

**A trade union perspective on industrial policy regimes in  
France, Germany, Denmark, China, Singapore and South  
Korea. What lessons for the United Kingdom?**

By Timothy Page

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### **Abstract**

This submission for a PhD by Published Work brings together five peer-reviewed papers produced between 2010 and 2017, which consider the role and outcomes of industrial policy. It is based on the experiences of France, Germany, Denmark, China, Singapore and South Korea. It considers debates surrounding the desirability of industrial policy at all, as well as discussions considering whether a light-touch approach, based on David Ricardo's theory of comparative advantage, or a more radical process, should be pursued.

The thesis is framed within the theory of institutional economics. Desk research undertaken for each paper was supplemented by semi-structured interviews conducted while I worked as a Senior Policy Officer at the Trades Union Congress (TUC). Agents within capitalism include trade unions, but the literature on industrial policy does not discuss the institutional role of union practitioners as experts, contributing to the implementation of industrial policy across different models of capitalism. This is a gap that my programme of research seeks to fill.

My key findings are: that industrial policy interventions, that is to say, government action taken against market signals, strategically applied, can play a major role in economic development; that transplanting institutions from one model of capitalism to another is problematic, but that developing institutions to take on different responsibilities as economic policy objectives change can overcome 'path dependency' constraints within different capitalist models; and that trade unions, using their 'insider' status, can shape the development of industrial policy.

The contributions to knowledge made by this body of work include the reconceptualizing of industrial relations within the United Kingdom, in order that social partnership is instituted at the company level, to deliver better outcomes for the workforce. My published work has already shaped the debate on the nature of industrial policy through discussion and comment in the national media and through in-depth policy discussions among political leaders and influencers.

## Contents

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Chapter One: Description of the overall programme of work</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>p. 6</b>                                                                                                                                                                                                                   |
| <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Aims and objectives of the research               <ul style="list-style-type: none"> <li>• Research aim</li> <li>• Objectives</li> </ul> </li> <li>• Structure</li> <li>• Research context</li> <li>• Concluding observation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | p. 6<br>p. 6<br>p. 7<br>p. 7<br>p. 8<br>p. 8<br>p. 10                                                                                                                                                                         |
| <b>Chapter Two: The publications and where they fit in the overall programme of Research</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>p. 11</b>                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• Paper one</li> <li>• Paper two</li> <li>• Paper three</li> <li>• Paper four</li> <li>• Paper five</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | p. 12<br>p. 13<br>p. 14<br>p. 15<br>p. 16                                                                                                                                                                                     |
| <b>Chapter Three: Literature review</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>p. 19</b>                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Industrial policy</li> <li>• Institutional economics</li> <li>• Varieties of capitalism</li> <li>• The development of capitalism and its discontents</li> <li>• Classical political economy</li> <li>• Regulating capitalism</li> <li>• The role of government</li> <li>• The golden age of industrial policy</li> <li>• Defining industrial policy</li> <li>• The developmental state</li> <li>• Industrial policy in post-war Europe</li> <li>• Ordoliberalism</li> <li>• China</li> <li>• Confucianism</li> <li>• The role of trade unions in post war industrial policy</li> <li>• Industrial relations in France</li> <li>• Industrial relations in Germany</li> <li>• Industrial relations in Denmark</li> <li>• Industrial relations in South Korea</li> <li>• Industrial relations in Singapore</li> <li>• Industrial relations in China</li> <li>• Industrial policies of the future</li> <li>• Transforming industrial policy across institutions</li> <li>• The case for co-determination</li> </ul> | p. 19<br>p. 19<br>p. 10<br>p. 20<br>p. 20<br>p. 21<br>p. 21<br>p. 22<br>p. 22<br>p. 22<br>p. 23<br>p. 24<br>p. 24<br>p. 25<br>p. 25<br>p. 26<br>p. 27<br>p. 27<br>p. 27<br>p. 28<br>p. 28<br>p. 28<br>p. 29<br>p. 30<br>p. 30 |

**Chapter Four: Research methodology****p. 33**

- Qualitative research p. 33
- Case studies p. 33
- The Eisenhardt method p. 34
- My research context p. 34
- Exploring nuance p. 35
- Pragmatism p. 35
- The co-creation of knowledge p. 36
- Pluralism p. 36
- Hidden agendas p. 36
- Challenging convention p. 37
- Generalizing from case studies p. 38
- Avoiding bias p. 38

**Chapter Five: Research contributions****p. 39**

- Theme one: the role of UK industrial policy p. 39
- Contribution one: shaping the contextual and policy debates on the nature of industrial policy p. 40
- Theme two: the role of UK trade unions p. 42
- Contribution two: challenging the conceptual parameters of industrial policy by considering its interaction with industrial relations p. 43
- Theme three: the role of the state p. 45
- Contribution three: re-examining the role of the state in developing an industrial policy for the United Kingdom, using new empirical data from the developmental and social market models of capitalism, as well as the Anglo Saxon model p. 45

**References****p. 47****Summary of Appendices****p. 55**

- Appendix one: Research and peer review process p. 56
- Appendix two: Confirmation of authorship of submitted papers p. 78
- Appendix three: Confirmatory documentation from co-authors p. 80
- Appendix four: Paper one – ‘Developing UK industrial policy: Lessons from France’ p. 81
- Appendix five: Paper two – ‘German lessons: developing Industrial policy in the UK’ p. 107
- Appendix six: Paper three – ‘The Way of the Dragon: What can the UK learn from the rise of China and East Asia?’ p. 204
- Appendix seven: Paper four – ‘Powering Ahead: How UK industry can match Europe’s environmental leaders’ p. 279
- Appendix eight: Paper five ‘Shaping our Digital Future’ p. 322

## Chapter One: Description of the overall programme of work

### Introduction

This submission for a PhD by Published Work brings together five peer reviewed papers produced between 2010 and 2017, which consider the role and outcomes of industrial policy, based on the experiences of France, Germany, Denmark, China, Singapore and South Korea. The papers are both theoretical and practical; by definition, the operation of industrial policy in each country takes place within the particular model of capitalism operating in each one, i.e. Anglo Saxon, corporatist or developmental (Marsh, Ercan and Furlong, quoted by Gilpin, 2011, p. 149)<sup>1</sup>. We should note that since 1992, China has called itself a socialist market economy (Naughton, 2017, p. 3).

The publications form a coherent body of work that reveals how industrial policy has been used in economic development, and latterly how it is increasingly focused on societal and economic challenges, such as the threat of climate change and the effects of digital disruption. The papers fill a gap in existing knowledge by considering the role of trade unions, an agent of capitalism since the mid-nineteenth century (Hobsbawm, 1977a, p. 139), in both overcoming imperfections in labour markets (Streeck, 2005, p. 263) and in regulating capitalist operation. The papers specifically consider trade unions as agents of industrial policy. Situated within the field of institutional economics, the papers consider questions including the desirability and possibility of transplanting best practice between countries operating different capitalist models. The papers challenge orthodox assumptions by considering what western countries can learn from Asian societies, including China, whose development was based much more on the role of the state, rather than simply asking this question the other way around.

### Aims and Objectives of the Research

Despite being the cradle of the industrial revolution (Hobsbawm, 1977b, p. 42), UK industry gradually declined relative to the USA and Germany, especially in the decades leading up to the Great War (Hobsbawm, 1994, p. 46). The UK's relative weakness continued into the post-war period (Childs, 2010, pp. 75-6; Judt, 2010, p. 354). Despite some attempts at corporatism (Benn, 1987, pp. 25-6), the UK never tried to become a coordinated market economy such as existed in countries like Germany, where firms place more reliance on collaborative, rather than competitive, relationships to build their competences (Hall and Soskice, 2001, p. 8).

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<sup>1</sup> The model of capitalism favoured in some Scandinavian and German-speaking countries is variously described as 'corporatist', 'social market' and 'coordinated market' by different authors. Those terms are used interchangeably throughout this thesis.

Towards the end of the twentieth century, the UK's industrial profile was changing; manufacturing employment fell from 6.7m in 1979, the year in which Margaret Thatcher was elected UK Prime Minister, to 2.6m in 2010, the year in which the first submitted paper was written (this decline continued during the Blair years)<sup>2</sup>. In May 2000, the closure of Ford's totemic Dagenham plant was announced; the new Ford Fiesta, once promised for Dagenham, would instead be built in Germany (Cruddas, 2021, p. 71). It is normal for developed economies to progressively focus less on manufacturing and more on services; gradually services reflected the UK's comparative advantage and went some way to offsetting its ongoing deficit in the trade in goods (Chamberlin and Yueh, 2011, p. 34). Yet manufacturing has historically provided good jobs to people from working class communities. To add to this, inequality has been a growing problem, in the UK and across much of the world; Piketty argues that the growth of inequality under the current phase of hyper-capitalism is undermining faith in economic liberalism, leading to a growth in nationalism and identity politics (Piketty and Goldhammer, 2020, pp. 1033-34).

How much of this was inevitable during the years that these five papers were written? Could a well-designed industrial policy have helped protect the jobs, especially of those people in working class communities who did not go to university? Was it too late to change course? Could trade unions have influenced a change? Was there an appetite, among government, business and among trade unions themselves, for a social partnership model? What could the UK learn from other countries, examined with an open mind, whether they followed Anglo Saxon, corporatist or developmental model of capitalism? These were the questions explored by my research.

### **Research Aim**

**To critically appraise the theory and practice of industrial policy, as practiced across different models of capitalism, and the role of trade unions in delivering economic success.**

### **Objectives**

In working towards this aim, the following objectives were pursued. Specifically:

1. To explore the nature of industrial policy in France, Germany, Denmark, China, Singapore and South Korea, with a view to describing how this is shaped by those countries' institutional frameworks. If those countries have policies that would benefit the UK, to understand what implications this would have for the institutions of the UK economy.

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<sup>2</sup> [source: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/jwr7/lms>] (accessed 17 January 2022)

2. To consider the role of industrial policy in finding solutions to major societal challenges, again learning from other institutional contexts, such as how Danish industrial policy is helping to address climate change and how Germany's social market economy is responding to digitalization.
3. To review the role of unions in Anglo Saxon, corporatist, and developmental models of capitalism, with a view to understanding how union engagement can strengthen industrial policy.

## Structure

- Chapter One identifies the scope and context of the research and sets out its aims and objectives.
- Chapter Two lists the submitted papers, outlines their relationship to each other and the place of each in the overall programme of research (and in the case of the fifth paper, sets out the contribution made by myself and that of other authors).
- Chapter Three reviews the literature in the field, identifying key themes, and sets the papers presented in this submission within the context of wider knowledge.
- Chapter Four describes the methodology used to conduct the programme of research.
- Chapter Five highlights the principal contributions of the programme of research, identifying the areas in which the submitted papers have extended knowledge and understanding.
- Appendices – the submitted papers are appended to this critical appraisal. A letter confirming my authorship of the submitted papers, a statement of my contribution to paper five, signed by the co-authors, and a description of my research and peer review processes, are also included as appendices.

## Research Context

We live in a globalized, interconnected world. Typically, globalization is identified as having begun with the industrial revolution; the “shackles were taken off the productive power of human societies” (Hobsbawm, 1977b, p. 43) and lower transportation costs made possible the shipment of goods to faraway destinations (Milanović, 2019, p. 150).

Yet globalization is not just about production and transportation; we must also think of it in economic and political terms. Stiglitz argues that an international order established after the Second World War has been supported by a set of institutions that provide a system of global governance without global



government (2018, p. 1). This served western economies well in the decades after the Second World War, but since 1978 China has re-emerged into the global economy and is now a key player on the international stage (Wang, 2019, p. 215). The rise of China is tilting the balance of the global economy towards the East. The East has different assumptions about the nature of a strong economy and a good society, based partly on Confucianism (Lee, 2000, p. 491). Of course, China's communist regime poses a systemic threat to a world order designed by the West.

Under Xi Jinping, China seeks to reform the international institutions to better reflect the realities of a world quite different from that when those institutions were established (Goldstein, 2020, pp. 178-9). The former UK Prime Minister Gordon Brown has also called for reform so that emerging markets are better represented on institutions like the International Monetary Fund (2021, pp. 408-9).

The re-emergence of China, with its scale and its lower labour costs, provided a major shock to industries in Western Europe and the United States. If meeting this challenge was not difficult enough, western policymakers must also grapple with two other epochal changes; the need to move to a net zero-carbon economy and the need to manage digital technology.

Both climate change and digital technology have major implications for the kind of industrial jobs that were already under threat in the West following the re-emergence of China. There could be opportunities as well as threats; evidence suggests, for example, that the emergence of eco- innovation stimulating the transition toward cleaner forms of production and consumption has contributed substantially to employment growth in Italian firms over the period 2001-2008 (Gagliardi, Marin and Miriello, 2016, p. 22). Pessimists, however, argue that recent technological change could see the end of an economy based on full employment, thus prompting calls for a universal basic income (Stern, 2016, quoted by Mathers, 2020, p. 326).

The mega-challenges we face, then, are threefold: the rebalancing of the global economy to include China, with its different ideas about politics and society; the existential threat of climate change; and the onset of digital technology. All three are systemic. From the perspective of the world of work, all three could signal a further decline in well paid, high skilled jobs in working class communities.

Industrial policies have been used since 1945 to respond to mega-challenges such as the rebuilding of the global economy after World War Two (Andreoni and Chang, 2019, p. 136). The economic opening of China after 1978 led to "an imported industrial revolution, information revolution and consumer revolution" (Vogel, 2011, p. 464) as Japanese and European companies and systems took hold, bringing the fruits of their industrial policies with them. Despite its embrace of markets, the state has been central to Chinese economic development over the last 40 years.

If we can speak of globalization as a concept that has spanned many of the years since the industrial revolution, we can also speak of trade unions as agents of capitalist economies during this time.

Each set of industrial policies took place within specific varieties of capitalism in which the institutional role of trade unions differed (Thelen, 2001, pp. 72-3). This is a crucial observation when considering the types of industrial policy that may be possible.

### **Concluding Observation**

So where do we go from here? In 'Capital and Ideology', Thomas Piketty writes:

“... the market and competition, profits and wages, capital and debt, skilled and unskilled workers, natives and aliens, tax havens and competitiveness – none of these things exist as such. All are social and historical constructs, which depend entirely on the legal, fiscal, educational and political systems that people choose to adopt and the conceptual definitions they choose to work with. These choices are shaped by each society’s conception of social justice and economic fairness and by the relative political and ideological power of contending groups and discourses. Importantly, this relative power is not exclusively material; it is also intellectual and ideological. In other words, ideologies and ideas count in history. They enable us to imagine new worlds and different types of society. Many paths are possible (Piketty and Goldhammer, 2020, p. 7).

We can, indeed, imagine new worlds and different types of society. But are many paths possible? That depends on whether path dependency can be overcome, and existing institutions can be refashioned alongside new policies. This is another idea that will be explored in the pages below.

## Chapter Two: The publications and where they fit in the overall programme of research

Five peer-reviewed papers are presented as part of this thesis. This chapter briefly overviews the papers and their place within the programme of research.

Before any of these papers, I had written ‘An Industrial Policy for the United Kingdom’, published by the TUC in 2005<sup>3</sup>. This paper argued for a modern industrial strategy that embraced intervention when it was strategically important to do so, seeking recognition of those particular industrial sectors that would contribute to the long-term future of UK plc. It also argued for European Champions, companies large enough to compete with major US and Chinese manufacturers.

‘An Industrial Strategy for the United Kingdom’ was written when Tony Blair was UK Prime Minister and Gordon Brown was Chancellor of the Exchequer. However, despite the introduction of some policies to regulate economic life, such as the National Minimum Wage (Rizov, Croucher and Lange, 2016, p. 819), a shift away from the endorsement of the Thatcher consensus came only in the final phase of these governments, after the 2008 financial crisis (Brivati, 2010, p. 196). Subtle changes became evident over time, however. For example, in 2007 the UK Treasury commissioned ‘The Race to the Top: A review of government’s science and innovation policies’<sup>4</sup>, which argued that:

“... it is possible to see many opportunities for UK companies to create new products and services, and new industries in areas as diverse as aerospace, pharmaceuticals, biotechnology, regenerative medicine, telemedicine, nanotechnology, the space industry, intelligent transport systems, new sources of energy, creative industries, computer games, the instrumentation sector, business and financial services, computer services and education.”

This was an oblique recognition that particular industries were of strategic importance; thus, the key argument of laissez faire economics, that the ‘market’ would decide the optimum mix of industries, was challenged.

In 2007, Blair resigned as Prime Minister, replaced by Brown. The following year, the worst economic crisis since the Great Depression took hold. Gordon Brown played a major role in averting a global economic collapse (Brown, 2017, pp. 323-336; Obama, 2020, pp. 334, 343). Less reported in the West was the role of China; a four trillion yuan (\$626bn) stimulus (Liu, Li and Chen, 2021, p. 2016) helped to avoid an economic collapse similar to the Great Depression (Hu, quoted by Fu, 2012, p. 83). Yet despite his contribution to the rescue of the global economy, Brown’s popularity at home nose-dived. In an attempt

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<sup>3</sup> <https://www.tuc.org.uk/sites/default/files/extras/industrial.pdf> (accessed 17 January 2022)

<sup>4</sup> [https://www.rsc.org/images/sainsbury\\_review051007\\_tcm18-103118.pdf](https://www.rsc.org/images/sainsbury_review051007_tcm18-103118.pdf) (accessed 17 January 2022)

to restore his political fortunes, he appointed Peter Mandelson as First Secretary of State. In April 2009, Mandelson, a former European Commissioner, introduced an active industrial policy in the UK, under the title 'New Industry, New Jobs'<sup>5</sup>.

**Paper One: Page, T. (2010), 'Developing Industrial Policy: Lessons from France'**

This paper was inspired by an article in the Financial Times, 'Dirigisme de Riguer', written by Peggy Hollinger, the FT's Paris Bureau Chief, and published on 3 June 2009. Hollinger argued that the damage done to France by the global economic crisis had been less severe than elsewhere. This had led many to wonder whether this was anything to do with France's tradition of Colbertisme, which placed industry at the heart of economic planning.

Using desk research<sup>6</sup>, paper one described France's post-Second World War history of 'dirigisme' and set out the industrial policy approach of the then French President, Nicolas Sarkozy. The paper's main contribution to new research, however, came from interviews with Sarkozy's industrial policy advisor, Matthieu Louvot, and with the Chief Executive Officer of France's Fonds Strategique D'Investissement (Strategic Investment Fund, FSI), Gilles Michel.

In common with the other four papers, paper one set out policy recommendations for the UK. Chief among them was that the UK set up a strategic investment fund similar to that operating in France, but with a smaller budget, to reflect the UK's cultural reticence about an active state. Without describing it in such terms, this paper was already reflecting the institutional frameworks in which both the UK and France worked, which was key to understanding why France may have little hesitation in setting up such a fund, at large cost to the taxpayer, whereas convincing the UK public of the benefits of such an idea would be much more difficult.

Paper one also contained interviews with three French trade unionists from two different union federations. Historically, France's trade union federations have been divided along political and, to an extent, religious lines (Parsons, 2015, pp. 66-7). All see the role of trade unions as to act separately from management, in an adversarial style relationship.

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<sup>5</sup> <https://webarchive.nationalarchives.gov.uk/ukgwa/20100512232040/http://www.bis.gov.uk/ninj> (accessed 22 June 2022)

<sup>6</sup> My research methods are summarised in Chapter Four and a full description of my Research and Peer Review Processes can be found in Appendix One.

*Place within the programme of research*

Although it was not initially conceived as the first stage of a programme of research, paper one provides the foundation for the four papers to follow. A first stage of desk research, combined with identifying key practitioners to be interviewed, was followed by a second stage of visits to the country being studied, a trajectory followed in the first three papers, and partially followed in the last two. Where the first paper differed from the other four was that it paid little attention to possible alternative roles for trade unionists to engage with industrial policymaking.

Paper one was, of course, a product of its time. The FSI no longer exists; it has now been subsumed into Bpifrance. Scholars will debate the degree to which it was successful. The FSI was an attempt to introduce a new innovation into industrial policy. Innovation practitioners speak of the importance of learning from failure (Carmeli and Dothan, 2017, p. 27). If the FSI failed, it is important to learn from that failure.

**Paper Two: Page, T. (2012), 'German Lessons: Developing industrial policy in the UK'**

Paper two was written after the Labour Government had left office and a Conservative-Liberal Democrat Coalition formed the UK Government. Industrial policy continued, however, under the tutelage of the Business Secretary, Vince Cable.

Paper two began life when I met a policy officer from IG Metall, the German metalworkers' union, and we decided to jointly write a paper on industrial policy in the UK and Germany, exploring what each could learn from the other. An internal reorganisation within IG Metall meant that the German policy officer was no longer available for this project, but the idea had momentum by this time, so it was reshaped as a consideration of what the UK could learn from Germany. Whilst, again, the language of institutional economics was not used, the paper sought to compare the success of German companies operating in Germany with German companies operating in the UK; in this way, the culture of German management, its relationships and ways of working with its employees, etc was present in all companies. What was different was the industrial policy regime under which the two sets of companies were operating. The 2008 financial crisis was still recent, yet Germany's labour market had been highly resilient compared to others (Reisenbichler and Morgan, 2012, p. 550); the report sought to understand why.

Paper two told the story of UK and German industrial development after the Second World War, before setting out evidence based on semi-structured interviews with company managers, works council members and trade unionists in Germany and the UK. Companies visited included Volkswagen, Siemens, ThyssenKrupp, BASF, Bentley (which is owned by Volkswagen) and BMW.

### *Place within the programme of research*

Paper two set out some obvious benefits of German industrial policy, such as that country's world beating apprenticeship system. The impact of environmental concerns was discussed, as was the need to compete in a global economy. Paper two described the role of short time working, which had been advocated by trade unions and had been important for Germany's success in minimising disruption during and after the 2008 crisis. By contrast, short time working was not introduced in the UK, although a time banking system was introduced in Bentley, which suggests the influence of its German parent on company policy.

Moving beyond policy, paper two considered the advantages and disadvantages of co-determination within a social market, or corporatist, economy. Co-determination, or *Mitbestimmung* in German, describes a system of employee consultation and participation, in certain cases, in company decisions at both establishment and company/group level within private sector companies (Page, 2018, p. 4). In other words, paper two considered not just industrial policy, but a different role for managers and trade unions in operating such a policy and therefore a different model of capitalism. Paper two argued that a version of the social market economy in the United Kingdom could help to unite our nation around values of equality, fairness and mutuality.

### **Paper Three: Page, T (2013), 'The Way of the Dragon: What can the UK learn from the rise of China and East Asia?'**

The Conservative-Liberal Democrat Coalition Government was still in power when paper three was published. Significantly, this was the age of the 'golden era' of relationships with China (Cable, 2021, p. 9).

The spark for paper three came when I attended an industrial policy seminar in Rome, addressed by the former President of the European Union and former Italian Prime Minister, Romano Prodi, among others. Competition from, and opportunities to trade with, China featured heavily in presentations to the conference. My papers dealing with industrial policy had now reached the stage of becoming a programme of research and, if a serious analysis of industrial policy regimes was to be completed, China had to be included. Preparations for a study visit to China began.

One financial sponsor of the trip suggested that I also visit South Korea while in East Asia. This was duly arranged. At this time, Lim Swee Say, the Singaporean Cabinet Office Minister, who under the Singapore model is also the Secretary General of the NTUC, Singapore's trade union federation, visited London, so an interview with Lim also took place.

Interviews were arranged with leading academics, company managers, and researchers from think tanks in China and South Korea, alongside off-the-record briefings with officials from the British Embassies in

Beijing and Seoul. By this time, I was also interested in the role of trade unions as agents in what was, in this case, the developmental model of capitalism. Interviews were duly arranged with representatives of the trade union federations in both countries.

*Place within the programme of research*

If papers one and two were focused on lessons from two different countries, paper three was hybrid in its nature; its focus was partly on lessons to be learned from the developmental state model, that is from China, South Korea and Singapore, and partly on how industrial policy can help to respond to an economic shock, that shock being the rise of China within the global economy.

Paper three describes the developmental state in Japan and in the ‘four little dragons’ of Hong Kong, Taiwan, South Korea and Singapore (Vogel, 1991), before turning to China. Paper three discusses the reforms implemented by Deng Xiaoping, which opened China to the global economy. It asks what the UK could learn from China, thereby challenging the argument that developing countries can learn from developed ones, but not the other way around. Given the UK’s tortured debate about the balance between state and market, it asks whether the UK has got the balance right and whether we could learn from China in this regard. Paper three also describes the institutional role of trade unions which are, of course, not independent in China. In theory, union members are not free to withdraw their labour in the face of industrial conflict, as they are in Europe or the United States, although stories of actual strike action in China, for example, are not uncommon (Zhu, Warner and Feng, 2011, p. 139).

From a UK perspective, paper three describes the opening of China as a major opportunity and a minor threat; it sets out a number of recommendations to boost UK exports, including an industrial policy which boosts sectors of the economy producing goods and services that China wishes to buy but which it cannot produce itself.

**Paper Four: Page, T. (2016), ‘Powering Ahead: How UK industry can match Europe’s environmental leaders’**

Paper four was written after the Conservative Party had won the 2015 General Election. The government no longer used the term ‘industrial policy’, instead speaking of its industrial approach. Meanwhile, after the retirement of the TUC’s Senior Policy Officer responsible for energy and environmental policy, I combined those two areas with my existing work on industrial policy. This had a natural logic and reflected the changing nature of the debate; ten years previously, energy and environmental policy on the one hand, and industrial policy on the other, were distinct. Over time, the debate about industrial policy

became increasingly focused on the need for a *sustainable industrial policy*. I took over as secretary of the Trade Union Sustainable Development Advisor Committee (TUSDAC), which co-ordinated the TUC's work on the environmental agenda. TUSDAC quickly agreed the need for a policy paper on sustainable industrial policy.

Paper four describes the beginnings of green politics, the way in which the environmental agenda was considered to be at odds with economic growth and the tensions that existed between unions, committed to defending jobs, including in fossil fuel sectors, and environmental activists. Paper four focuses on lessons from Denmark and Germany, two countries that have led the way in the development of sustainable industry. Of course, Denmark and Germany are both co-ordinated market economies, giving trade unions a major voice in policy development at company level.

Having considered the role of trade unions in France, Germany, China, South Korea and Singapore, alongside the UK, the evidence suggested that the corporatist model, used in Germany and Denmark, offered the greatest influence for trade unions in shaping policy.

#### *Place within the programme of research*

Paper four was the first of the five papers to focus completely on an economic shock, i.e. the climate crisis, and to consider the role of industrial policy in meeting this challenge.

Paper four was published in 2016. It is a mark of how much more urgent the climate crisis has become, even in six years, that some of its policy recommendations are now out of date. Specifically, the paper called for fifty per cent of the UK's energy coming from renewable resources by 2050. The UK is now, of course, committed to a policy of 'net zero' carbon emissions by that date, a policy supported by trade unions.

Paper four was published after the Brexit vote to leave the EU and it engages with concerns raised about parts of the UK that have been left behind, calling for the development of new, green technologies in those parts of the country where jobs have been lost due to the demise of heavy industry.

#### **Paper Five: Page, T., Bell, K., Jones, J. (2017), 'Shaping our Digital Future'**

Paper five was written after the new, post-Brexit Conservative Prime Minister, Theresa May, had recommitted to industrial policy. In one of her last acts as Prime Minister, Theresa May would also commit the UK to a policy of net zero carbon emissions.



Paper five was conceived after a forum on digitalisation organised by the Trade Union Advisory Committee to the OECD, at which I was a panellist in a breakout session<sup>7</sup>. The concept of a ‘just transition’, which describes a move from a fossil-fuel based to a low carbon economy that provides good jobs in the latter for those who previously worked in the former, was applied to the concept of a digital transition at this seminar. However, more work was needed to develop a policy for the UK context.

Paper five describes the meaning of digitalisation and sets out some of the benefits that digital technology can bring, based on desk research and an interview with a Senior Policy Analyst at the OECD. Paper five also discusses the impact that digital technology could have on jobs; the most famous study on this issue is that produced by Carl Frey and Michael Osborne, which estimated that about 47 per cent of total US employment could be at risk as a result of future computerisation of the US labour market (2017, p. 268).

However, the main value of the paper is its description of how Germany’s co-determination system allows works council members a key voice in shaping the way digital technology is introduced in the workplace.

#### *Place within the programme of research*

Paper five was the second paper to focus solely on the way in which industrial policy can respond to an economic shock, in this case the introduction of digital technology.

Paper five argues that the UK should embrace digital technology, using it to enhance productivity, jobs, and wages. A key aim for managing this wave of technology should be to protect workforces and communities who are at greatest risk of seeing their jobs change. A third priority should be to ensure that if the productivity benefits from new technology were as predicted, the rewards are fairly shared.

Paper five was written after the TUC had introduced a change in format for its economic reports. Papers one to four were based mostly on narrative, with data obtained via desk research and semi-structured interviews. Paper five was based on such data, but also included a number of graphs. The graphs, and a small part of the background narrative, was produced by other members of the TUC economics team. Paper five was launched at the TUC’s annual congress, which is its showpiece event. One of the conclusions of the paper argued that a way to share the economic growth created by digital technology could be to abandon a plan to increase the state pension age to 68 for those in their forties; this conclusion was developed with media coverage in mind. The semi-structured interviews, i.e. the new data, was produced by me, however. The table below sets out the percentage of contributions made to

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<sup>7</sup> <https://tuac.org/wp-content/uploads/201708/Agenda-TU-Digitalisation-Forum.pdf> (accessed 17 January 2022)

paper five by its different authors. A signed note confirming those percentages is included as an appendix to this thesis.

**Page, T., Bell, K., Jones, J. (2017) 'Shaping our Digital Future'**

| Aspect of Paper                | Tim<br>Page | Jack<br>Jones | Kate<br>Bell |
|--------------------------------|-------------|---------------|--------------|
| Research conception and design | 80%         |               | 20%          |
| Literature search and review   | 80%         | 10%           | 10%          |
| Collection of data             | 80%         | 20%           |              |
| Analysis of data               | 80%         | 20%           |              |
| Writing of paper               | 80%         | 10%           | 10%          |

## Chapter Three: Literature review

### **Introduction**

This chapter situates the five papers within a review of the extant literature on industrial policy. It also considers the contribution that trade unions make, or could make, to the complexion and operation of such a policy.

This chapter will put my research in context. It will briefly describe the development of capitalism and of the agents which sought to balance the power of capital, including the state and the trade union movement. It will explore debates about the desirability of state intervention in the economy and they will discuss the nature of industrial policy across different capitalist models.

Before that, it will introduce three concepts that are central to my thesis: industrial policy; institutional economics; and varieties of capitalism.

### ***Industrial Policy***

The term ‘industrial policy’ was not used widely until the period after the Second World War, but it could be argued that a form of industrial policy dates back to Antonio Serra’s ‘Short Treatise’ of 1613 (Andreoni and Chang, 2019, p. 137). Other early advocates included Alexander Hamilton, the First US Treasury Secretary, who argued for a number of ‘industrial policy’ proposals in his 1791 ‘Report on the Subject of Manufactures’, and the German-American economist Frederick List, who argued that policy-makers should take a long-term view of economic development and intervene accordingly, especially to promote domestic manufacture and commerce (Bailey, Cowling and Tomlinson, 2015, pp. 1-2).

A wide literature exists on industrial policy across different models of capitalism, but this does not discuss the institutional role of trade unions or trade union practitioners as experts, contributing to the nature and implementation of industrial policy. This is a gap that my programme of research seeks to fill.

### ***Institutional Economics***

This chapter is framed within the theory of institutional economics. Douglass North described institutions as “the rules of the game in a society” (North, 1990, p. 3). Dani Rodrik argues that, following Lin and Nugent (1995, 2306-7), we can think of institutions broadly as “a set of humanly devised behavioral rules that govern and shape the interactions of human beings, in part by helping them to form expectations of what other people will do” (2007, p. 154). Institutional economics is a valuable framework through which to consider the five papers because each considers industrial policy in a different institutional context.

Joseph Schumpeter, John R Commons and Thorsten Veblen established the paradigm of institutional evolutionary economics (Papageorgiou, Katselidis and Michaelides, 2013, p. 1247). Commons put “an

emphasis on the economy as an ongoing socio-cultural process”, contending that “economic order is a product of institutional adjustment” (Whalen, 1989, quoted by Papageorgiou, Katselidis and Michaelides, 2013, p. 1248). For Schumpeter and Veblen, technological development leads to a habituation of institutional change (Papageorgiou, Katselidis and Michaelides, 2013, p. 1249).

The concept of complementarity refers to situations in which the functionality of an institutional form is conditioned by other institutions (Hopner, 2005, p. 331). This makes the transfer of institutions between different economies problematic; such transfers are particularly difficult between countries operating different varieties of capitalism, in which institutions and the relationship between them differ (Hall and Soskice, 2001, pp. 9-10).

### ***Varieties of Capitalism***

We noted in chapter one that Gilpin speaks of Anglo Saxon, corporatist and developmental models of capitalism (Gilpin, 2011, p. 149). Goren Esping-Andersen notes the ways in which welfare regimes impact on capitalist models. Whereas Nordic welfare states seek specifically to maximize women’s economic independence, Conservative-Catholic policy seeks to strengthen, or at least reproduce, traditional family dependencies, implying radically different welfare state models (1999, pp. 45-6). Those different configurations produce different capitalist systems.

### **The Development of Capitalism and its Discontents**

The 1780s was the decade in which the industrial revolution began (Hobsbawm, 1977b, p. 43). Writing at the dawn of capitalism, Adam Smith argued that in promoting his own, selfish interests, man is “led by an invisible hand to promote an end which was no part of his intention” (Smith and Sutherland, 1993, p. 292).

Capitalism can be viewed in historical context. Fernand Braudel describes an earlier industrial revolution between the eleventh and thirteenth centuries, when the use of horses and mills transformed production. The large wooden panels turned by a water-wheel and introduced to the major industry of the time – woollen cloth – “proved to be instruments of a revolutionary upheaval” (Braudel, 1992, p. 544).

Max Weber identified a connection between Protestantism and capitalism that was not merely coincidental; he described a particular affinity between certain of the doctrines of Protestantism, implying a conception of salvation through the pursuit of a secular calling and the style of life necessary for the successful accumulation of capital through commercial activity (Weber, Runciman and Matthews, 1978, p. 135). Braudel is sceptical of this argument, however; to view capitalism as the embodiment of the Calvinist ethic is to propose simple solutions to complex problems. Capitalism did not spring from a unique source - the economy, society, politics, and culture were all involved, and it was the historical mix

of these different elements that shaped what capitalism was to become (Day, 1980, p. 512). This, of course, also explains why capitalism varied so much across countries and continents.

### **Classical Political Economy**

If the great period of classical political economy began with the publication of Smith's 'The Wealth of Nations', it arguably reached its peak with David Ricardo's 'On the principles of political economy and taxation' in 1817 (Hobsbawm, 1977b, pp. 288-9). Ricardo developed his theory of comparative advantage (Baiman, 2010, p. 419). Simply put, this proposed that, under conditions of international trade, nations should focus production on those goods they could produce most efficiently.

The nineteenth century's most famous critic of capitalism was Karl Marx, who argued that a property-owning bourgeoisie used its power to exploit those who had nothing to sell but their labour. According to Marx and his collaborator, Friedrich Engels: "The history of all hitherto existing society is the history of class struggles" (Marx *et al.*, 2002, p. 219).

Marx and Engels believed that the state in a post-capitalist society would die out (Marx and Engels, 1989, p. 321). The Social Democrats of the twentieth century, however, argued that the state could be used as a corrective to the injustices of capitalism. The Fabian Society, which helped to establish the British Labour Party, believed that the state was fundamentally neutral; it could be used to hinder progress, or it could be used to further the evolution of humanity towards its collectivist goal (Foote, 1985, p. 28).

### **Regulating Capitalism**

This raises a number of interesting questions. Do we accept a role for the state in regulating capitalist society? If so, what role? How much should the state intervene, and to what ends? Is the reason for regulation simply to make capitalism fairer, or could regulation improve the functioning of capitalism? Marx and Engels believed that capitalism would ultimately fail because of the contradictions inherent within it; the bourgeoisie produced "its own gravediggers" (Marx *et al.*, 2002, p. 233), but suppose regulation lessened, or even removed, those contradictions? We might also ask a wider question: if capitalism needs to be regulated, are there other actors, apart from the state, which could help to perform this function?

Unions, which acquired legal status and privileges in the UK between 1867 and 1875 (Hobsbawm, 1977a, p. 139), became a major agent in the regulation of capitalism, a role they played for much of the twentieth century. Chang notes that economic development creates new agents of change, demanding new institutions; the growing power of the working class in the nineteenth and early twentieth centuries led to the rise of the welfare state and protective labour laws, contrary to the will of the capitalist class (2011b, p. 476). TH Marshall assumed an almost dialectical tension between the free market of

capitalism, including the free labour market, and the various layers of citizenship rights institutionalised in the modern nation state, which led him to see unions as collective actors crossing the boundary between the polity and the economy (Marshall, 1964, quoted by Streeck, 2005, p. 257).

The role of unions was and, it could be argued, is paradoxical: in organising to make free labour markets fair through institutional safeguards, they make them less like pure markets. Yet by creating institutions of contractual governance, unions overcome inherent imperfections in labour markets. They can thus be seen as agents of both the suspension and perfection of labour markets (Streeck, 2005, p. 263).

### **The Role of Government**

In 1936, John Maynard Keynes published 'The General Theory of Employment, Interest and Money', in which he argued that the world would no longer tolerate the unemployment which was associated with capitalist individualism (Keynes, 1936, p. 381). Defending "the enlargement of the functions of government", Keynes argued that this was "the only practical means of avoiding the destruction of existing economic forms in their entirety" (Keynes, 1936, p. 380).

Keynes enjoyed a rivalry with Friedrich von Hayek, author of 'The Road to Serfdom', who argued against public works to avoid unemployment, as this would risk "making all economic activity progressively more dependent on the direction and volume of government expenditure" (1991, p. 91). Immediately after the Second World War, we can say that Keynes won this battle of ideas, as the UK and Europe enjoyed thirty years of economic growth under activist government programmes.

### **The Golden Age of Industrial Policy**

The emphasis on regulating capitalism after the Second World War had two elements: economic policy pursued the Keynesian approach as discussed above and dealt with managing economic and financial issues day-to-day; this was complemented by industrial policy, which sought to build and/or strengthen particular industries deemed to be vital for economic success over a longer period of time. Post-war economic regeneration was pursued in each of the major industrial economies and the development of semi-automated methods of production during the war itself gave the manufacturing sector the capacity to significantly raise living standards (Coates, 2015, p. 43).

### **Defining Industrial Policy**

When we talk about industrial policy, we usually mean 'selective industrial policy', or 'targeting'. Ha- Joon Chang describes this as "a policy that deliberately favours particular industries over others, against market signals, usually (but not necessarily) to enhance efficiency and promote productivity growth" (2011a, p. 84). Dani Rodrik makes a similar point: "the nature of industrial policies is that they

complement – opponents would say “distort” – market forces; they reinforce or counteract the allocative effects that the existing markets would otherwise produce” (2007, p. 100).

A neoliberal purist might argue that such an industrial policy is rarely, if ever, a good idea. Wade summarises the neoliberal argument as based on “faith in the efficiency of markets”. Public ‘intervention’ is only justified when markets fail to produce socially optimum outcomes and the intervention can be presumed to move the outcome closer to the social optimum at a cost less than the gain; in the real world, both conditions are rarely satisfied (2012, p. 225).

### **The Developmental State**

Proponents of industrial policy disagree. The debate, then, focuses on the desirability, the nature and the limits of public intervention. This has been particularly important in the context of the “developmental state”, which first emerged in post-war Japan. Ignoring advice from the United States, Japan created the Ministry of International Trade and Industry (MITI), through which it sought to become economically and technologically equivalent, and perhaps even superior, to the West (Gilpin, 2011, pp. 156-7).

Japan was followed by the “little dragons” (Vogel, 1991) of South Korea, Taiwan, Hong Kong and Singapore. South Korea enjoyed remarkable economic growth after the Second World War; in four and a half decades, a country whose main exports included tungsten ore, fish and wigs made from human hair became a high-tech powerhouse. (Chang, 2008, p. 12). Selected firms, the top chaebols, were instrumental to the government’s industrial policy; they also had an interest in the growth of the developmental state and in gaining access to global markets (Chibber, 1999, quoted by Lechevalier, Debanes and Shin, 2019, p. 74).

By the late 1970s, Singapore was the intellectual and financial centre of Southeast Asia and, with a strong leader in Lee Kuan Yew, was far more influential than its size – it had a population of less than three million – would suggest (Vogel, 2011, p. 288). Living to the age of 91, Lee had a finger in almost every pie of Singapore’s development (Ang, 2019, p. 557). Under his leadership, Singapore sought to achieve “capitalism with socialist characteristics”.

Proponents of the developmental state point to incentives that encouraged private investment in strategic industries, the creation of an entrepreneurial class, the identification of critical economic areas for development, and the exposing of priority sectors to international competition, thereby forcing them to become competitive (Gilpin, 2011, p. 317). In all of these ways, supporters argue that the developmental state was responsible for the industrial success of these East Asian economies.

## Industrial Policy in Post-War Europe

Industrial policy was a feature of the rebuilding of both France and Germany after the horrors of the Second World War. In France, post-war industrial policy was powered by the state, managed finance and public sector firms (Cohen, 2007, p. 213). “Dirigisme” was seen as a middle way between the American policy of little state intervention and the Soviet policy of total state control.

At the dawn of the post-war Golden Age of economic growth, Germany already possessed the industries required for economic strength, from coal and steel to transportation equipment and electrical machinery (Eichengreen, 2007, p. 93). This did not, however, preclude targeted policy initiatives designed to facilitate post-war reconstruction, to strengthen market competition (Smith, quoted by Coates, 2015, p. 48) and later to enhance the competitiveness of locally based manufacturing industry (Coates, 2015, p. 48).

## Ordoliberalism

Yet as we shall see, more interesting than Germany’s industrial prowess at this time was its post-war institutions, which can be viewed as a part of its industrial policy. Germany’s new economic policy, known as ordoliberalism, had its antecedents in the Austrian School, which rejected both the Marxist theory of the exploitation of workers (Negishi, 1986, p. 3), notably by Eugen von Bohm Bawerk (Edgeworth, 1892) and Keynesian interventionism (Feld, Köhler and Nientiedt, 2021, p. 17). Firmly committed to the laws of supply and demand, individual entrepreneurship, the free price mechanism and the benefits of competition, Ordoliberals sought checks and balances to block over-mighty subjects, cartels or monopolies (Nicholls, 1990, p. 605).

Comprising “a wider complex of measures of social policy and a narrower complex of measures of economic policy, delicately synchronised with each other” (Muller-Armack, 1978, p. 328), the resulting social market economy led to a West German state that was ‘neither *laissez faire* nor *etatiste*’, but rather ‘*enabling*’ (Streeck, quoted by Coates, 2015, p. 48).

During these years, the UK fell behind. The post war Labour Government had “no serious industrial policy or training programmes” and the most important thing it did “was an act of omission – it did not reform capitalism” (Sassoon, 2014, pp. 156-7).

As the Golden Age came to an end in the 1970s, the influence of Keynes declined and that of Hayek advanced. The end of the 1970s saw the election of a new breed of conservative on both sides of the Atlantic, leading to neoliberalism, the dominant ideology in much of the world for decades to follow. Britain’s Prime Minister, Margaret Thatcher, elected in 1979 “had read Hayek’s ‘Road to Serfdom’ as an undergraduate at Oxford, and in the 1970s used to pull his ‘Constitution of Liberty’ out of her handbag, declaring ‘*This is what we believe*’” (Cockett, quoted by Moore, 2013, p. 342).



Institutionally, this meant that a reduced role for government in the economy was in, at least in theory (Walker, 1993, p. 103), and trade unions and social dialogue bodies were out. As neo-liberal ideas spread to other countries, industrial policy went undercover (Andreoni and Chang, 2019, p. 136).

## **China**

Hobsbawm describes the history of the twenty years after 1973 as “that of a world which lost its bearings and slid into instability and crisis” (Hobsbawm, 1995, p. 403), yet this was not true for everywhere: opening its economy in 1978 after nearly three decades of Maoism, China has followed what could be called a ‘catch-up growth’ model, which involves rapid economic growth following years of lagging behind (Hu, 2015). According to the World Bank, since 1978, Chinese GDP growth has averaged almost 10 percent a year, and more than 800 million people have been lifted out of poverty.<sup>8</sup>

China’s most important post-Mao leader, Deng Xiaoping, was fond of the aphorism “It doesn’t matter if the cat is black or white as long as it catches mice”. This suggested that what works is more important than following a particular ideology (Vogel, 2011, p. 391). It also speaks to the idea of markets being introduced into China’s socialist planned economy. China pursued an experimental approach that used given institutional realities to construct a new economic system, in which the state gradually recreated markets on the margins of the old system (Weber, 2021, p. 7).

As we shall see, this is a crucial insight, given debates about path dependency and the degree to which existing institutions militate against successful policy change. It also has geopolitical relevance; present day disputes between China and the US are not about the existence of markets, as was the case during the Cold War between the US and the Soviet Union, but rather about their role and whether they are synonymous with the public interest or subservient to it (Brown, 2021, p. 353).

China’s economic reforms have not been matched by political reforms, of course. The Communist Party of China has its own system of appointing political elites. The party has both political power and controls the allocation of economic resources. This synergy between the political and economic dimensions has a decisive importance on the specific character of Chinese capitalism (Pęciak, 2019, p. 149).

## **Confucianism**

All countries must grapple with their relationship with China. South Korea, an East Asian neighbour, drew closer to China in the two decades after China began its market reforms, against some expectations. This is because South Korea’s development was predicated on international trade and investment (Kang, 2009,

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<sup>8</sup> <https://www.worldbank.org/en/country/china/overview#1>. (Accessed on 10 October 2021)

p. 4), and it saw a lot of economic opportunities in China. Indeed, the rapid economic growth of China has been truly helpful to the expansion of export markets for major East Asian countries (Lin *et al.*, 2013, p. 398).

It is also important to note cultural similarities between East Asian economies. Lee notes the “Confucian values” of Singapore, where the strength and influence of the family keeps society orderly and maintains a culture of thrift, hard work, scholarship and learning. These are among the “fundamental differences” between East Asian Confucian and Western liberal societies (Lee, 2000, p. 491). If, as noted earlier, institutions are “the rules of the game” in a society (North, 1990, p. 3), we might describe these Confucian values as part of the East Asian institutional architecture. Their attitude to the primacy of the family also has similarities with the Conservative-Catholic European welfare state tradition, discussed above.

Martin Jacques has described China as a civilisation-state; China has existed roughly within its present borders for at least two millenia, but for only a fraction of this time has it come to regard itself as a nation. What defines the Chinese, then, is not a sense of nationhood but of civilisation (2012, p. 244). This long, pre-communist, Confucian history also helps to explain East Asia’s embrace of China, in spite of political differences.

### **The Role of Trade Unions in Post-War Industrial Policy**

The role of unions cannot be divorced from the historic, economic and political contexts in which they operate. In early industrialising countries, including the UK, craft unions represented an aristocracy of labour; general unions, sometimes known as industrial unions, came to represent the unskilled, in a second wave of unionisation (Streeck, 2005, p. 267). In late industrialising countries, unions had developed as part of a labour movement with a political and an industrial wing, the former dominating the latter at least until democratisation. Industrial unions were fragmented by political affiliation rather than by occupation, reflecting the dominant political and social cleavages of their home countries (Ebbingham, 1995, and Rokkan 1998, quoted by Streeck, 2005, p. 267).

In countries where political democracy arrived much after industrialisation, as in Japan and other Asian economies, unions organised, if at all, as ‘enterprise unions’. In Japan, such unions and large companies agreed on a largely informal system of ‘lifetime employment’. Reflecting the structure of Japanese labour markets, enterprise unions have only weak links across workplace boundaries, to political parties or union confederations (Streeck, 2005, p. 268).

In Sweden, Germany, the UK, France and other European countries, the 1950s to the 1980s was the golden age of social democracy, loosely defined to describe a set of political practices and institutions

whose purpose was to socially embed private property and capitalism (Piketty and Goldhammer, 2020, p. 487). The role of trade unions in these countries differed, however, and continues to differ to this day.

### **Industrial Relations in France**

In France, five historical unions are recognised as legal bargaining units wherever a single worker agrees to be their representative (Breda, 2015, p. 1623). This creates a quirk, whereby unions have low density but high bargaining coverage, as there is little incentive to join the union if a worker can gain the benefits of its collective agreement outside of membership. Union legitimacy, such that it exists, is derived from unions' ability to mobilise and their knowledge of the world of work, and to a lesser extent their representativeness within the workplace (Milner and Mathers, 2013, p. 134). French unions can react to company policies, including industrial policies, but they have little role in shaping them. French unions were represented on the governing body of the Fonds Stratégique D'Investissement, however (Page, T. 2010, 'Developing Industrial Policy: Lessons from France', Paper One, p. 10).

### **Industrial Relations in Germany**

Germany's social market principles state that market freedom must go hand-in-hand with social balance. The rights and obligations of the social partners (unions, individual employers and employer associations) are set down in law (Muller-Jentsch, 2018, p. 636). Germany's social market economy is "culturally cherished", in much the same way that the National Health Service is culturally cherished in the UK (Page T, 2012, 'German Lessons: Developing industrial policy in the UK', Paper Two, p.82).

Germany's co-determination system recognises works councils which, in practice, tend to be dominated by unions. French law also requires companies employing more than 50 people to establish a works council (See 'Democracy in the Workplace: strengthening information and consultation', TUC, 2014<sup>9</sup>). As economic agents, works councils are established in France; as an economic institution, however, social partnership is not established in the way that it is in Germany.

### **Industrial Relations in Denmark**

Like Germany, Denmark is a co-ordinated market economy (Hall and Soskice, 2001). As of 2014, union density remained high, at 68 per cent of the Danish labour force, with collective agreement coverage at 84 per cent of the Danish workforce. This is, in part, because of the Ghent system, in which the unions also administer unemployment insurance, meaning that many workers have a double membership of both the union and the unemployment insurance fund (Hogedahl, 2014, quoted by Refslund and

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<sup>9</sup> [https://www.tuc.org.uk/sites/default/files/Democracy In The Workplace 2014 .pdf](https://www.tuc.org.uk/sites/default/files/Democracy%20In%20The%20Workplace%202014.pdf) (accessed 17 January 2022)

Sørensen, 2016, p. 538). Alongside traditional collective bargaining, Danish workers have the right to representation at board level in public limited companies, but compared to Germany's co-determination system, Danish participation rights are relatively weak, with no genuine co-decision or co-determination rights, and the functioning of board level representation varying across companies (Lind and Knudsen, 2018, p. 588).

### **Industrial Relations in South Korea**

During its period of rapid economic development, the South Korean government acted as a "benevolent dictator" (Kim and Kim, 2003, p. 347), protecting individual workers rights, but suppressing an independent labour movement. Two union federations have been recognised, one of them since a general strike of 1997, but after the financial crisis of that year, an attempt was made to institute European-style social dialogue, through the Korean Tripartite Commission. This struggled, however (Chonghee, Jiho and Sunhyuk, 2010, p. 302) with the lack of trusted relationships between state, business and unions that can be found in Europe. Contrary to China's experience after it began its market reforms, in which it built a new economic model on its existing institutions, this speaks to the difficulty of translating the institutions of one country into another with a different culture, history and traditions.

### **Industrial Relations in Singapore**

Singapore's National Trade Union Congress (NTUC), established in the 1960s, engages in a 'tripartite partnership' model of industrial relations (Rajah, 2019, p. 42), which encourages the government, employers and trade unions to work together to increase efficiency and flexibility in the capital market. This seeks a co-operative rather than a confrontational policy towards employers. Lee Kuan Yew, who began life as a trade union advisor, had called on Singapore's unions to "rid ourselves of pernicious British style trade union practices" (Lee, 2000, p. 87), but observers have questioned whether Singaporean unions really are unions (Barr, 2000, quoted by Rajah, 2019, p. 48).

### **Industrial Relations in China**

The All-China Federation of Trade Unions (ACFTU) is controlled by the Communist Party and the role of unions is to act as a "transmission belt" through which the State-Party can reach the majority of workers and, ideally, the employees' collective voice is also transmitted in the opposite direction to reach policymakers (Ge, 2014, p. 189). Some scholars argue that the ACFTU is not a union and shouldn't be viewed as such (Taylor and Qi, 2007, p. 707). The evidence shows that unions have real effects in terms of enterprise average wage, nonwage compensation and employee training, however (Ge, 2014, p. 188), and this is a sign of soft power; unions in China can obtain benefits from their close links with the Communist Party, such as political access, legitimacy and prestige (Guo and Laroche, 2020, p. 1086). Furthermore,

workers congresses, at least in theory, allow the workforce to participate in the management of the company and trade unions have representation in the National Peoples Congress, the top legislature in China (Page, T: 2014, 'The Way of the Dragon: What can the UK learn from the rise of China and East Asia?' Paper Three, p.48).

### **Industrial Policies of the Future**

Debates continue about the value and direction of industrial policy. Some call for a more gradual approach to industrial development; echoing Ricardo, Justin Lin says that, rather than fostering structural change, any industrial policy should be based on the country's current comparative advantage (Lin and Chang, 2009, p. 486). In contrast, Chang argues that comparative advantage should be "no more than the base line, and that a country needs to defy its comparative advantage in order to upgrade its industry" (Lin and Chang, 2009, p. 489). Whilst noting that in advanced economies, industrial policy is often associated with white elephants, Rodrik argues that this is a caricature. He reminds us that government support was crucial for the development of Silicon Valley and that political interference, a risk of industrial policy, can be overcome by appropriate institutional design (2014, p. 482).

Rodrik takes on other criticisms of industrial policy. It may be true, as critics suggest, that governments cannot pick winners, but making mistakes is part and parcel of good industrial policy when cost discovery is at issue. It also may be also true that competent bureaucracies are hard to find in some parts of the world, but this problem affects market economies generally (2007, pp. 50-51).

In the future, especially in developed countries, industrial policies are likely to be less focused on overall economic outcomes and more focused on specific missions, such as a green transition (Mazzucato, 2021, p. 137). In advanced economies, advocates cite a role for industrial policy in responding to the competitive threat from China (Aiginger and Rodrik, 2020, p. 190), an argument made in 'The Way of the Dragon: What can the UK learn from the rise of China and East Asia?', the third paper in this thesis.

As the importance of 'place-based' economies are recognised, such as in the European Union, where there is a focus on utilising policy to develop knowledge and innovation opportunities building on regions' existing advantages and capabilities (Bailey, Pitelis and Tomlinson, 2018, p. 1521), industrial policy may also become more regional in nature. For example, calls have been made for transformative place-based industrial policies which join up technologies, sectors and places, in ways that recognise possibilities for regional transformation pathways (De Propris and Bailey, 2021, p. 1626). At the same time, cluster policy, innovation policy and regional policy have helped firms to survive and grow through seizing the opportunities of global networks of knowledge, production and demand (Bailey, Cowling and Tomlinson, 2015, p. 3)

## **Transforming Industrial Policy Across Institutions**

A separate debate exists with regard to the ability to transfer industrial policies from a country with one set of institutions to a second country with a different set of institutions. This is clearly a challenge, as we have seen with South Korea's attempt to introduce a tripartite commission, although major structural reform within a specific set of institutions was achieved in China. Historic evidence suggests that such change would be particularly difficult in the UK, given that our institutions have been intertwined with our economy for over 200 years; as Hobsbawm writes, even at the time of the industrial revolution, "private profit and economic development had become accepted as the supreme objects of government policy" (1977b, p. 46). At this time, "it was accepted that money not only talked, it governed" (1977b, p. 47). Questioning how British capitalist institutions operate or suggesting that they might learn from others has thus always been problematic in the UK.

There are other aspects to this challenge. Human beings are products of existing institutions, so the very notions of self-interest and rationality are defined by history. Marx recognised this, arguing that whilst men make their own history, they do so under already existing circumstances, and that the "tradition of all dead generations weighs like a nightmare on the brains of the living" (Karl Marx, 'The Eighteenth Brumaire of Louis Bonaparte', quoted by Weldon, 2021, p. 1). To add to this, institutions are meant to be stable, making them difficult to change (Chang, 2011b, p. 490). Thorstein Veblen described institutions, "habits of thought, points of view, mental attitudes" as "a conservative factor" (Veblen, quoted in Papageorgiou, Katselidis and Michaelides, 2013, p. 1234).

Dani Rodrik speaks of institutional diversity and the ways in which fashion changes over time: "with its low unemployment, high growth and thriving culture, Europe was the continent to emulate throughout much of the 1970s; during the trade conscious 1980s, Japan became the exemplar of choice; and the 1990s were the decade of US-style freewheeling capitalism. It is anybody's guess which countries will capture the imagination next. Back to Sweden perhaps?" (2007, p. 162).

## **The Case for Co-determination**

Germany has not needed to develop its industries, given its long-standing strengths. Germany is, however, directing its industrial policies towards future challenges such as greening the economy (Page T. 2016, 'Powering Ahead: How UK industry can match Europe's environmental leaders', Paper Four, p.5) and digitalisation (Page T. 2017, 'Shaping our Digital Future', Paper Five p.30).

There are particular innovations that other countries could learn from Germany, such as mandatory small and medium-sized enterprise (SME) participation in applied research programmes, thereby allowing SME

participation in collaborative projects (Bailey, Pitelis and Tomlinson, 2018, p. 1534). Germany is also the economy, more than any other, that has integrated works councils into its policy-making.

As a co-ordinated market economy (Hall and Soskice, 2001, pp. 9-10), Germany's economic agents, including companies and works councils, are designed to seek consensus. Comparing Germany with his own country, Thomas Piketty writes with some amusement that "French socialists believed that the state and its high civil servants were perfectly capable of taking over the boards of directors of all key industries but that worker representatives had no place among them" (Piketty and Goldhammer, 2020, p. 503).

Germany's social market economy enjoys complementarity with other institutions. Making co-determination work in the UK might be a different challenge. Leonie Williams, a senior human resources manager at Bentley, told 'German Lessons' that her company had an "intention to achieve co-determination, but we will do this in the context and the framework of the UK environment. It is important that it fits within our culture".

As industrial policy attracts criticism, so does union influence through works councils. Sectoral collective bargaining, declining in Germany since the 1980s, continues to shrink without any material increase in firm level bargaining, while there is also some erosion in works council coverage (John *et al.*, 2017, pp. 222-3). Employer resistance, especially in medium-sized and owner-managed firms, might be a factor (Behrens and Dribbusch, 2020, p. 431). Given that firms with works councils make a significantly higher net investment in training (Kriechel *et al.*, 2014, p. 199) and works councils have been shown not to reduce innovation (Kraft, Stank and Dewenter, 2011, p. 167), it is worth asking why there is this employer hostility. The answer might be that those firms benefiting less in terms of productivity and profits have disproportionate influence over the policy debate within employers' organisations (Muller and Stegmaier, 2020, p. 552).

Are works councils successful? As with any institutional body, their functional success depends partly on design; factors related to corporate structure – head office location, the level at which supervisory boards are established – play a decisive role in determining the power resources available to employee representatives, for example (Rosenbohm and Haipeter, 2019, p. 219). The broader question, however, relates to whether they are successful in improving company performance. The answer depends on what companies are trying to achieve. Critics argue that co-determination leads to risk-aversion, avoidance of rapid change, rigid labour markets and high wages (Hopner, 2005, p. 345), but if part of the role of companies, as agents of a stable capitalist model, is to offer high quality, secure employment, are these outcomes always bad? Some argue that the institutions of co-ordinated market economies such as Germany damage aggregate performance and simply deliver rents to specific groups of actors (c.f. Pagano and Volpin, 2001, quoted by Hall in Crouch *et al.*, 2005, p. 374). It may, however, be that case that

German social market capitalism both delivers rents *and* enhances aggregate economic performance (Crouch *et al.*, 2005, p. 374). Industrial policy delivers certain outcomes; specifically, it helps to grow major companies, offering good jobs, in strategic sectors, able to compete globally. It is less successful at other things, such as fostering innovative start-ups, notwithstanding some talk of a start-up philosophy in German policy debates. Perhaps we should discuss industrial policy in the context of what we want our economy to look like and what challenges we face.

The past fifteen years has seen the biggest economic downturn since the Great Depression, the growing importance of the climate crisis, the emergence of digital technology and, most recently, the economic damage caused by Covid-19. A system that maintains economic strength and helps to protect the employment and wages of workers as effectively as the social market economy has is a huge success if these are our desired outcomes.



## Chapter Four: Research methodology

This section considers theoretical questions concerning my research methodology, before setting out the research process undertaken for the submitted papers.

The five papers that comprise my thesis are summarised as follows.

| Title of Research Paper                                                            | Publication Date | Research Duration | Number of Pages |
|------------------------------------------------------------------------------------|------------------|-------------------|-----------------|
| Developing UK Industrial Policy: Lessons from France                               | 2010             | Eight Months      | 25              |
| German Lessons: Developing industrial policy in the UK                             | 2012             | 18 Months         | 93              |
| The Way of the Dragon: What can the UK learn from the rise of China and East Asia? | 2014             | Two Years         | 72              |
| Powering Ahead: How UK industry can match Europe's environmental leaders           | 2016             | Six Months        | 41              |
| Shaping our Digital Future                                                         | 2017             | Six Months        | 51              |

These five papers represent case studies which cover the role and outcomes of industrial policy, and the influence of trade unions on that industrial policy, across three different models of capitalism.

### Qualitative Research

The first four papers were written in two parts; a period of desk research was followed by semi-structured interviews with company managers, works council members, trade unionists, academics and researchers from think tanks. Desk research ranged from books by academics specialising in my subject, covering general issues like the post-war European economy, to more specific studies, such as a major biography of Deng Xiaoping (Vogel, 2011), along with journal articles and other material. The nature of the fifth paper meant that the writing of the work was done in smaller, shorter phases.

Ontologically, qualitative research methods, including semi-structured interviews, are sited within a social constructivist philosophy, which stresses a reflexive approach, where the role and perspective of the researcher in the research process is acknowledged. Qualitative researchers “study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them” (Denzin and Lincoln, 2017, p. 10).

### Case Studies

Five case studies are presented in this thesis. Case studies are particularly valuable when examining contemporary events and when the relevant behaviors cannot be manipulated (Yin, 2014, p. 12). They are

useful when seeking to understand real-world examples, in the belief that such an understanding is likely to involve important contextual conditions pertinent to the researcher's case (Yin, 2014, p. 16).

For case studies, theory development is both possible and desirable. Theory development entails proposing theoretical propositions, which have been described by Sutton and Staw as "a [hypothetical] story about why acts, events, structure, and thoughts occur" (Sutton and Staw, 1995, quoted by Yin, 2014, p. 38). Case studies are sited within interpretivism which, in epistemological terms, "is concerned with understanding, not with predictive explanation". A researcher from this tradition "offers his/her results as one interpretation of the relationship between the social phenomena studied" (Marsh, Ercan and Furlong, quoted by Lowndes, Marsh and Stoker, 2017, p. 185).

### **The Eisenhardt Method**

The Eisenhardt Method also speaks of building of theory from multiple cases (Eisenhardt, 2021, p. 148). My methodology included some features of the Eisenhardt method; I took an under-represented perspective in the otherwise well-known literature around industrial policy, that perspective being the role of trade unions, for which there was no prior theory or empirical evidence, and so no obvious answers (Eisenhardt, 2021, p. 149). I chose cases where the similarities and differences across cases, in the three different models of capitalism, were likely to improve theory-building (Eisenhardt, 2021, p. 149). I chose cases with common antecedents, i.e. France, Germany and China had all survived the economic crisis of 2008 more successfully than had the UK (Eisenhardt, 2021, p. 149).

### **My Research Context**

I had been thinking for some years about industrial policy before I began work on the five papers contained here. I was aware of the UK's slow industrial decline, from academic reading and statistical analysis. I wanted to question both the scale and the speed of that decline, whether there were some industries that could be retained or built in the UK, and the role of industrial policy in making this happen. I brought these themes into my research questions. My interviewees were aware of the aims of my work. They were either trade unionists themselves or they were not hostile to trade unions.

Qualitative methods in general, and semi-structured interviews as part of case study research in particular, were important to the value of my work in a number of ways. I wished to develop an understanding of the meaning and value of trade unionism *to the trade unionists being interviewed* which was both historically and culturally specific. To give an example, Germany's co-determination system gives worker representatives (who, in practice, are usually trade union members) seats on the supervisory boards of companies, leading them to co-operate with management in a way that trade unionists in France and the UK often do not see as their role. One of my research questions considers whether the

transfer of such an approach to a country like the UK, with a different history and culture, is both desirable and feasible: desirable from the perspective of unions, i.e. whether *they believe that this is what it means to be a trade unionist*; and feasible in light of the UK's Anglo Saxon model of capitalism.

Linked to this, my case studies provided a serendipitous theoretical opportunity (Eisenhardt, 2021, p. 150), i.e. that through company agreements negotiated by works councils, company performance could be improved, the jobs of workers could be better protected and that this could form part of a nation's industrial policy. My case study research investigated this theory, which emerged when I followed new leads by asking different questions from those in my interview script, thereby facilitating unforeseen insights. Works council members stressed the importance of their procedure agreements, reached with company management, through which they had negotiated important rights and opportunities, and which they were anxious to describe to me. I hadn't thought to ask about these agreements, not understanding their importance, but they were, in fact, critical to the successful operation of the works councils, from an employee perspective.

### **Exploring nuance**

The Danish industrial relations system gives trade unions great influence, yet when interviewing Danish trade unionists for 'Powering Ahead', my fourth paper, at the union's office in Aalborg, Denmark, the mood and body language reflected 'rights' more than 'obligations'. By contrast, 'rights and obligations', taken together, was a more accurate reflection of the atmosphere in Germany, during interviews for 'German Lessons'. If qualitative researchers "study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them" (Denzin and Lincoln, 2017, p. 10), this was a vital observation.

Even the titles, 'trade unionist' and 'works council member' provoke different attitudes, with trade unionists offering a clearer, separate workforce perspective. In any industrial relations situation, both works councils and trade unions must consider how much to concede. Frederic Speidel, a full-time trade union official at Volkswagen who was interviewed for 'German Lessons', holds a PhD and, in a joint article with Melanie Simms, quote's Kotthoff's observation of a tendency of works councils, rather than having an antagonistic relationship with management, to play the role of management's junior partner, competing against other countries on the world market (Kotthoff, 1998, quoted by Speidel and Simms, 2003, p. 165).

### **Pragmatism**

A good degree of pragmatism characterised the work; my role at the TUC gave me contacts, who were able to introduce me to their contacts. My first paper, for example, came about because a well-

researched article about industrial policy in France appeared in the Financial Times, whose author, Peggy Hollinger, was known within the international trade union movement. Hollinger, the Financial Times' Paris Bureau Chief at the time, helped me to gain access to key players on France's industrial policy scene, including an advisor to France's then President, Nicolas Sarkozy. This was a great opportunity and so the paper was born. Once the structure of the paper and its value became clear, a template emerged for similar research.

### **The Co-Creation of Knowledge**

Epistemologically, in the social constructivist model, knowledge is co-created by the interaction between researcher and researched. Before embarking on my interviews, I conducted desk research, which gave me a detailed background understanding of my subject. I sought insights and advice from specialists in the field, including academics from the University of Cambridge, who also suggested potential interviewees. My interview questions were based on this background knowledge, but the real value and the new learning from my research came from voices in the field, which gave insights that books could not provide.

### **Pluralism**

My work comes from the pluralist perspective on work, which acknowledges the uneven distribution of economic power within a capitalist system and considers how best to manage this (Blyton and Jenkins, 2007, p. 166). As a pluralist, I believe this tension can be compromised, but I acknowledge that company managers have different headline priorities to trade unionists. It is to be expected, therefore, that they talk about the company in different terms. Managers often stress the positive, trade unionists the negative. To this extent, there can be inconsistencies in answers given to questions. However, as companies were dealing with economic shocks, such as the 2008 downturn, a similar way of seeing the challenge was evident.

### **Hidden Agendas**

Similarly, we would expect definitions of democracy to differ between China and European states. In a conversation with a group of Chinese trade unionists, I prefaced a question by saying, "If this question is permissible..." to which one replied, "All questions are allowed". I then asked a question about democracy in China. The same interviewee prefaced her reply with the words, "Democracy can mean many different things..." before going on to defend the Chinese system. I expected such a response.

My data consists of the stories that my interviewees told me, supported and informed by my desk research. Those interviewees were, themselves, identified as a result of careful research. My papers include quotes, some of them quite long, designed to bring their stories alive. At other times,

interviewees gave me information “off the record”, so that I could include the information but not the source.

I am aware that some interviewees tried to project a positive image. I am also aware that some might have had other agendas; I participated in a game of badminton with workers at a factory in China, conscious that there was a photographer present and suspicious that these photos might be used as “evidence” of Chinese openness to a Western researcher. This didn’t seem particularly problematic, and I thought it rude to refuse; my hosts were friendly, and I tried to be friendly in return. Furthermore, my visit to China was designed to identify what works well, as dispassionately as I could, eliminating anything else. This sometimes raised eyebrows; why didn’t my report on China take a stronger line on the massacre in Tiananmen Square in 1989, perhaps China’s darkest moment in the post-Mao period, for example? The answer was that I was writing about China’s economic development and anything else made my research less relevant.

### **Challenging Convention**

For the most part, my interview responses were consistent with the data I had retrieved through my desk research. I did, however, want to challenge convention. When I asked one interviewee in China what the UK could learn from that country, the response was, “You should be asking the question the other way around. Surely China should be learning from the UK”. I replied, “All that glitters is not gold”. Whilst developed countries like the UK move from a manufacturing to a service-based economy, I wished to challenge the degree to which this was happening in the UK and I wanted to make the case for the defence of good jobs. For this reason, I was keen to learn from others, including China.

Social constructivism gathers knowledge by comparing experiences, thereby expanding horizons of understanding. Taken together, this is what my thesis seeks to do. The voices of trade unionists from France, Germany, Denmark, China and South Korea, in their cultural settings (my interview with the Secretary General of Singapore’s NTUC took place in London), bring out the similarities and the subtle differences in what it means to be a trade unionist in those five countries and the degree to which they see their influence as being an ‘insider’, working with the company to improve its performance, and then using their negotiating or ‘soft’ power to gain a share of that improvement for their members, or whether they see themselves as an ‘outsider’, taking no responsibility for improving company performance, which they see as the job of managers, but using their negotiating ‘muscle’ to enhance the interests of their members.

### **Generalizing from Case Studies**

Some have questioned the generalizability of case study evidence. As noted above, interpretivism seeks to understand the relationship between social phenomena and, according to Robert Yin, case studies do not aim for statistical generalizability. In this sense, the case studies do not represent a sample drawn from a specific population, and in doing case study research, the researcher's goal can be to expand or challenge theories, rather than to extrapolate probabilities (Yin, 2014).

My research contributes to the theorization of the functioning of industrial policy by discussing the role of trade unions, a previously neglected stakeholder. Without an understanding of that role, we cannot fully understand why Germany has enjoyed greater industrial success than the UK, because we miss a contributory factor to that success, i.e. a process through which workers and employers reach mutually beneficial outcomes which affect the performance of companies, as well as the nature and quality of work.

### **Avoiding Bias**

A researcher from an interpretivist perspective "must be as aware as possible of her partialities and, as far as possible, take those into account when interpreting her respondents' interpretation of their experiences/actions" (Marsh, Ercan and Furlong, quoted by Lowndes, Marsh and Stoker, 2017, p. 190).

It could be argued that my work contains a sample bias, as there are no voices that give a negative perspective of the role of trade unions. It is true that some perspectives may be missed; however, the dialogue around unions in the UK tends to stress the negative. Unions gain media attention either when industrial action is happening, in which case they tend to be cast as the villain, or when a political argument is taking place, usually with regard to the internal workings of the Labour Party. Little is said about the day-to-day work of unions in supporting in health and safety at work, or the skills training of employees. The discourse of unions as agents of capitalism that can support industrial policy doesn't exist at all, hence the gap filled by my thesis.

## Chapter Five: Research Contributions

This thesis considers three themes: the role of industrial policy; the role of trade unions; and the role of the state. It discusses the ways in which those institutions and agents work in the UK, compared with their operation in selected countries following different models of capitalism.

The body of published work included with this thesis, alongside the thesis itself, also contains three research contributions: practical (in terms of policy recommendations); theoretical; and empirical.

Recognising the value but also the limits of case study research, the thesis extends theory, both about the nature of industrial policy as previously understood, and about the conceptual barriers to industrial policy and its interaction with industrial relations. It re-examines the role of the state in developing an industrial policy for the United Kingdom, using new empirical data from the developmental and social market models of capitalism, as well as the Anglo Saxon model. It also rehearses practical policy recommendations which have been debated by politicians, academics and journalists.

The three themes of this thesis – around industrial policy, trade unions and the role of the state – are set out below. In each case, the research contribution which corresponds to that theme is described.

### Theme One: The role of UK industrial policy

UK industrial policy has been a failure. The industrial revolution may have begun in Britain (Weldon, 2021, p. 17), but by the time of the Great War, Britain had experienced relative decline, while the USA and Germany enjoyed relative – and absolute – advance (Hobsbawm, 1994, p. 46).

The UK's post war Labour Government had no serious industrial policy (Sassoon, 2014, p. 156). The first Wilson Government (1964-70) sought to modernize the British economy, based on a tripartite partnership with organised business and labour, using French indicative planning as its model, while the Wilson-Callaghan Government (1974-79) created a series of agencies and policies, seeking to learn from Japanese administrative guidance. The latter failed, partly as a result of opposition from sections of UK industry, partly because of internal divisions within the government itself, and partly because it came too little and too late (Coates, 2015, p. 51).

Active industrial policy was politically unfashionable in the UK during the 1980s; Margaret Thatcher entered power armed with a renewed faith in the growth-generating capacity of unregulated markets and in the inflation-killing capacity of monetarist macroeconomic policy (Coates, 2015, p. 53). After the financial crisis of 2008, industrial policy was back in vogue, pursued by the Labour Party from 2009 and the Coalition Government thereafter. The name of the responsible Ministry was even renamed the

‘Department for Business, Energy and Industrial Strategy (Johnstone *et al.*, 2021, p. 6) but, in March 2021, the industrial policy was abolished, in favour of a much less strategic ‘Plan for Growth’<sup>10</sup>.

This compares with the targeted use of industrial policy in Developmental State economies in the second half of the twentieth century, leading to the ‘East Asian miracle’ (Andreoni and Chang, 2019, p. 136), and with a more passive industrial policy in Germany which nevertheless maintains Germany’s position as the manufacturing heartland and the economic powerhouse of Europe. In the 1990s, the French economist Michel Albert described ‘Rhenish Capitalism: “Post-war Germany has shown that the coexistence of capitalism, prosperity for all and a non-conflictual balance of interests between capital and labour is possible” (Albert, quoted by Muller-Jentsch, 2018, p. 641).

### **Contribution One: Shaping the contextual and policy debates on the nature of industrial policy**

My work makes the case for an industrial policy for the UK. In *paper two*, I call for an investment fund to take a long-term interest in companies of strategic importance, based on the French model. In *paper three*, I call for an export strategy to China focused on those goods and services that China needs but cannot yet produce itself. In *paper four*, I call for investments in green technology to be made in those communities across the UK that have lost or will lose jobs as a result of the transition from fossil fuels. In *paper five*, I call for an industrial ‘mission’ to be one of the world’s top five digital economies by 2030, as well as a way to share the productivity benefits created by digital technology with the workforce.

My work accepts that some industries are strategically more important than others. In that sense, it is based on Ha-Joon Chang’s definition of industrial policy, as described above: “a policy that deliberately favours particular industries over others, against market signals, usually (but not necessarily) to enhance efficiency and promote productivity growth” (Chang, 2011a, p. 84). In my case, the defining question with regard to whether or not an industrial policy intervention should be supported is: does it help to create or maintain quality jobs, especially in industrial sectors for people who do not go to university.

Having made the case for an industrial policy in the UK, my work has been a major voice among politicians, policymakers, academics and journalists over an eight-year period; it has made a major contribution to the theorising of this concept.

To give a few examples, *paper two* was launched at a House of Commons event, addressed by the Labour Party’s Business Spokesperson. About 30 Labour MPs, including senior backbenchers, took part in the meeting. *Paper three* was launched at an event at TUC Headquarters chaired by Linda Yueh, Fellow in Economics at St Edmund Hall, Oxford University, former Visiting Professor of Economics at Peking

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<sup>10</sup> <https://www.niesr.ac.uk/blog/what-next-uk-industrial-policy-and-productivity>



University, and author of 'China's Growth: The making of a superpower'. Terry Scuoler, who was Chief Executive Officer of EEF, the manufacturers lobby organisation, spoke at the event, as did Martin Jacques, Visiting Professor at Tsinghua University, Beijing, and author of 'When China Rules the World'. *Paper four* was launched at an event addressed by Nick Hurd MP, Industry and Climate Change Minister, and chaired by Peggy Hollinger, who was by now Industry Editor of the Financial Times.

Whilst correlation does not mean causation, it is noteworthy that the value of learning from best practice in other countries, including Germany and China, is a policy that continues to this day. For example, *paper two*, spoke positively of both Germany's high quality skills training system and the value that Germany places on strong employers' organisations, as well as trade unions. In a speech to the Social Market Foundation on 9 July 2020, the Secretary of State for Education, Gavin Williamson, announced plans for a German-style further education system in Britain<sup>11</sup>. The subsequent skills white paper, 'Skills for Jobs: lifelong learning for opportunity and growth', published in January 2021, specifically highlighted the central role of Chambers of Commerce in Germany's skills system<sup>12</sup>.

I argued that the UK could learn from developing countries such as China as well as developed ones such as Germany. *Paper three* described the way in which Special Economic Zones in places such as Guangdong province in 1978 began to transform China's economic fortunes. Budget 2021, unveiled by the Chancellor of the Exchequer, Rishi Sunak, on 3 March 2021 included plans for the first eight freeports in England. The Scottish Government set out plans for green ports, adapted from the English freeports proposal, in January 2021.

I gave various media interviews to discuss my work, including one to former Labour Leader, Ed Miliband, and Geoff Lloyd for their podcast, 'Reasons to be Cheerful' (available at <https://www.cheerfulpodcast.com/rtbc-episodes/no-worker-left-behind-planning-a-just-transition>, accessed on 10 November 2021).

My work has been widely covered in the print media, further influencing political debate. Examples include: Groom, B and Hollinger, P, (2010). 'TUC seeks £5bn manufacturing fund: UK sheds hostility to dirigiste approach', Financial Times, 4 March, (available at: <https://www.ft.com/content/4ad58386-27b9-11df-863d-00144feabdc0>, accessed 13 March 2021); Lea, P. (2014). 'TUC Policy takes leaf out of Beijing's book', The Times, 15 April, (available at: <https://www.thetimes.co.uk/article/tuc-policy-study-takes-leaf-out-of-beijings-book-gk3nfb8dnfs>, accessed 13 March 2021); and The Observer, Business Leader. (2014).

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<sup>11</sup> <https://www.gov.uk/government/speeches/education-secretary-fe-speech-with-social-market-foundation> (accessed 217 January 2022)

<sup>12</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/957856/Skills\\_for\\_jobs\\_lifelong\\_learning\\_for\\_opportunity\\_and\\_growth\\_web\\_version.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957856/Skills_for_jobs_lifelong_learning_for_opportunity_and_growth_web_version.pdf) (accessed 17 January 2022)

'If Britain wants to become a nation of makers, why not a five-year plan?', (available at <https://www.theguardian.com/business/2014/apr/20/britain-nation-of-makers-five-year-plan> , accessed 13 March 2021).

## **Theme Two: The role of UK trade unions**

My published work considers how trade unions operate in three very different models of capitalism.

Under all three capitalist models, i.e. the social market, developmental and Anglo Saxon models, unions developed within particular historical conditions. Unions emerged in the UK to defend workers subject to the harsh conditions of capitalism. They would go on to create a political party, the Labour Party, to represent organised labour (Foote, 1985, p. 6). After the UK, unions developed across the world. As we have seen (Streeck, 2005), their interactions with economies and politics are multi-faceted and they have the capacity to promote both the suspension and perfection of labour markets.

UK unions have historically operated in an adversarial style relationship with management. At its most confrontational, the miners' strike of 1984-5 was seen by some as an attempt to bring down the elected government (Moore, 2015, p. 164) and its leader, Arthur Scargill, as seeking to bring down capitalism itself (Westlake, 2001, p. 289). A decade earlier, strikes, "a symptom of labour militancy and incompetent management alike" (Judt, 2010, p. 358), were endemic to post-war British industrial life. It is an awkward fact for trade unionists that Margaret Thatcher's reforms of employment law were popular among the public, as well as among union members themselves (Dorey, 2016, p. 190). The New Labour Government of Tony Blair introduced some laws allowing greater union organisation, but many of the Thatcher reforms were not overturned.

In countries where political democracy arrived much after industrialization, as in Japan and other Asian countries, unions organised, if at all, as enterprise unions (Streeck, 2005, p. 268). As noted above, they have come under great pressure to support the economic development of their countries, leading some to question whether they are really unions at all.

Whilst industrial action, including strike action, is also open to unions operating under the social partnership model, their post war experience has been quite different. Some union officials, such as one at Siemens UK, had experience of such a model, given that company's European Works Council. A senior manager at Siemens across Europe spoke of how co-determination can help to build a common agenda. Yet despite the presence of a Labour Government, UK unions were not able to win a short-time working scheme during the economic downturn of 2008, as did their German counterparts. German governments had decades of experience of seeing the benefits of social partnership; UK governments had no such experience.

**Contribution Two:** Challenging the conceptual parameters of industrial policy by considering its interaction with industrial relations

In these publications, as well as in this critical appraisal, I use my comparative analysis across several national contexts to argue that UK industrial relations *could* deliver new opportunities for worker influence in company strategy which could also provide a new model for industrial policy at the national level.

*Paper two* makes the case for a social market economy in the UK. Germany's Works Constitution Act requires companies to consider not only the interests of shareholders but also those of employees (Page, 2018, p. 9). I was co-author of a book chapter which argued that, in the UK, directors have a mandate to prioritise the interests of shareholders, and this encourages short termism, given the prevalence of shareholder strategies based on share trading rather than long-term share ownership. Workers, by contrast, tend to be long-term stakeholders in the company. It is in the interests of workers for profits to be invested in research and development, training, and other long term investment strategies (Williamson and Page, 2015, pp. 228-9).

Germany's social market principles seek both market freedom and social balance. The rights and obligations of the social partners are set down in law, but I would argue that the culture of partnership is more important than its legal status, important though it is to have that status. Works councils are legally established in France, but we have seen that social partnership in the German style has not been achieved in that country. We have also seen how in Denmark, workers have the right to representation at board level in public limited companies yet, again, whilst unions enjoy a privileged place in the Danish economy, their role is different.

'Agents' can be distinguished from 'institutions'. Agents are bodies, such as companies, political parties or trade unions. We saw earlier that Douglass North called institutions "the rules of the game in a society". It is interesting that in describing Germany's social partnership economy in *paper two*, Martin Rosik, Human Resources Manager at Volkswagen, uses similar language, saying that "Here you don't have the classic understanding of what is whose role in this game".

Both companies and unions would need to be convinced that a social market economy offers them more than they achieve in the UK at present; the theorising in this thesis, based on my five case studies, argues this to be the case. For example, at a time of real concern about the effects of digital technology on jobs, the agreement reached between management and the works council at Airbus Deutschland described in *paper five*, which would see no worker losing their job or suffering a pay cut following the introduction of digital technology, is a powerful example of the benefits of social partnership.

I was a member of the European Trade Union Confederation team which negotiated the European Framework Agreement on Digitalisation<sup>13</sup>. Wording in that agreement which describes an “employers’ commitment to introduce technology in a way that benefits at the same time employment, productivity and the work content and improved working conditions” was inspired by the Airbus Deutschland example. In this way, industrial policy developed at corporate level has now become established within EU law. A similar agreement at BASF, described in *paper two*, means that employees cannot lose their jobs in the face of economic challenges faced by the company, except in the most extreme circumstances.

My thesis reconceptualises UK industrial relations in order that social partnership at the company level could deliver new opportunities for worker influence in company strategy; in turn, this could provide a model for industrial policy at the national level as well.

Further research is needed into how such an institution could be established in the UK. There would need to be supportive legislative changes, such as the wider reform of corporate governance and a lower legal threshold before unions can achieve recognition in the workplace. Governments and employers would need to stop seeing unions as an enemy; unions would need to change their sometimes-hostile attitudes towards capitalism and the private sector. Incentives might be necessary; in a brief flirtation with a so-called ‘partnership’ agenda, the New Labour Government established a Partnership at Work fund to support companies and employees working together<sup>14</sup>. On 7 June 2022, the Social Partnership and Public Procurement (Wales) Bill, designed to embed the principle of social partnership in the operation of public bodies in Wales, was laid before the Senedd Cymru (Welsh Parliament).<sup>15</sup> The Institute of Directors has called for a lower rate of corporation tax for companies that achieve net zero, compared to those that do not.<sup>16</sup> Perhaps a lower rate of corporation tax could also be considered for companies signing up to genuine social partnership.

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<sup>13</sup> [https://www.etuc.org/system/files/document/file2020-06/Final%2022%2006%2020\\_Agreement%20on%20Digitalisation%202020.pdf](https://www.etuc.org/system/files/document/file2020-06/Final%2022%2006%2020_Agreement%20on%20Digitalisation%202020.pdf) (accessed 17 January 2022)

<sup>14</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/272133/6536.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/272133/6536.pdf) (accessed 30 May 2022)

<sup>15</sup> <https://gov.wales/written-statement-introduction-social-partnership-and-public-procurement-wales-bill> (accessed 16 June 2022)

<sup>16</sup> <https://www.iod.com/app/uploads/2022/05/IOD-Policy-Paper-The-Green-Incentive-aa042171998b4f5f8f0366ea69401f0e.pdf> (accessed 26 May 2022)

### **Theme Three: The role of the state**

The appropriate role of the state has exercised economists for two or three centuries (Chang, quoted in Burlamaqui, Castro and Chang, 2000, p. 3). The political right tends to be more sceptical of a strong state, the political left, more supportive although, as we have seen, Marx and Engels believed that, under Communism, the state would wither and die.

The early years after the Second World War saw a rejection of *laissez faire* (Burlamaqui, Castro and Chang, 2000, p. 3). In 1956, one of the Labour Party's foremost philosophers, Anthony Crosland, argued that economic planning was supported by the business community, which "now concedes that the government has a clear responsibility to intervene to whatever extent is required to maintain full employment (and hence high profits)" (1985, p. 342). The end of the 1970s saw an extraordinary *volte face*, however, with the rise of neoliberalism, a strong belief in markets and a corresponding rejection of an economic role for the state.

Support for competition, which "stimulates innovation and productivity growth by pushing firms to innovate in order to surpass their rivals" (Aghion *et al.*, 2021, p. 68) has led to a view that almost anything which limits competition must be a bad thing. Yet, whilst arguing that "governments are not great at picking winners", Aghion and his colleagues recognise a role for the state in addressing economic and social priorities such as fighting climate change and developing renewable energies, health and defence" (2021, p. 70). It should also focus on sectors using highly skilled labour or having a high degree of competition.

### **Contribution Three: Re-examining the role of the state in developing an industrial policy for the United Kingdom, using new empirical data from the developmental and social market models of capitalism, as well as the Anglo Saxon model.**

My papers reconceptualise a role for the state in the United Kingdom, to give it a sectoral focus and to address key economic and social challenges, exactly as Aghion *et al.* suggest. They draw lessons from France, where the state, via an investment fund, takes a strategic stake in companies believed to be important for the development of the French economy. The investment fund seeks to divest its investment at the appropriate time and, in aggregate, to at least break even on its investments. Among its achievements, this investment fund has helped to "green" the French automotive sector. My reports draw lessons from Germany, where the *energiewende* programme is moving that country towards a greener future, and from the development of Denmark's wind energy sector, which is now a world leader. My reports also draw lessons from China, where companies such as Gaungqi Honda, which I visited, is fifty per cent own by the public sector.

Without necessarily recommending all of these policies for the UK today, the point is to break out of sterile debates about the role of the state and to look at the issue afresh, with an open mind. Mariana Mazzucato has highlighted the role of the state in innovation, for example; the various component technologies featured in the first generation iPod had their origins as part of basic and applied US tax-funded research (United States Office of Science and Technology Policy, 2006, quoted in 2013, pp. 109-10). Aghion *et al* argues that incumbent firms, which are strong enough to influence policy, may lobby governments to protect their position, which is bad for innovation (2021, p. 68). Both arguments can be true; the state is necessary, but it must also be nimble.

There could be a new, active (but not over-active) role for the state in developing an industrial policy for the UK, if we can throw off preconceived notions about the nature of that state. My research presents empirical data from countries near and far which give some examples of how that new role could be built. My research offers possibilities, not probabilities (Yin, 2014, p. 21). They are possibilities, however, that I believe the UK would do well to explore.

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## Summary of Appendices

- Appendix one: Research and peer review process p. 56
- Appendix two: Confirmation of authorship of submitted papers p. 78
- Appendix three: Confirmatory documentation from co-authors p. 80
- Appendix four: Paper one – ‘Developing UK industrial policy: Lessons from France’ p. 81
- Appendix five: Paper two – ‘German lessons: developing industrial policy in the UK’ p. 107
- Appendix six: Paper three – ‘The Way of the Dragon: What can the UK learn from the rise of China and East Asia?’ p. 204
- Appendix seven: Paper four – ‘Powering ahead: How UK industry can match Europe’s environmental leaders’ p. 279
- Appendix eight: Paper five – ‘Shaping our Digital Future’ p. 322

## Appendix One: Research and Peer Review Processes

### Summary

This appendix sets out the research process and peer review process undertaken for each of the five papers that I have submitted for my PhD by Published Work. The five papers are as follows:

| Title of Research Paper                                                            | Publication Date | Research Duration | Number of Pages |
|------------------------------------------------------------------------------------|------------------|-------------------|-----------------|
| Developing UK Industrial Policy: Lessons from France                               | 2010             | Eight Months      | 25              |
| German Lessons: Developing industrial policy in the UK                             | 2012             | 18 Months         | 93              |
| The Way of the Dragon: What can the UK learn from the rise of China and East Asia? | 2014             | Two Years         | 72              |
| Powering Ahead: How can UK industry match Europe's environmental leaders?          | 2016             | Six Months        | 41              |
| Shaping our Digital Future                                                         | 2017             | Six Months        | 51              |

### Paper One: Developing Industrial Policy: Lessons from France

#### Research process

1. Idea Generation
  - a) Landscape Analysis
    - i. In my role as TUC Senior Policy Officer with lead responsibility for industrial policy, read key research papers, newspaper/periodical articles, follow discussions on industrial policy among academics, think tanks, journalists etc.
    - ii. Specifically seek to identify industrial policy instruments used in comparable countries during and after 2008 financial crisis, with a view to lessons that the UK could learn from those instruments.
    - iii. Identify article in the Financial Times, entitled 'Dirigisme de Rigueur', published on 3 June 2009.
  - b) Stakeholder Engagement
    - i. Hold first conversation to discuss policy paper, looking at industrial policy lessons from France, with my Head of Department.



- ii. Speak to TUC's international department about seeking support from French trade unions.
- iii. Approach Peggy Hollinger, Financial Times' Paris Bureau Chief and author of 'Dirigisme de Rigueur', for further details of article, background information and suggested contacts.
- iv. Following conversation with Peggy Hollinger, approach Gilles Michel, Chief Executive Officer of Frances's Fonds Strategique D'Investissement (FSI, Strategic Investment Fund) and Matthieu Louvot, Industrial Policy Advisor to President Sarkozy of France, seeking their participation in potential research project.
- v. Approach two of the French trade union federations, 'Confederation Francaise Democratique du Travail' (CFDT) and 'Force Ouvriere', (FO) asking for support.

## 2. Design of the Research Project

- a) In conversation with my Head of Department, decide to undertake desk research exploring history of French industrial policy, exploring its advantages and disadvantages, and its similarities and differences with the UK, combined with five stakeholder interviews. Those interviews to be with Mr Michel, Mr Louvot and three key representatives from CFDT and FO union federations.
- b) Decide that my interviews would be semi-structured
  - i. Develop detailed list of questions in advance, but recognise that interviewees are experts who may have insights that I haven't anticipated.
  - ii. Recognise the cultural differences between UK and French political institutions which, again, mean that there could be insights that I have not foreseen in advance.

## 3. Execution of the Research Project

- a) Carry out desk research, using: a standard textbook on post-war European economic history, produced by a scholar in the field; five research reports and articles covering recent French economic history; and twelve other publications including government reports, statistical analyses from the IMF and OECD, transcripts from the European Parliament, and reports from the Financial Times, the Observer, the Guardian, the Economist, Business Week and Le Monde.
- b) Write the first sections of the paper, describing key developments in the post-war industrial history of France, as well as major current debates as identified by my desk research.
- c) Travel to Paris to interview both Mr Michel and Mr Louvot. My questions to Mr Michel

concern the nature of the FSI, its political origins, its governance model, its investment strategy and the key policy debates with which it has engaged. My intention is to assess whether a similar initiative to the FSI might work in the UK.

- d) My questions to Mr Louvot concern the President's policy on industry, what it seeks to achieve, how it differs from the Anglo Saxon approach, in what ways it has protected France during and after the 2008 financial crisis, and the role of leadership, with a view to lessons for the UK.
  - e) Interview industrial policy experts from the two identified French trade union confederations, Henri Catz of CFDT, and Jens Tinga and Sebastien Dupich of FO. These interviews give a trade union perspective on France's interventionist industrial policy, what its successes might be and what more could be done to support industry.
  - f) Based on this original research, write the second half of my paper, using key information from the interviews conducted.
  - g) As I progress my work programme, continue to scan news reports, research papers and other sources of relevant information. Include related, current research in my final paper, to complement my findings.
4. Analysis and Conclusions
- a) TUC policy supports the development of an economy that produces more high- skilled, high value jobs, as well as protecting and enhancing industrial communities. Conclude, based on evidence from my research findings, that there are lessons from France in the development of such an economy.
  - b) Specifically, I call for
    - i. A UK equivalent to the FSI, but with a smaller budget, to reflect the UK's cultural reticence towards an over-active state.
    - ii. Greater leadership from the Prime Minister with regard to industrial policy.
    - iii. More proactive use of procurement rules to support UK industry.
    - iv. The need to develop a dialogue on a European industrial policy.

### **Peer Review Process**

- 1. First draft of paper
  - a. Submit first draft internally for initial comment and analysis to:
    - i. My Head of Department.
    - ii. Other relevant Senior Policy Officers and Policy Officers at the TUC.

- b. Receive written feedback from my Head of Department and verbal feedback from other Senior Policy Officers and Policy Officers. Incorporate changes and amendments into the paper.
- 2. Second draft of paper
  - a. Submit my second draft externally for comment and analysis to:
    - i. Key members of the TUC Executive Committee<sup>13</sup> with an interest in economic and industrial policy.
    - ii. Henri Catz of CFDT, and Jens Tinga and Sebastien Dupich of FO.
    - iii. Peggy Hollinger, Paris Bureau Chief of the Financial Times.
    - iv. Gilles Michel, CEO of the Fond Strategique D'Investissement, and Matthieu Louvot, Industrial Policy Adviser to President Sarkozy, for comment and to give them the opportunity to review and correct any quotes or findings that they feel are not clear or they wish to express in a different way.
  - b. Receive written feedback from Gilles Michel and from the French trade union officials, and verbal feedback from Peggy Hollinger.
- 3. Third draft of paper
  - a. Incorporate any necessary or valuable changes from comments received into a third draft of the paper.
  - b. Amend any corrections received from Mr Michel or the French trade unions.
  - c. Send the third draft to the full TUC Executive Committee for discussion, analysis, amendment and sign off.
- 4. Final paper
  - a. Incorporate any further changes or amendments from the Executive Committee into the final paper.

From start to finish, the production of this report, including desk research, semi-structured interviews, writing the paper and conducting the peer review process, took 8 months.

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<sup>13</sup> The TUC Executive Committee is made up of members of the TUC General Council and agrees policy actions in between the annual meeting of the TUC Congress.

## Paper Two: German Lessons: Developing Industrial Policy in the UK

### Research process

#### 1. Idea Generation

##### a) Landscape Analysis

- i. In my role as TUC Senior Policy Officer with lead responsibility for industrial policy, read key research papers, newspaper/periodical articles, follow discussions on industrial policy among academics, think tanks, journalists etc.
- ii. Meet with research official from IG Metall, the German metalworkers' union, while he was on a trip to London. Discuss a potential project considering industrial policy in Germany and the UK, asking the question: what can the UK learn from Germany and what can Germany learn from the UK?
- iii. Hold first conversation to discuss production of policy paper with my Head of Department.
- iv. Following reorganisation within IG Metall, research official no longer available for a long-term initiative, but agrees to support a redesigned project looking at lessons for the UK from Germany.
- v. Decide specific focus of project, looking at how industrial policy in Germany affects German-owned companies operating in Germany and how industrial policy in the UK affects German-owned companies operating in the UK. As both sets of companies will follow German management practices, this allows a specific analysis of how the policy environment in each country affects company success.

##### b) Stakeholder Engagement

- i. Liaise with IG Metall to identify companies to visit in Germany.
- ii. Liaise with Unite, the UK's manufacturing union, to identify German-owned companies to visit in the UK.
- iii. Following conversations with IG Metall and Unite, decide to approach
  1. Volkswagen in Wolfsburg.
  2. Siemens in Nuremberg.
  3. ThyssenKrupp in Duisberg.
  4. BASF in Ludwigshafen.
  5. Bentley, which is owned by Volkswagen, in Crewe.
  6. Siemens in Poole.
  7. BMW in Oxford.

8. Roballo Engineering, which is owned by ThyssenKrupp, in Peterlee.
  - iv. Also decide to approach Airbus Deutschland and the Hans Bockler Stiftung think tank for supplementary talks.
2. Design of the Research Project
  - a) In conversation with my Head of Department, decide to undertake desk research exploring history of German industrial policy, its advantages and disadvantages, and its similarities and differences with the UK, combined with stakeholder interviews at nine companies and with one think tank.
  - b) Decide that my interviews would be semi-structured
    - i. Develop detailed list of questions in advance, but wish to keep interviews flexible enough to identify insights that I haven't anticipated.
    - ii. Recognise the cultural differences between UK and German political institutions which, again, mean that there could be insights that I have not foreseen in advance.
3. Execution of the Research Project
  - a) Carry out desk research, using
    - i. three textbooks on post-war Global, European and British economic and political history, produced by academics from the University of Nottingham, the University of California Berkeley, and Princeton University.
    - ii. a peer-reviewed journal article from the European Review of Economic History, together with
      1. An article from a German think tank, the Friedrich Ebert Foundation.
      2. UK Government documents from HM Treasury and the Department for Business, Innovation and Skills.
      3. UK Parliamentary reports.
      4. Articles from other journals, including Management Today.
  - b) Write the first sections of the paper, describing key developments in the post-war industrial histories of Germany and the UK, as well as key current debates as identified by my desk research.
  - c) Make two trips to Germany, to undertake eleven semi-structured interviews with senior managers, works council officials, trade union officers within companies, trade union research officers and one policy officer in a think tank. Interviewees are
    - i. Dr Frederic Speidel, IG Metall Officer, Volkswagen.
    - ii. Martin Rosik, Human Resources Manager, Volkswagen.

- iii. Thymian Bussemer, Industrial Relations Department, Volkswagen.
  - iv. Harald Kern, Siemens Works Council, Nuremberg.
  - v. Guenter Drindle, Head of the Factory, Siemens, Nuremberg.
  - vi. Norbert Kluge, Co-ordinator of the European Works Council, ThyssenKrupp.
  - vii. Charlotte Platzkoster, Co-ordinator of the Group Works Council, ThyssenKrupp.
  - viii. Thomas Peter, full-time Works Council Member, BASF.
  - ix. Sonja Daum, BASF Works Council.
  - x. Siegfried Balduin, IG Metall Co-ordinator for Germany's Aerospace Industry, to discuss Airbus.
  - xi. Martin Behrens, Head of the European Industrial Relations Unit, Hans Bockler Stiftung.
- d) Make five trips in the UK, to undertake a further ten interviews with senior managers and trade union officials. Interviewees are
- i. Leonie Williams, Head of Personnel Manufacturing and Skill Development, Bentley Motors.
  - ii. Stuart Davis, Unite the Union, Bentley.
  - iii. Toby Peyton-Jones, Director of Human Resources in the UK and North West Europe, Siemens.
  - iv. Colin Gosling, Unite the Union, Siemens.
  - v. Erich Thanner, Human Resources Director, MINI plant owned by BMW, Oxford.
  - vi. Chris Bond, Unite the Union, MINI plant, Oxford.
  - vii. Dave Reed, Union Official, MINI plant, Oxford.
  - viii. Joe Peacock, Works Manager, Roballo Engineering.
  - ix. Ray Carr, Sales and Procurement Manager, Roballo Engineering.
  - x. Neil Gardiner, Unite the Union, Roballo Engineering.
- e) My questions to interviewees in Germany consider: Germany's response to the 2008 economic crisis; the responses of the individual companies; the German industrial policy framework; Germany's response to the competitive threat from China; and German attempts, at government and company level, to respond to the environmental agenda.
- f) My interviews in Germany demonstrate the value of semi-structured interviews. I had prepared no questions in advance regarding Germany's social market/co- determination

system of employee relations, yet the value of such a system, identified in my interviews, became a key recommendation in the conclusions of my paper.

- g) My interviews in the UK cover the same themes as (e) above, but from a UK perspective. In addition, I specifically explored companies' experiences of being subsidiaries of German owners and asked about the benefits and difficulties of adopting German attitudes to company strategy in a UK context.
  - h) Based on this original research, write the second half of my report, using key information from the interviews conducted.
  - i) As I progress my work programme, continue to scan news reports, research papers and other sources of relevant information. Include related, current research in my final paper, to complement my findings.
4. Analysis and Conclusions
- a) TUC policy supports the development of an economy that produces more high- skilled, high value jobs, as well as protecting and enhancing industrial communities. Conclude, based on evidence from my research findings, that there are lessons from Germany in the development of such an economy.
  - b) Specifically
    - i. My paper argues that a version of the social market economy in the United Kingdom could help to unite our nation around values of equality fairness and mutuality.
    - ii. I call for UK specialism in a number of targeted, high-skill, high-value manufacturing sectors where we are or could be strong in the age of globalisation.
    - iii. I also call for support for key industries in the context of tackling climate change.
    - iv. I support the building of an economic rationale for the growing of small firms to create a cohort of medium-sized companies, similar to Germany's 'mittelstand'.
    - v. I argue for a recognition that informing and consulting employees, collective bargaining and minimum standards are not either/or policies, but both have a role to play in the modern workplace.

## Peer Review Process

1. First draft of paper
  - a. Submit first draft internally for initial comment and analysis to
    - i. My Head of Department.
    - ii. The TUC Deputy General Secretary.
  - b. Receive written feedback from both my Head of Department and the TUC Deputy General Secretary.
2. Second draft of paper
  - a. Submit my second draft externally for comment and analysis to
    - i. Key members of the TUC Executive Committee with an interest in economic and industrial policy, including representatives from Unite.
    - ii. Officials from the IG Metall in Germany.
    - iii. Professor Sir Mike Gregory, Head of the Institute for Manufacturing at the University of Cambridge.
    - iv. All of those interviewed in Germany and the UK.
  - b. Receive written and verbal feedback on my second draft from various members of those consulted. For example, Erich Thanner of BMW gave written feedback, while Tony Burke, Assistant General Secretary of Unite, and Sir Mike Gregory from the University of Cambridge gave verbal feedback.
  - c. Incorporate all necessary and valuable changes from comments received into a third draft of the paper.
3. Third draft of paper
  - a. Send the third draft to the full TUC Executive Committee for discussion, analysis, amendment and sign off.
4. Final paper
  - a. Incorporate any further changes or amendments from the Executive Committee into the final paper.

From start to finish, the production of this report, including desk research, semi-structured interviews, writing the paper and conducting the peer review process, took 18 months.



## **Paper Three: The Way of the Dragon: What can the UK learn from the rise of China and East Asia?**

### **Research process**

#### **1. Idea Generation**

##### **a) Landscape Analysis**

- i. In my role as TUC Senior Policy Officer with lead responsibility for industrial policy, read key research papers, newspaper/periodical articles, follow discussions on industrial policy among academics, think tanks, journalists etc.
- ii. Attend conference, 'The Challenge of Economic Growth: New Approaches to Industrial Policy', in Rome in 2012, at which I first develop an interest in research in China.

##### **b) Stakeholder Engagement**

- i. Hold first conversation to discuss policy paper with my Head of Department.
- ii. In conjunction with the TUC's International Department, make contact with All China Federation of Trade Unions, to explore the possibility of a research trip to China.
- iii. Contact British Embassies in Beijing, China, and Seoul, South Korea, to seek support for project. Liaise with British Consulate General, Guangzhou, China, for additional support.
- iv. Discuss ideas, research materials and potential academic contacts in China and South Korea with Eoin O'Sullivan, Senior Policy Fellow at the Institute of Manufacturing, University of Cambridge, and Antonio Andreoni, Post- Doctoral Research Associate, Institute of Manufacturing, University of Cambridge.
- v. Discuss ideas and research materials with Patrizio Bianchi, Professor of Economics and Industrial Policy at the University of Ferrara.
- vi. Following conversations with academic community at Cambridge, approach Dr Hu Angang, Director of Centre for China Studies, Tsinghua University, and Dr Weiyang Zhang, Professor of Economics at National School of Development, Peking University, seeking participation in research project.
- vii. Agree an interview with Lim Swee Say, Cabinet Officer Minister and Secretary-General of the Singapore National Trades Union Congress, during his forthcoming visit to London.
- viii. Approach Hong Kong Federation of Trade Unions and the Federation of Korean Trade Unions, seeking engagement in project.

#### **2. Design of the Research Project**

- a) In conversation with my Head of Department, decide to undertake desk research exploring developmental model of industrial policy and its application in Japan, China, South Korea, Singapore, Taiwan and Hong Kong, with a view to lessons for the UK. Also agree to seek conclusions regarding how UK industry can minimise the threat, and maximise the opportunities, from Chinese economic development.
  - b) Seek interviews with
    - i. Dr Hu Angang.
    - ii. Dr Weiyang Zhang.
    - iii. Kevin Zeng, Investment Promotion Division, 'Invest Shenzhen'.
    - iv. A member union of the All-China Federation of Trade Unions.
    - v. The Hong Kong Federation of Trade Unions.
    - vi. The Korea Labour Institute.
    - vii. The Korea Institute for Industrial Economics and Trade.
    - viii. The Federation of Korean Trade Unions.
  - c) Agree off the record briefings from the British Embassy, Beijing, and British Embassy, Seoul.
  - d) Agree company visits to Guangqi Honda, Guangzhou, and Sinopec, Guangzhou.
  - e) Decide that my interviews would be semi-structured
    - i. Develop detailed list of questions in advance, but recognise that interviewees are experts who may have insights that I haven't anticipated.
    - ii. Recognise the cultural differences between UK, Chinese, Singaporean and South Korean political institutions which, again, mean that there could be insights that I have not foreseen in advance.
3. Execution of the Research Project – Desk Research
- a) Carry out desk research, using: six books produced by academics from Harvard University, the University of Cambridge, Tsinghua University, and Tallin University of Technology, describing the developmental model of industrial policy and its use in Japan, China, South Korea, Singapore, Taiwan and Hong Kong; one book by the founding prime minister of South Korea, Lee Kuan Yew.
  - b) Supplement the above desk research with journal articles by academics from the University of Cambridge, Austrian Institute for Economic Research, the University of Michigan and Tsinghua University, as well as a news report from the Guardian newspaper.
  - c) Write the first sections of the paper, describing key developments in the economic

development of Japan, China and the ‘four little dragons’ of Singapore, South Korea, Taiwan and Hong Kong.

#### 4. Execution of the Research Project – Semi-Structured Interviews

a) Second stage of research involved two briefings from the British Embassies in Seoul and Beijing, a further meeting with the British Consulate in Guangzhou, briefings from two major companies in China, eight in-depth interviews with academics, industry practitioners and trade unionists in Seoul, Beijing, Hong Kong, Shenzhen and Guangzhou, and a ninth interview in London. Details are set out below.

i. Travel to Seoul to attend briefing from the British Embassy in Seoul and to carry out three in-depth interviews. Those interviews were with

1. Dr Kie-Sik Bae, Senior Research Fellow, Korea Labour Institute.
2. Heeson Choi, Research Fellow, Korea Institute for Industrial Economics and Trade.
3. Yoo Jung-Sup, Federation of Korean Trade Unions.

Interviews cover the economic development of South Korea, its major companies, its industrial strategy, its current challenges, including competition with China and its ageing society, and the role of trade unions.

ii. Travel to Beijing to attend briefing from the British Embassy in Beijing and to carry out three in depth-interviews. Interviewees are

1. Dr Hu Angang, Director of Centre for China Studies, Tsinghua University.
2. Dr Weiying Zhang, Professor of Economics at National School of Development, Peking University.
3. Fang Dan, Vice Chair, National Committee of Defence, Postal and Telecommunications Workers Union of China.

Interviews cover the economic development of China, economic relations between China and the UK, the role of UK companies in China and the role of unions within Chinese companies.

iii. Travel to Hong Kong to interview Poon Man Hon, Policy researcher, Hong Kong Federation of Trade Unions. Interview cover the Hong Kong economy in the context of Chinese growth and human and labour rights in Hong Kong.

iv. Travel to Shenzhen and Guangzhou to meet with officials from the British Consulate, to interview Kevin Zeng, Investment Promotion Division, ‘Invest Shenzhen’, and to visit two companies, Guangqi Honda and Sinopec, where I

attended briefings with company managers and union officials. Interviews and briefings cover the role and contribution of companies in Shenzhen and Guangzhou to the Chinese economy.

- v. Interview Lim Swee Say, Cabinet Office Minister and Secretary-General of the Singapore National Trades Union Congress during a visit he made to the TUC in London. Interview covered the history of Singapore's economic development, Singapore's challenge in the face of Chinese competition and other economic challenges faced by Singapore.

- b) Based on this original research, write the second half of my report, using key information from the interviews conducted.
- c) As I progress my work programme, continue to scan news reports, research papers and other sources of relevant information. These include one book on industrial policy by an academic from the University of Sussex, UK government reports from the Department of Business and the Cabinet Office, the UK government's review of science policy, the UK Climate Change Act and a report from the British Council. Also use reports from the Financial Times and the Independent. Include this research in my final paper, to complement my findings.

## 5. Analysis and Conclusions

- a) TUC policy supports the development of an economy that produces more high- skilled, high value jobs, as well as protecting and enhancing industrial communities. Conclude, based on evidence from my research findings, that there are lessons from China, Singapore and South Korea in the development of such an economy.
- b) Specifically, I call for
  - i. A UK analysis of growth areas of the Chinese economy whose needs Chinese firms themselves cannot meet and where UK companies have the skills, technology and experience to meet this gap in the market.
  - ii. An economic strategy for the UK that addresses the need to need to build modern, sustainable export industries and the need to create quality jobs.
  - iii. In exceptional cases, the UK government to take a strategic stake in a company where it is in the long-term interests of the national economy to do so.
  - iv. Making the UK one of the best destinations in the world for attracting Chinese students.
  - v. A sustained effort to increase UK foreign language learning, including Mandarin.

- vi. The UK to remain in the European Union, seeking to ensure that trade and investment agreements between the EU and South and East Asian economies include respect for workers' rights.

### **Peer Review Process**

1. First draft
  - a. Submit first draft internally for initial comment and analysis to
    - i. My Head of Department.
    - ii. The Head of the TUC's European Union and International Relations Department.
    - iii. Other relevant Senior Policy Officers, including Duncan Weldon, the TUC's senior economist, and Policy Officers at the TUC.
    - iv. Receive written feedback from my Head of Department and the Head of the TUC's European Union and International Relations Department, and verbal feedback from other Senior Policy Officers at the TUC.
2. Second draft
  - a. Submit my second draft externally for comment and analysis to:
    - i. Key members of the TUC Executive Committee with an interest in economic, industrial and international policy.
    - ii. Academics, including Professor Sir Mike Gregory, Head of the Institute for Manufacturing, and Antonio Andreoni, Post-Doctoral Research Associate, University of Cambridge.
  - b. Incorporate all necessary and valuable changes from comments received into a third draft of the paper.
3. Third draft
  - a. Send the third draft to the full TUC Executive Committee for discussion, analysis, amendment and sign off.
4. Final paper
  - a. Once approved by the TUC Executive Committee, I had a final version of my paper ready for publication.

From start to finish, the production of this report, including desk research, semi-structured interviews, writing the final report and conducting the peer review process, took two years.

## Paper Four: Powering Ahead: How can UK industry match Europe's environmental leaders?

### Research process

#### 1. Idea Generation

##### a) Landscape Analysis

- i. In my role as TUC Senior Policy Officer with lead responsibility for industrial policy, read key research papers, newspaper/periodical articles, follow discussions on industrial policy among academics, think tanks, journalists etc.
- ii. By 2016, a year after the signing of the Paris Agreement on Climate Change, the issue of sustainable industry is at the forefront of policy makers minds.

##### b) Stakeholder Engagement

- i. Hold first conversation to discuss policy paper with my Head of Department.
- ii. The Trade Union Sustainable Development Advisory Committee (TUSDAC), which brings together trade unionists with an interest in climate change, discusses the need for a study of sustainable industry from a trade union perspective. A decision is made that I should produce such a study.
- iii. Discuss the idea of a study with the Head of the TUC's European Union and International Relations Department.
- iv. My landscape analysis has suggested that Germany, which is pushing forward on sustainable industry, and Denmark, which was a world leader in wind turbine technology, would be rich places to study.
- v. Approach DGB, the German trade union confederation, seeking their support for a study.
- vi. Advised by DGB, make contact with the Industriegewerkschaft, Bergbau, Chemie, Energie (IGBCE), the German union federation comprised of workers in the mining, chemical and energy sectors.
- vii. Advised by the Head of the TUC's European Union and International Relations Department, make contact with the United Federation of Danish Workers, known as 3F.
- viii. Agree to visit 3F, who will also arrange a meeting with Siemens Wind Power, based in Aalborg, Denmark.

#### 2. Design of the Research Project

- a) In conversation with my Head of Department, decide to undertake a two-stage

research project, featuring a short literature review followed by detailed, semi-structured interviews with practitioners in Germany and Denmark.

- b) Agree interviews with eight policy experts and practitioners
    - i. Ralph Bartels, Head of Mining and Energy Policy at IGBCE.
    - ii. Frederik Moch, Head of Energy Policy, DGB.
    - iii. Sabrina Schulz, Head of Berlin Office, E3G environmental consultancy.
    - iv. Rasmus Prehn, Member of the Danish Parliament representing Aalborg, Denmark.
    - v. Henning Kruse, Head of Government Affairs at Siemens Wind Power, Aalborg.
    - vi. Benny Vinther, President of the Industrial Sector of 3F in Aalborg.
    - vii. Mads Andersen, National President, 3F Industrial Sector.
    - viii. Thomas Fischer, Senior Union Steward, Siemens Wind Power, Aalborg.
  - c) Decide that my interviews would be semi-structured
    - i. Develop detailed list of questions in advance, but recognise that interviewees are experts who may have insights that I haven't anticipated.
    - ii. Recognise the cultural differences between UK, German and Danish political institutions and trade unions which, again, mean that there could be insights that I have not foreseen in advance.
3. Execution of the Research Project – Desk Research
- a) Carry out short desk research project, using reports, periodicals and newspaper articles, describing the Danish, German and UK trajectories towards sustainable industries, as well as reports from HM Treasury.
  - b) Write the first sections of the paper, describing the 'greening' of politics and economics in Denmark, Germany and the UK.
4. Execution of the Research Project – Semi-Structured Interviews
- a) Second stage of research involves research trips to Berlin, Germany, and Aalborg, Denmark.
    - i. Interview Ralph Bartels and Frederik Moch, separately, in Germany. Interviews cover: the development of the German concept of 'energiewende', which includes the growth of renewables and the phasing out of nuclear power; union attitudes to this policy shift; the role of the social market economy in managing this transition; and the needs of energy intensive industries such as steel.
    - ii. Interview Sabrina Schulz in Germany. Interview covers the development of

energiewende.

- iii. Interview Rasmus Prehn, Henning Kruse and Benny Vinther in Denmark.  
Interview covers the development of sustainable industry in Denmark and the specific role of wind power.
- iv. Interview Benny Vinther, Mads Andersen and Thomas Fischer in Denmark.  
Interview covers the role of trade unions in managing the Danish energy transition.

- b) Based on this original research, write the second half of my report, using key information from the interviews conducted.
- c) As I progress my work programme, continue to scan news reports, research papers and other sources of relevant information. Include related, current research in my final paper, to complement my findings.
  - i. These include an article by Mariana Mazzucato, RM Phillips Professorial Chair at the Science Policy Research Unit (SPRU) at Sussex University.
  - ii. The think tank Institute for Public Policy Research, as well as statistical evidence from the Office for National Statistics.
  - iii. Also use reports from the Guardian and the Daily Telegraph, including an article by the influential environmentalist George Monbiot, and reports from the UK Department for Energy and Climate Change and the UK Committee on Climate Change.

## 5. Analysis and Conclusions

- a) TUC policy supports the development of an economy that produces more high- skilled, high value jobs, as well as protecting industrial communities and developing sustainable industrial sectors. Conclude, based on evidence from my research findings, that there are lessons from the German and Danish models of sustainable industry in the pursuit of such an economy.
- b) Specifically, I call for
  - i. The building of a consensus across political parties, business organisations and trade unions, in favour of a sustainable industrial strategy.
  - ii. The development of a roadmap for a sustainable industrial strategy. This industrial strategy should be 'sustainable' in the sense that it balances economic, social and environmental concerns.
  - iii. The government to aim for 50 per cent of the UK's energy coming from renewable sources by 2050.



- iv. A study into the technologies that the UK would need to bring us up to 50 per cent of renewable energy and which of these technologies could be developed in the UK. New, sustainable industrial sectors should be targeted on those communities that lost their livelihoods with the demise of heavy industry.
- v. Government to set up a competition for companies and universities, working jointly, to bid for funds to research solutions to the specific issue of the storage of renewable energy.

### **Peer Review Process**

1. First draft
  - a. Submit first draft for initial comment and analysis to
    - i. My Head of Department.
    - ii. The Chair of the Trade Union Sustainable Development Advisory Committee (TUSDAC).
  - b. Receive written feedback from my Head of Department and the Chair of TUSDAC.
2. Second draft
  - a. Submit my second draft externally for comment and analysis to:
    - i. Key members of the TUC Executive Committee with an interest in economic and industrial policy, including members of TUSDAC.
    - ii. Ralph Bartels, Frederik Moch, Sabrina Schulz, Benny Vinther, Henning Kruse and Rasmus Prehn.
  - b. Receive written feedback on my second draft from Frederik Moch, Sabrina Schulz and Benny Vinther.
  - c. Incorporate all necessary and valuable changes from comments received into a third draft of the paper.
3. Third draft
  - a. Send the third draft first to TUSDAC and then to the full TUC Executive Committee for discussion, analysis, amendment and sign off.
4. Final paper
  - a. Incorporate any further changes or amendments first from TUSDAC and then from the Executive Committee into the final paper.

From start to finish, the production of this report, including desk research, semi-structured interviews, writing the final report and conducting the peer review process, took six months.

## Paper Five: Shaping our Digital Future

### Research process

#### 1. Idea Generation

##### a) Landscape Analysis

- i. In my role as TUC Senior Policy Officer with lead responsibility for industrial policy, read key research papers, newspaper/periodical articles, follow discussions on industrial policy among academics, think tanks, journalists etc.
- ii. In February 2017, I represent the TUC at a two-day conference, 'Digitalisation and the Future of Work', organised by the Trade Union Advisory Committee to the OECD. I am a panel speaker at a breakout session on trade union strategies towards innovation and digital disruption across economic sectors.
- iii. I believe it is important that the TUC undertakes some research and analysis, and developed some recommendations, in response to this major economic disruption.

##### b) Stakeholder Engagement

- i. Hold first conversation to discuss research paper with my Head of Department.
- ii. Make contact with Alistair Nolan, Senior Policy Analyst at the OECD and editor, project manager and contributing author to the OECD report, 'The Next Production Revolution'. Alistair Nolan agrees to be interviewed for my paper.
- iii. My landscape analysis has identified Germany as a lead player in the development of digital technology, as well as German unions having developed structures within which to negotiate its introduction.
- iv. Approach IG Metall, the German metalworkers' union, seeking their support for a study. IG Metall advise me to visit Airbus Deutschland, based in Hamburg, to discuss the way its Works Council has negotiated the use of digital technology.

#### 2. Design of the Research Project

- a) In conversation with my Head of Department, decide to undertake a two-stage research project, featuring a literature review followed by detailed, semi-structured interviews with experts and practitioners from the OECD and Germany.
- b) Agree interviews with
  - i. Alistair Nolan, Senior Policy Analyst at the OECD.

- ii. Moritz Niehaus, Future of Work Department, IG Metall.
  - iii. Jan Hinz, Vice Chair of General Works Council of the German civil Airbus factories.
- c) Decide that my interviews would be semi-structured
  - i. Develop detailed list of questions in advance, but recognise that interviewees are experts who may have insights that I haven't anticipated.
  - ii. Recognise the cultural differences between UK, German and wider international political institutions and trade unions which, again, mean that there could be insights that I have not foreseen in advance.
- 3. Execution of the Research Project – Desk Research
  - a) Carry out first part of desk research project, using reports and statistics from: the Executive Office of the [United States] President; the Federal Ministry of Labour and Social Affairs in Germany; the academic journal Technological Forecasting and Social Change; the OECD; the World Economic Forum; the International Bar Association Global Employment Institute; the World Income Inequality Database; the Bank of England; the Office for National Statistics; the International Monetary Fund; the International Labour Office; PwC; the Resolution Foundation; and the Atlantic magazine.
- 4. Execution of the Research Project – First Semi-Structured Interview
  - a) Attend the OECD Forum in Paris in June 2017, where I participate in discussions on the digital economy and interview Alistair Nolan, Senior Policy Analyst, OECD.
- 5. Execution of the Research Project – Begin First Draft
  - a) Write the first sections of the paper, setting the scene, describing the different aspects of digital technology, such as Artificial Intelligence, 'Deep Learning', Robotisation, the 'Smart' Factory and 'Big Data', and giving examples of digitalisation as a force for good, highlighting improved productivity, better medical diagnostics and a boost to the battle against climate change. Those latter examples are based on my interview with Alistair Nolan.
  - b) Set out how digital technology is forecast to affect jobs, productivity and wages.
  - c) Describe initiatives in the US, under President Barack Obama, and Germany designed to introduce digital technology in ways that strengthen the economy and support those at work.
- 6. Execution of the Research Project – Second and Third Semi-Structured Interviews
  - a) Travel to Frankfurt to interview Moritz Niehaus, a trade union policy expert on digital technology, and then to Hamburg to interview Jan Hinz, a Works Council member in a

company, Airbus Deutschland, that is introducing digital technology.

7. Execution of the Research Project – Continue First Draft

- a) Based on this original research, continue to write my first draft, using key information from the interviews conducted.
  - i. As I progress my work programme, continue to scan news reports, research papers and other sources of relevant information. Include related, current research in my final paper, to complement my findings. These include academic research from the Massachusetts Institute of Technology and George Washington University, as well as reports from the Institute for Public Policy Research think tank and the Institute for Fiscal Studies.

8. Execution of the Research Project – Produce Second Draft

- a) Following a discussion with my Head of Department, a decision is taken to include an economic analysis chapter, taking a historical look at employment, unemployment, average hours, wage growth, productivity and the wage share in advanced industrial countries since the middle of the eighteenth century, when the first and second industrial revolutions were taking place. Work with junior members of the TUC economics team, as well as my Head of Department, to produce this chapter.

9. Analysis and Conclusions

- a) TUC policy supports the development of an economy that produces more high- skilled, high value jobs, as well as enhancing industrial communities and developing sustainable industrial sectors. Conclude, based on evidence from my research findings, that there are policies that must be put in place to protect the workforce during the introduction of digital technology.
- b) Specifically, I call for
  - i. The government to set a mission for the UK to be a top five digital economy by 2030.
  - ii. The government to establish a commission on the future of work, engaging unions, business and civil society in how technology should be introduced.
  - iii. The diversification of the tech workforce, with a target to double the proportion of female science, technology, engineering and mathematics (STEM) graduates in ten years.
  - iv. The introduction of a new targeted retraining programme aimed at those facing redundancy due to industrial change.
  - v. The sharing of the rewards of increasing productivity.

- vi. The promotion of collective bargaining to tackle wage inequality.
- vii. Consideration of how the gains from increased productivity could be used to lower the state pension age.

### **Peer Review Process**

1. First draft
  - a. Submit first draft for initial comment and analysis to my Head of Department.
  - b. Receive feedback from my Head of Department. Make decision to insert an economic analysis chapter to the paper.
  - c. Work with my Head of Department and junior economists within the TUC Economic and Social Affairs Department to produce new chapter.
  - d. Send first draft, including new chapter, to TUC Deputy General Secretary.
  - e. Meet with my Head of Department and the TUC Deputy General Secretary to hear Deputy General Secretary's feedback and to agree the final shape of the report.
2. Second draft
  - a. Having made the changes listed above, submit my second draft externally for comment and analysis to
    - i. Key members of the TUC Executive Committee with an interest in economic and industrial policy.
    - ii. Alastair Nolan, Moritz Niehaus and Jan Hinz.
  - b. Receive written feedback on my second draft from Alastair Nolan, Moritz Niehaus and Jan Hinz.
  - c. Incorporate all necessary and valuable changes from comments received into a third draft of the paper.
3. Third draft
  - a. Send the third draft to the full TUC Executive Committee for discussion, analysis, amendment and sign off.
4. Final paper
  - a. Incorporate any further changes or amendments from the Executive Committee into the final paper.

From start to finish, the production of this report, including desk research, semi-structured interviews, writing the paper and conducting the peer review process, took 8 months.

**Appendix Two: Confirmation of Authorship of Submitted Papers**

contact: Frances O'Grady  
direct line: 020 7467 1249  
email: fogrady@tuc.org.uk

September 2020

To whom it may concern:

### **Timothy Andrew Page - Confirmation of Authorship of TUC Reports**

The purpose of this letter is to confirm that Timothy Andrew (Tim) Page worked for the TUC as a Senior Policy Officer from March 2004 until September 2020 and, during this time, he authored the following TUC reports in the field of industrial policy:

- 'Shaping our Digital Future', published in 2017;
- 'Powering Ahead: How UK industry can match Europe's environmental leaders', published in 2016;
- 'The Way of the Dragon: What can the UK learn from the rise of China and East Asia?', published in 2014;
- 'German Lessons: Developing industrial policy in the UK', published in 2012;
- 'Developing UK Industrial Policy: Lessons from France', published in 2010.

All of the above reports were subject to review and critical analysis by Tim's colleagues and his Head of Department before publication.

Yours sincerely



**Frances O'Grady**  
General Secretary

### Appendix Three: Confirmatory documentation from co-authors

#### To whom it may concern

We write to confirm that we collaborated with Tim Page on the following paper:

- Page, T. (2017) 'Shaping our Digital Future', TUC.

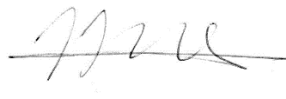
The nature of our collaboration is set out in the following table.

| Aspect of Paper                | Tim Page | Jack Jones | Kate Bell |
|--------------------------------|----------|------------|-----------|
| Research conception and design | 80%      |            | 20%       |
| Literature search and review   | 80%      | 10%        | 10%       |
| Collection of data             | 80%      | 20%        |           |
| Analysis of data               | 80%      | 20%        |           |
| Writing of paper               | 80%      | 10%        | 10%       |

Signed



Kate Bell



Jack Jones



**Appendix Four: Paper One – Page, T. (2010), ‘Developing UK industrial policy: Lessons from France’**



# Developing UK Industrial Policy

Lessons from France

## Executive Summary

This paper is designed to contribute to discussions about the next phase of industrial policy in the United Kingdom. It is based on the history and traditions of industrial policy in France. It makes clear that France operates in a different political culture to the United Kingdom and, therefore, it does not seek to impose wholesale French industrial policy solutions on the UK. It does, however, seek to learn some lessons. The fact that France has suffered significantly less in the economic downturn than some other European countries has led many policy makers, previously critical of France's traditions of a large role for the state and its perceived nationalism, to look at France with renewed interest.

Two distinctive aspects to France's response to the economic downturn are the creation of the Fonds Stratégique d'Investissement (FSI, or Strategic Investment Fund) and the introduction of 'Le Grand Emprunt' (literally, "the big loan"). This paper argues for the creation of a body similar to the FSI in the UK. Such a body should have a budget of £5 billion. It should be managed at arms' length from the government and it should make strategic investments in companies looking for a long-term partner. The government should expect a return on its investment over a long-term timescale: a UK Strategic Investment Fund should back companies with potential, with the aim and expectation that government will get at least its money back (and should return a profit) over a five- to ten-year period.

Other conclusions of this paper are:

- The importance of leadership. A second phase of 'New Industry, New Jobs' should be pursued after the next General Election, but a clear, visible commitment to industrial policy, as has been offered by Nicolas Sarkozy in France and Peter Mandelson in the UK, is necessary, to convince industry of the seriousness of the government's vision. The private sector will only invest in the key industries of the future if they are convinced that the government will pursue this agenda;
- The need for a statement of industrial intent by the Prime Minister, setting out the ambition to create and sustain a modern manufacturing sector in the UK. This should be linked to a Public Service Agreement on the future of industry and be part of 'New Industry, New Jobs' phase two.
- The role of procurement in underpinning both infrastructure investment and in developing the key strategic sectors of the future;
- The need for aerospace and automobiles to be incorporated in the next phase of 'New Industry, New Jobs'. The need for aircraft and motor cars that produce lower CO<sub>2</sub> emissions should be central to their place in industrial policy;
- Dialogue at a European level to develop a European industrial policy.

## Introduction

1.1 The last 18 months have seen the resurgence of industrial policy in the United Kingdom. The degree to which this development has come about because of the economic crisis, or whether it is because of a personal policy preference on the part of the Business Secretary, Lord Mandelson, is unclear. It is probably some combination of the two. Whatever the reason, this development is both long overdue and very welcome.

1.2 The previous UK position, which was characterised by the absence of an interventionist policy and a preference for letting the market identify optimum industrial outcomes, was, at best, naïve. Less charitably, it could be seen as a deliberate attempt to allow some industries, especially those in manufacturing, to slowly decline, in the mistaken belief that China, the other BRIC economies and Eastern Europe, with their lower labour costs, are better placed to manufacture goods, while the UK focuses on services, especially financial services.

1.3 This belief is patently mistaken. There is a range of industrial sectors where the UK either currently is or could become, with targeted government interventions, in a strong position. Financial services have been important for the British economy and that will continue. However, there has been an excessive faith in financial services in the past decade and, especially in the light of the economic downturn and the reasons behind it, a more balanced economy is required.

1.4 Moreover, the economies that are most comparable to the UK's are those of France, Germany, Italy, Spain and, albeit on a different scale, the United States. Those countries have most certainly not given up on their manufacturing sectors. They don't assume, whatever the new challenges brought about by globalisation, that their manufacturing industries will decline; indeed, they strongly believe that those sectors can grow.

1.5 Furthermore, the fact that the last ten years has seen a new understanding of the crucial importance of protecting the environment poses new questions about how and what we manufacture. These questions will only become more important. This means that lower polluting cars and aircraft, as well as the direct environmental technologies such as building wind turbines and solar panels, will be central to the thinking of those interested in manufacturing. This point has not been lost on the 'New Industry, New Jobs' agenda, which includes a focus on composites, among other sectors, partly because composite materials, with their much lower weight, enable aircraft to fly while emitting lower CO2 emissions.

1.6 The question, then, is not will manufacturing remain relevant to the United Kingdom. The answer to that is clearly yes. The question is what will our manufacturing sector look like. An equally important question is: what can government do to shape the future of manufacturing, so that it provides for economic growth, investment, exports and jobs.

1.7 This paper focuses on industrial policy in France. It recognises that France has a particular tradition of high government investment and state direction. It understands that the industrial policy language of France can seem old-fashioned, or worse, to Anglo-Saxon ears (although the Americans and Germans can be

decidedly interventionist as well, in spite of their free market rhetoric). This paper doesn't try to argue that France has all the answers or to suggest that UK industrial policy should mirror that of France. However, it does cast an admiring glance at a country where manufacturing is considered to be of fundamental importance to the national economy and where the President, Nicolas Sarkozy, appears intent on using the full power of his office to support French manufacturing.

1.8 As well as literature reviews of French industrial policy, central elements of this paper have been made possible by interviews with major stakeholders in French industrial policy. Interviews have taken place with Gilles Michel, Chief Executive of the Fonds Stratégique d'Investissement, and with Mathieu Louvot, Adviser to President Sarkozy on industrial policy. The paper benefits from interviews with industrial policy officers from two French trade union confederations, Henri Catz of CDFT and Jens Tinga and Sebastien Dupich of Force Ouvrière. Finally, a brief German critique of French industrial policy comes from Henrik Uterwedde of the Deutsche-Französisches Institut.

## A Short History of Post War Industrial Policy in France

2.1 The end of the Second World War marked the beginning of a major French effort to industrialise. The reasons were partly economic and partly political. Unsurprisingly, French citizens sought protection against future industrial and military might from their German neighbour. Supported by Charles de Gaulle, a multi-year blueprint for reconstruction and modernisation was drawn up by the businessman and diplomat Jean Monnet. This plan, scheduled to run from 1947 to 1950 (but eventually running until 1952, so that its end coincided with the end of Marshall aid), targeted the expansion of the coal, steel, electricity, cement, agricultural machinery, and transportation industries. Steel, in particular, was associated with national security.

2.2 By increasing domestic supplies of steel and other basic products, the Monnet plan promised to enhance that security, which in turn gave the French the confidence to remove ceilings on German industrial production. Germany had, of course, been the engine of European industrialisation since the previous century, and the removal of these ceilings created a more favourable environment for economic revival and growth across the continent.

2.3 In 1958, the Rueff plan, adopted in conjunction with a 17.5 per cent devaluation in France, imposed drastic cuts in subsidies. It was seen as being indicative of France's rededication to market led growth, a sign that France was now ready to join Europe in pursuing growth based on exports and investment. And France certainly enjoyed growth. The Rueff plan, along with the export opportunities provided by the Treaty of Rome, allowed a growth rate of nearly six per cent. On 1 January 1960, 90 per cent of all trade with European markets and 50 per cent of trade with the dollar zone were freed – and France took full advantage.

2.4 The period from 1948 to 1973 has been described as a golden age of economic growth for Western Europe. This age came to an abrupt halt with the oil shock of 1973. In France, the years 1945-1975 are referred to as 'Les Trente

Glorieuses', "the glorious thirty". This name was first used by the French demographer Jean Fourastie, and refers to a period when the French economy grew rapidly and the French standard of living, which had been ruined by both World Wars, became one of the world's highest. During this time, France's economic policy was decidedly 'dirigiste'.

## **Dirigisme**

2.5 Dirigisme describes an economy where the government exerts a strong directive influence. The phrase was invented by Jean-Baptiste Colbert, Louis XIV's Finance Minister, which indicates how old the idea actually is. Post war French Governments, of differing political perspectives, sought rational, efficient economic development, with the long term goal of matching the highly developed and technologically advanced economy of the United States. Charles de Gaulle's lifelong campaign to restore French 'grandeur' is part of the reason for the tradition of dirigisme that emerged.

2.6 Prior to the Second World War, French industry had been weak due to fragmentation. French companies were much smaller than their international competitors, making economies of scale difficult. In order to overcome this, the French Government, with the support of large industry groups, sought mergers and the formation of "national champions". Two further areas where the French Government sought greater control were infrastructure and the transportation system. The French Government owned the national railway company SNCF, the national electricity utility EDF, the national gas utility GDF and the national airline Air France. Phone and postal services were operated as the PTT administration. The French Government also directly intervened in the defence, nuclear and aerospace industries (Aerospatiale).

2.7 Dirigisme flourished under the centre right governments of Charles de Gaulle and Georges Pompidou. The policy was viewed as a middle way between the American policy of little state involvement and the Soviet policy of total state control. An obsession with modernising France led to a variety of ambitious plans imposed by the state, including the extensive use of nuclear energy (close to 80 per cent of French electrical consumption), the Minitel, an early online system for the masses, and the TGV, a high speed rail network.

2.8 Ironically, Francois Mitterand, the Socialist President who broke the stranglehold of the centre-right on the French Presidency, is less associated with dirigisme, partly because after initially being elected on a left-wing platform, the French economy hit problems and the demands of controlling inflation, in order to secure France's place in the European Monetary System, took precedence in economic policy-making. Whilst the role of the French state remained, dirigisme went out of vogue in the years that followed.

## **The Beffa Report**

2.9 A sea-change in attitudes came with the 2005 publication of 'For A New Industrial Policy' ('Pour une nouvelle politique industrielle'), by Jean Louis Beffa, the Chief Executive of the glass making company St Gobain. This report was

drafted at the behest of President Jacques Chirac. M Beffa was assisted by a task force of 12 people, including industrialists, experts and two trade unionists.

2.10 The Jean-Louis Beffa report focused on 'signs that French manufacturing industry is starting to lose ground', due primarily to the fact that French manufacturing specialisation was not sufficiently high-technology oriented. This degree of specialisation was one of the factors underlying the relative lack of research and development in France, since French industry focused primarily on activities that were not traditionally research oriented. Overall, a significant amount of research was done in France, but it tended to be concentrated on a small number of areas such as nuclear science, aeronautics and space, which were often linked to the defence sector and were formerly funded through major government spending programmes.

2.11 More specifically, the Beffa report recommended the definition and implementation of 'industrial innovation stimulation programmes' (Programmes mobilisateurs pour l'innovation industrielle, PMIIs). These would aim to identify industrial initiatives involving major technological innovation and addressing new growing European or worldwide markets. Their time frame would be five to 15 years.

2.12 PMIIs would receive public financial backing and provide various forms of insurance coverage and incentives with a view to fostering partnerships between companies, large and small, and other entities involved in the various initiatives, such as research laboratories. The terms and conditions underpinning public backing, which would take the form of subsidies in the early stages and of repayable loans at pre-competition development stages, would have to be in line with EU rules. The various PMIIs would be administered by an Industrial Innovation Agency (Agence de l'Innovation Industrielle), which should have sufficient resources to enable it to acquire the necessary expertise and to act as a project 'driver'. The range of programmes would be wide enough to diversify and help to bear collectively the brunt of the inevitable risks associated with innovation.

2.13 President Chirac was quick to indicate that the Beffa report would result in tangible initiatives. The proposed Industrial Innovation Agency was to be set up under the direct control of the Prime Minister. It would double investment from the private sector and would be allocated a budget of EUR 2 billion by 2007.

### **Sarkozy and dirigisme**

2.14 Two years after the publication of the Beffa Report, Nicolas Sarkozy was elected President of France. Casting himself as a reformer, championing a clean break with France's traditional ruling elite, Sarkozy has advocated cutting taxes, slimming down the public sector and reviving the work ethic. His language, however, often bears the hallmark of French scepticism towards Anglo Saxon capitalism.

2.15 Sarkozy has been quoted, in *The Economist*, as having said (with more than a hint of satisfaction, according to the magazine): "The main feature of this crisis is the return of the state, the end of the ideology of public powerlessness." Sarkozy

believes that the crisis presents the perfect opportunity to impose his long-held view that the EU puts free market dogma ahead of the true political needs of governments and ordinary people. He has also proclaimed “the death of the all powerful market, which is always right”. More recently, in comments following the appointment of Michel Barnier to the European Union’s internal market portfolio, President Sarkozy has spoken of French ideas on regulation triumphing in Europe.

2.16 Speaking to the European Parliament in October 2008, Nicolas Sarkozy suggested that European countries should establish their own sovereign wealth funds to take ownership stakes in key industries. Sarkozy told MEPs:

“Stock markets are at a historically low level. I wouldn’t like European citizens to wake up in a few months time and discover that European companies belong to non-European investors who purchased them at next to nothing when share prices were at rock bottom, with European citizens left asking: what have you done? I ask each of you to think about whether it might be opportune for us too to create sovereign wealth funds in each of our countries and perhaps whether these national sovereign wealth funds could, from time to time, be co-ordinated to provide an industrial response to the crisis as well.”

2.17 According to Business Week, Sarkozy added that state funds could later sell their stakes at a profit, in a policy similar to that pursued by France’s Strategic Investment Fund (see below).

2.18 Nicolas Sarkozy went on to suggest that European States should co-ordinate their industrial policies:

“I noted with great interest the American plan for the automobile industry. \$25bn dollars at unbeatably low interest rates to save the three American automobile manufacturers from bankruptcy. I’d like us to dwell on this for a moment. We’re asking our manufacturers, and we’re right, to now build clean cars, completely change their production apparatus ... Can we leave the European automobile industry in a market where there is a serious distortion of competition with its US rivals without looking at the possibility of a European sectoral policy to defend the European industry? This doesn’t mean calling the single market into question. It doesn’t mean us undermining the principle of competition. It doesn’t mean undermining the principles governing state aid. It means that Europe must put forward a united response, one which mustn’t be naïve, in the face of the competition from the other major world regions. Our duty is to ensure that, in Europe, we can go on building planes, ships, trains and cars because Europe needs a robust industry.”

2.19 This demonstrates a clear French view of the central importance of manufacturing to its economy and a preparedness to galvanise the instruments of the state in protection of that industry. This was particularly noticeable in the government’s six billion euro rescue of Renault and PSA Peugeot Citroen captured the political mood. There was little debate over whether the state should bail out carmakers or whether such action would distort competition. Rather, Sarkozy had



said that it was “not justified” for a French carmaker to build a factory in the Czech Republic in order to sell cars in France. Furthermore, criticism of Sarkozy has come not from any anti-competitive remarks, but from those who feel he should be doing even more to protect French jobs, keep factories open and curb executive pay. The French car industry directly employs 700,000 people and indirectly employs 2.5m more. The industry is regarded as strategic and its protection is opposed by no-one.

## The Economic Downturn in France

3.1 What is more, the French claim some moral authority in economic and industrial affairs, because France has suffered less than the US, the UK or other comparable economies during the downturn, and its recession appears to be ending faster than that of others, as table one shows.

**Table One – Selected Advanced Economies: Real GDP, Consumer Prices and Unemployment**

(Annual percentage change and percent of labour force)

| Year    | Real GDP |      |      |      | Consumer Prices |     |      |     | Unemployment |      |      |      |
|---------|----------|------|------|------|-----------------|-----|------|-----|--------------|------|------|------|
|         | 07       | 08   | 09   | 10   | 07              | 08  | 09   | 10  | 07           | 08   | 09   | 10   |
| U SA    | 2.1      | 0.4  | -2.7 | 1.5  | 2.9             | 3.8 | -0.4 | 1.7 | 4.6          | 5.8  | 9.3  | 10.1 |
| Germany | 2.5      | 1.2  | -5.3 | 0.3  | 2.3             | 2.8 | 0.1  | 0.2 | 8.4          | 7.4  | 8.0  | 10.7 |
| France  | 2.3      | 0.3  | -2.4 | 0.9  | 1.6             | 3.2 | 0.3  | 1.1 | 8.3          | 7.9  | 9.5  | 10.3 |
| Italy   | 1.6      | -1.0 | -5.1 | 0.2  | 2.0             | 3.5 | 0.7  | 0.9 | 6.1          | 6.8  | 9.1  | 10.5 |
| Spain   | 3.6      | 0.9  | -3.8 | -0.7 | 2.8             | 4.1 | -0.3 | 0.9 | 8.3          | 11.3 | 18.2 | 20.2 |
| UK      | 2.6      | 0.7  | -4.4 | 0.9  | 2.3             | 3.6 | 1.9  | 1.5 | 5.4          | 5.5  | 7.6  | 9.3  |

Source: IMF World Economic Outlook October 2009, p. 69

3.2 According to the International Monetary Fund, economic growth in France will fall to -2.4 per cent in 2009, but that compares with a fall to -5.3 per cent in Germany and -4.4 per cent in the UK. GDP will grow by 0.9 per cent next year.

3.3 Forecasts from the OECD in November predict a slightly better performance. GDP in France will fall by 2.2 per cent in 2009, but will grow by 1.4 per cent in 2010 and 1.7 per cent in 2011.

3.4 There are many reasons for this performance and French industrial policy will only be one. Among other reasons, French banks were more conservative before the crisis than their counterparts in the USA, the UK or even Germany, so the issue of reckless bank lending didn't arise. French households also had a relatively high savings rate, of about 12 to 15 per cent, compared to the US rate, which hovered around zero pre-crisis. This meant that, while in many countries consumers began saving as trouble began, the French saw no need for sudden extra savings, allowing them to go on consuming and for demand in the economy to hold up better.

3.5 One of the most important reasons for the French experience was France's generous welfare system, the so-called 'automatic stabilisers', which maintain economic activity through the spending of those receiving benefits. The average

size of the automatic stabiliser in the Group of 20 countries was 1.2 per cent of GDP in 2009. In France, it was 1.9 per cent.

3.6 Nevertheless, an unashamedly interventionist industrial policy, which kept people in work, at least in part by retaining industrial production in France, will have played an important part in France's economic performance. What is more, as France (and other countries) emerges from recession, having strong industries in place, providing quality jobs, will help the economy to recover. *Le Monde*, the French daily has noted, "In the crisis, the French model, formerly knocked, finds favour once more". *Le Monde* has added, "France is better equipped than the United States or some of its European partners to deal with the recession, because its model limits social damage." In 2002, public spending accounted for 52 per cent of GDP in France, compared with 45 per cent in Britain and 44 per cent in Germany. Some argue that this might have held back the economy in boom times, but with its welfare cushion, it helps to keep it afloat in recession.

## The New French Industrial Policy

4.1 The French Government is currently embarking on a number of new industrial policy initiatives. Like the UK's 'New Industry, New Jobs', the French approach is long term, but is under pressure to deliver short term success, in response to the economic downturn.

4.2 Some elements of the French approach are at a very early stage: a comprehensive new industrial approach is being discussed and a series of meetings on ten industrial sectors have taken place between unions, employers and the Minister of Industry. Different horizontal policy prescriptions, such as supporting skill development among the ten sectors, have been debated.

4.3 Trade unions, while engaging with the new industrial policy approach, are concerned about the short time scale.

## Fonds Strategique D'Investissement

5.1 A major initiative of the new industrial policy, which originated in November 2008 and began work in January 2009, is the Fonds Strategique D'Investissement (Strategic Investment Fund, FSI). This initiative is expensive and France is well aware that it has not been tested. Indeed, its Chief Executive, Gilles Michel, acknowledges that intense political debates around the FSI are taking place. Nevertheless, its boldness underlines the commitment to industrial policy in France.

5.2 The FSI is the direct result of a political decision by the President. In the words of Gilles Michel: "It is a public body to support French companies in growth and competitiveness, to reinforce the French nature of their capital structures (i.e. to provide for a stronger proportion of their capital structure that is French) and to support SMEs."

## **Governance**

5.3 The FSI is incorporated as a company. It has two shareholders – the Caisse des Depots, which has a 51% stake and the Government has a 49% stake. The Caisse des Depots was established in 1816 to restore economic confidence following the financial crisis after the Napoleonic wars. Using private investment funds, notably pension funds, it is, itself, a long term investor, able to commit the time needed for sustainable growth. It also invests in projects in which it is deemed that the market itself cannot satisfy. However, the FSI was established to meet a unique objective, i.e. to strengthen French competitiveness. The FSI does not invest in areas that are traditionally covered by the Caisse des Depots, such as infrastructure or financial services, but invests only in equity.

5.4 FSI funds are managed through a board of seven people, four from government and three from the private sector. A governance body, composed of 20 people from unions (all three French trade union federations have a seat), MPs and business associations, is asked to advise on investment strategies. The staff of the FSI is composed of corporate/investment professionals. Gilles Michel worked in the private sector for 20 years before taking the post of CEO. The FSI invests in large, listed companies; in mid-sized, often not listed companies; and in SMEs. Some SME interventions are private investments, of which the FSI is one part, but not the only part. This allows investment in technical areas, start-ups etc.

## **Investment Strategy**

5.5 The FSI's money is utilised exclusively through investment in the capital structure of private companies, with the FSI taking a role as a minority shareholder. The FSI seeks to be a long-term investor, investing for up to 8-10 years, possibly longer. It invests an amount of money that gives it presence and allows a say in governance (through seats on boards). It also makes a commitment to exit in a way that supports the company in question. Rather than offering subsidies, it associates itself with entrepreneurial risk. It is emphatically not nationalising companies.

5.6 The FSI has 20bn euros at its disposal: 6bn euros in cash and 14bn in equity stakes in companies. This money and equity comes directly from its two principle shareholders, the government and the Caisse des Depots. It is permanently established and has a permanent investment capacity of 2.5bn euros a year, by virtue of a rotating portfolio and dividends from companies in which it has invested.

5.7 So far, 750m euros have been invested in 18 companies, 600m of which have been invested in funds established in partnership with private companies, especially in the biotech sector and in the motor industry.

## **Policy Debates**

5.8 With such a large amount of money available to the FSI, expectations have to be managed. The FSI seeks to work with the grain of the market, but there is little market activity at present, as a result of the financial crisis. As there are not many private investors wanting to be long-term, friendly, strategic investors at this time,

it is necessary, in Gilles Michel's words, to "adjust the financial horizon to the industrial horizon".

5.9 Important policy discussions take place, of course, around the issue of how companies are selected. Is the FSI picking champions? Is it only interested in strategic companies? Gilles Michel argues that the fund, not the companies, is strategic. The FSI analyses opportunities on a case-by-case basis. It would invest in a "non-strategic" company, provided that company has a case. However, a more sectoral industrial policy vision exists, where appropriate. If it was agreed that it was important to foster growth in environmental technology companies, the FSI would do that. It is already helping to "green" the automotive sector.

5.10 Debates also exist around the role that the FSI should play in companies in which it invests. Gilles Michel is strongly promoting the view that the effective use of public money is through support, but not pretending to be in control. If the FSI promoted a given agenda in the companies where it currently invests, its future investments would not be welcome in other companies. The ability of the FSI to fulfil its mission would therefore be undermined.

5.11 The use of public money must be considered carefully, of course. The FSI runs the risk that it uses public money to make investments that would have been made anyway by the private sector. It also risks investing in companies that ultimately fail, thereby wasting taxpayers' money.

5.12 Gilles Michel said that with regard to these investments, some will fail, by definition. However, the FSI wants more successes than failures overall. The FSI takes its share of the industrial risk borne by the companies in which it invests. In the long term, it seeks to profit from all companies, which is a condition of its existence, but people would understand that it does not always win.

### **Nexans**

5.13 A particular controversy has existed in France relating to one recipient of FSI funds, this being the cabling company, Nexans. Formerly Alcatel Cables, Nexans is a world leader in its sector, addressing the energy infrastructure (high and medium voltage), industry, building and local area network markets.

5.14 Nexans recently increased its exposure to businesses with long growth cycles and fast growth potential (energy and emerging markets) thanks to selective acquisitions and disposal of its low profitability and non-core businesses. In response to a desire by Nexans to strengthen its shareholder base, the FSI acquired a five per cent equity stake on the stock market in July 2009. The FSI aimed to support Nexans' future acquisitions, consolidating the fragmented cable industry and increasing its market share.

5.15 However, soon after the FSI made its investment, Nexans sought to restructure, with the loss of 387 jobs in France. There was a great deal of debate and this is not over, but the FSI is withstanding the pressure. The question, according to the FSI, is whether Nexans will be stronger tomorrow than today. The FSI believes it is better to have companies in a leadership position, even if their focus is on the world outside of France, because such companies will have

### **Marguerite Fund**

Other, similar initiatives are afoot across Europe, one of which is the Marguerite Fund.

Speaking at a conference organised by Confrontations Europe on 10<sup>th</sup>-11<sup>th</sup> December 2009, Franco Bassanini, Chairman of the Italian Cassa Depositi e Prestiti and one of the founders of the Marguerite Fund, set out its context. The question before us, said Bassanini, is how to repay public debt in ways that do not undermine our social infrastructure. To do this, we must accelerate growth. China, South Korea and other Asian economies have done this through public investment, but they have low levels of debt.

Bassanini said Europe has three strengths: it has high savings levels; a stable currency; and emerging companies with diversified reserves. If Europe could utilise private savings, it could invest without incurring public debt. To attract private capital into desirable long-term investments, European tax incentives were necessary.

This approach should have an anti-cyclical role. It could spread risk between generations and could accept moderate profitability and long term commitment.

The Marguerite Fund was established by the four founding institutions of the Long Term Investors Club – the European Investment Bank, the Caisse des Depots (France), the Cassa Depositi e Prestiti (Italy) and the KfW (Germany). Initiated in September 2008 under the aegis of the European Council as a key measure of the European Economic Recovery Plan, Marguerite is the European equity fund to invest in the Member States' environmental, energy and transport infrastructures. Regarding its investments, priority will be given to projects addressing the climate change goals of the European Union.

In addition to the four bodies listed above, the Spanish Instituto de Credito Oficial and the Polish Powszechna Kasa Oszczednosci Bank Polski have committed to support this initiative, on a parity basis. Following Decembris Pre Budget Report, so has the United Kingdom, but with £50m invested. Each of the six other bodies has invested one hundred million euros each, giving the Marguerite Fund approximately 650m euros. It has a fund-raising target of 1.5 billion euros by December 2011.

suppliers, relationships etc, that support the economy, through jobs, R&D, exports, etc in France.

## Le Grand Emprunt

6.1 Le Grand Emprunt is another major French policy initiative. It was unveiled in November 2009, when the French Government proposed a 35bn euro loan to support forward-looking strategic investments and to help France emerge from the economic crisis in a stronger position.

6.2 Le grand emprunt (literally, ‘the big loan’) was outlined in a report prepared for President Sarkozy by two former Prime Ministers, Alain Juppe and Michel Rocard. It sets out seven strategic priorities for the spending. In December President Sarkozy announced that the report’s proposals would be broadly followed, meaning that universities and research laboratories will receive the largest share of the loan, totalling 16bn euros. Of that 16bn euros, 10 bn will serve to fund endowments for the top five to ten universities, which will be allowed to use only the interest and not the capital. Such a funding system for public universities does not exist in France at present. Mr Sarkozy earmarked 3.5 billion euros for commercial spin offs from universities and public research institutes, explaining that the French were “champions in discovery but very behind in patents”.

6.3 According to the Juppe-Rocard report, the rest of the special loan will go towards priority sectors, including the digital economy, which will get 4 billion euros under the commission’s recommendations. A further 2 billion euros will go to investments in nano- and bio-technologies, while 3.5 billion will go to renewable energy and 4.5 billion to sustainable urban development such as reducing the energy consumption of social housing blocks. Innovative SMEs will get 2 billion euros, while 3 billion will go towards the development of vehicles such as electric cars, that have lower carbon emissions.

### **Paying for le grand emprunt**

6.4 As interesting as the proposal for ‘le grand emprunt’ itself is the debate over whether or not it can be afforded and whether or not it amounts to sound economics. President Sarkozy said France would begin to put in place a strategy for reducing the public deficit in 2010, the year in which that deficit would hit 8.5 per cent of GDP. Sarkozy ruled out tax rises and said proceeds from the return of economic growth would be earmarked for deficit reduction.

6.5 Needless to say, this approach has many critics. In the short term, it will worsen France’s public finances. Last year, France spent 55bn euros servicing its total debt of 1.3 trillion euros. The OECD has said the loan “risks being pro-cyclical, coming too late to aid the recovery and making the task of inevitable fiscal consolidation more difficult.”

6.6 However, addressing concerns over France’s debt, the Juppe/Rocard commission said the best way to assure France’s future success was to invest rather than hold back. “Borrowing is, in fact, justified when it is about investing to target a future return on investment. And a loan allows for quick action,” it said in its report. Moreover, President Sarkozy is expected to reduce the actual borrowing on

the market by using the 13bn euros that banks will pay back in return for state aid during the financial crisis.

6.7 Economists say that while France can afford to raise 20bn euros or more in new debt, the important question is how it will be spent. “Twenty billion euros is not a huge sum of money: 1.2 or 1.3 per cent of GDP. The question is whether it will be wisely spent, and what impact it has on France’s ability to bring its deficit down,” according to Simon Tilford, Chief Economist at the Centre for European Reform in London.

6.8 Rocard himself has said, “The markets won’t be too sensitive to an increase of 10 per cent (of the total 250-300bn euros that the French state borrows every year). Meanwhile, Moodys Investor Services has said that, at 35bn euros, the loan would not “pose a threat” to France’s rating. At this amount, Moody’s believe the scheme would only marginally weaken Frances’ position in the Aaa rating category over the short term.

6.9 Moreover, in stark contrast to political debate in the UK, Sarkozy is under pressure not to introduce a smaller loan, but to introduce a bigger one. “The big loan must not become a little loan”, said 63 members of parliament from Sarkozy’s own UMP party, writing in *Le Monde* on 3<sup>rd</sup> November. They argue that the TGV high speed rail network, the motorway system, and aerospace giant EADS are successes that would never have got off the ground without high infusions of state cash. “To construct the France of the 21<sup>st</sup> century ... we have to be able to mobilise a critical mass of more than 50 billion euros”, according to the deputies.

## French Perspectives on French Industrial Policy

7.1 France can easily be pigeon-holed as a country where the state is strong, belief in manufacturing and wider industry unwavering and the limits of the free market are widely acknowledged. Of course, there are nuances that are difficult for the outsider to see, and these must be considered for a full appraisal of the lessons of industrial policy in France.

### **The limits of intervention**

7.2 First, the Sarkozy Government will not spend public money on industrial policy unless this is supplemented by finance from the private sector. Despite its public self-confidence, the Government is aware that France has had its industrial policy failures too. Furthermore, it recognises the embarrassment caused by such failures. Were the FSI to fail badly, this would be embarrassing for the President, so the FSI is told to invest only in companies which have good prospects. Whilst the French people want strong action, the Government will not bail out loss making companies. The Government takes comfort in the fact that most state enterprises, including SNCF and even EdF, which is 84 per cent state owned, must answer to minority shareholders. This is considered to be an important safety valve.

7.3 The French believe that most countries involve their state in their industry, so if the French don’t do it, they will be left behind. The Government accepts that

research and development, for example, is often too risky for private money to finance, as ideas end up being copied and patents only last for so long, so companies do not get the full benefit of their investment. The government believes that it is sometimes more efficient to co-invest in a company than to subsidise it. Companies feel more reassured if state money is invested as well.

### **Prerequisites for success**

7.4 To make industrial intervention work, the French Government believes that the skills of the civil service are of critical importance. For example, France wishes to introduce high-speed, fibre-optic internet access, and believes there is a strong role for the state in making that happen, but there is concern that the civil service doesn't currently have the skills to do so.

7.5 Understandably, France compares itself to its neighbour across the Rhine and this is where its mask of self confidence can sometimes slip. Compared to Germany, France has lost competitiveness and market share in the last ten years. The Government blames higher costs, brought about by the 35-hour week, which, with hindsight, the Government believes to be a mistake, and changes to the minimum wage. The Government dates the relative decline of French industry to the year 2000, the year in which the 35-hour week was introduced. Needless to say, this position is disputed by the French unions.

### **How important is nationality?**

7.6 The French Government privately denies that the nationality of companies is important, arguing that one in seven French workers works for a foreign company. It also argues that the French people have worries about international takeovers of French companies, but admits that this is instinctive and is not totally rational. However, it says the Germans, the Spanish and the Italians have similar fears. Having said this, French officials cite the recent GM/Vauxhall/Opel case as evidence that all governments want plant closures to take place in countries other than their own. As noted in paragraph 2.19 above, President Sarkozy has called for European countries to co-ordinate their industrial policies. Elysee officials admit that they do not have a blueprint for what a European industrial policy would look like, but believe that rational discussions would be preferable to a beggar thy neighbour policy. They also cite the recent US bailout of General Motors, a policy that, they argue, would never have been tolerated by the European Commission. When the European motor industry faces US competition, they believe the European faith in free markets within European borders to be naïve in the light of such action across the Atlantic.

7.7 The French Government also believe that Germany industry can be more nationalistic than its own. Officials point out that German car makers choose very precisely what they want to outsource and what they want to keep in Germany. As a result, most high tech content is kept in Germany, while they still export a lot of cars.

### **A trade union perspective**



7.8 Meanwhile, French trade unions believe that the French Government adopts an employer-led agenda. Business cries for labour costs have been heeded. Unions point out that, whilst President Sarkozy adopts a very social tone in international speeches, he can be much more liberal when talking to his domestic audience, arguing the case for spending cuts in social areas. Trade unions are critical about the lack of investment in social areas, such as pensions and childcare. As public sector workers retire, only one in two are replaced, leading to job cuts in public services over a period of time.

7.9 Force Ouvriere, one of the main French trade union federations, supports the industrial policy debate, but believes its timescale is too short, it does not have clear objectives and fears that it is focused only on communication and publicity. Neither does Force Ouvriere know what will follow the debate. It seeks a strengthening of social dialogue, at national and regional level, to take these discussions forward.

7.10 Force Ouvriere believes (no doubt with an eye on Germany) that other large industrialised countries have more ambitious industrial policies than has France. Among its proposals, it calls for a national public bank to support manufacturing, in order to evaluate and co-ordinate all existing structures and public interventions, to favour investment and employment, and to support research and development.

### **The German tradition: “implicit” industrial policy**

**Henrik Uterwedde** (Deputy director, Deutsch-Französisches Institut, Ludwigsburg)

Compared to France, Germany seems to have no explicit industrial policy; indeed, the term itself has been criticised and the French approach is rejected as state-interventionism. However, Germany practices an implicit industrial policy, but in doing so, it relies on a multitude of public and private actors, rather than on the state.

After 1945, German economic reconstruction was concentrated on the industrial sectors which have become the leading engines of post-war growth in the western world (automobiles, chemicals, engineering, electronics). Germany’s economic policy has always been influenced by an industrial culture, and this culture has been the base of the German model of capitalism after 1945.

A main feature of German industry is its export orientation: hence a constant concern for the competitiveness of German industry. This competitiveness has been realised by specialising in high quality products, which makes German industry less dependent on cost competitiveness. However, Germany’s historic fear of inflation has produced an orientation to price stability, helping to contain costs of production.

In reaction to both the history of Nazi Germany and, later, to the communist economy in eastern Germany, leading politicians developed the concept of the Social Market Economy (Soziale Marktwirtschaft). This concept tries to merge a liberal attachment to markets with a concern for social justice. It fosters social partnership both at the micro and macro level, channelling industrial conflict into a system of social negotiation. The Social Market Economy is seen as a provider of market rules, a certain ethics of responsibility and limits to “wild” capitalism, principles which have been “forgotten” in the past.

German capitalism has been characterized by institutions and behaviour patterns favouring negotiation, compromise and cooperation in all fields of the economy: social partnership in the firms (co-determination of employees), at branch and national level (highly developed collective bargaining system, which is independent from government intervention); cooperation between state and business; devolution of public regulations to business organizations; inter-firm cooperation; bank-industry cooperation (banks rather than financial markets funding the large industrial firms; strategic partnerships between banks/insurance and industrial companies via large blocks of shares. Hence, partnership behaviours according to a stakeholder philosophy.

In the German political system, public actors share decision making with organized interests (business; trade unions, etc.) through consultation, partnerships or devolution. Moreover, in the federal system, “the state” is represented not only by the federal government but also by the 16 regional state governments (Länder), which have the legal status of federated states and are able to participate in national law making via the second chamber of Parliament (Bundesrat). The regional governments are also powerful actors in economic and industrial policy.

In fact, whereas the federal Economics Ministry often acts in a liberal tradition, the Länder governments have been repeatedly interventionist: For example, the governments of North Rhine-Westfalia (17 million inhabitants) have led the transformation process of a mining and

steel region into a modern high-tech industrial and services region; Bavaria (population: 12 million) has developed an energetic public policy fostering high tech industrial development; in a similar way Baden-Württemberg (population: 10 million) has modernized its automobile and engineering industries.

The best policy for industrial development is still seen as generating a stable and favourable, general regulatory and fiscal framework for business. Furthermore, a comprehensive, cross-sectoral approach has been developed since the 1990s, trying to enhance conditions for industrial production in Germany and attract foreign investors. This implies public action in the fields of education and job training, research and development, innovation, facilitating technology transfers, conditions favouring the creation of new firms, efficient public administrations, etc.

Sectoral policies sometimes exist. In recent years, renewable energies such as wind and solar energy have been favoured by price support (guaranteeing a high price for the producers) and contributed to the development of new industries. Moreover, the federal Economics Ministry assures a coordination of kinds in some industrial sectors such as aerospace or shipbuilding, through “sectoral dialogues” with the industries and trade unions concerned. Their aim is to identify problems and to work out common solutions.

Economic patriotism is an issue. As in France, there is a concern in Germany about large national companies threatened by unfriendly foreign take-overs. Public discussion is controversial on this point, divided between “liberals” and “protectionists”, but a certain number of regional decisions have been made in the sense of a protection of German capital: several years ago, the tyre producer Continental was saved from a takeover by Pirelli; more recently, the Hamburg state government assured “local solutions” for two local companies Nivea (Beiersdorf) and Hapag Lloyd, in order to prevent a foreign takeover. In Baden-Württemberg, the regional state government incited a group of local public utilities firms to take a 40% share in the energy group EnBW, in order to reach parity with the French EDF, which also holds 40% of EnBW. In 2009 the federal government, along with the relevant regional state governments, was actively engaged in the operation to save Opel (the European branch of General Motors) and especially the German sites.

In conclusion, industrial policy follows different paths in both Germany and France, due to different economic cultures and industrial structures. Yet the differences are less sharp in practise than in discourse. Germany and France share a concern about the future of industry, and in many ways their differences may be interpreted as complementary rather than opposed.

## Lessons from French Industrial Policy

7.11 France clearly operates in a very different political atmosphere to the UK. Their culture supports a strong state, one that is believed to be active, effective and benign. Interventions by the state are considered positively. Indeed, when industry struggles, the state is expected to step in. In the United Kingdom, by contrast, state intervention in industry (as opposed to other state interventions, most obviously the National Health Service) is treated with suspicion. The role of the private sector is presumed to be both morally superior and likely to be more successful. The history of British Leyland is the example most often used as example of how the state fails, although Edward Heath's rescue of Rolls Royce in 1973 is easily forgotten and rarely quoted as a success.

7.12 Under Margaret Thatcher, and continued under Tony Blair, active industrial policy was considered to be unnecessary and unwelcome. In this sense, the intervention of Peter Mandelson, by initiating 'New Industry, New Jobs', is a break from thirty years of cross party agreement on the lack of need for an active industrial policy.

7.13 The French Government does have a presumption towards a private sector lead in industry, but it appears obvious to them that some interventions, especially those with high up-front costs, will not be undertaken without state support.

7.14 There are a number of lessons to be learned from the French experience.

### Leadership

7.15 If a more active industrial approach is to be successful, the first priority is that such an approach benefits from leadership, especially from politicians. The ability of political leadership to attract support should not be underestimated. The TUC, along with some others, has advocated an active industrial strategy for many years, with very few supporters, yet since Lord Mandelson began arguing for industrial activism, it has been astounding (and a little amusing) to see how many industrialists have supported this approach all along!

7.16 President Sarkozy has been giving firm support to French industries. Cynics argue that much of this amounts to style, not substance, and there could be a grain of truth in this. However, whilst Sarkozy clearly knows how to attract headlines, he has backed up his words with the euros of enough French taxpayers that there can be little doubt of his support for industry. Such leadership is important; industrialists will behave differently if they believe that a government is serious in its support for industry, rather than if a government is not.

7.17 Whatever doubt there might have been about Labour's attitude towards industry, the change in climate since the publication of 'New Industry, New Jobs' is tangible and it must be sustained into 2010 and beyond, whoever wins the next General Election.

7.18 To this end, it was most encouraging that Ed Miliband's article in The Observer, 10<sup>th</sup> January 2010, included the lines: "We need to rebuild our economy in a different way from the past, with more jobs in real engineering not just financial engineering." That is a phrase borrowed from Peter Mandelson and the

fact that it has been quoted by a rising star of the Labour Party, irrespective of the outcome of the next election, gives hope that the ‘New Industry, New Jobs’ agenda can continue in the months and years to come.

7.19 And continue it must. This means the serious engagement with industry and unions that takes place, on issues such as skills, innovation, infrastructure, and so on, must also carry on. However, it is clear that all industries will lobby for government support. This is only natural yet, especially in the current climate, the government has a finite amount of money to spend. Ultimately, governments have to decide on the strategic direction of the economy, building on our strengths and our potential, but also bearing in mind the risks associated with its decisions (so we do not see a repeat of the excessive faith put in the City of London in recent years), and then support the industries that lead the economy towards that strategic direction. British Governments do not like to “pick winners”, yet failing to support key strategic sectors risks the UK being left behind in the increasing pace of globalisation.

### **Procurement**

7.20 Procurement has a crucial role to play in a modern industrial strategy. The public sector – central and local government, as well as major public sector bodies such as the National Health Service and the Ministry of Defence – spends £220 billion procuring goods and services each year. What it buys, and how it buys it, can have a crucial impact on the development of industry.

7.21 Where the public sector is a major purchaser of large scale manufactured products, such as a new bus fleet, that purchase could help to sustain manufacturing facilities in the United Kingdom. Of course, European rules require open competition in such procurement processes, so a simplistic ‘buy British’ approach would not work, but this does not mean that procurement has no role to play.

7.22 In 2005, the UK’s Defence Industrial Strategy set out the long term needs of the UK armed forces, regarding the defence equipment needed, and assessed the capability of UK industry to meet those needs. By setting out its needs in the long term, the Ministry of Defence, working with the Treasury and the Department of Trade and Industry, sent a clear message to manufacturing companies about the types of manufactured goods for which there would be markets.

7.23 Whilst defence is a special case, as military equipment is considered to be linked to national security, a similar approach could be used with other industries. This is exactly what happens in France. The Government will set out the areas of the economy in which it wishes to invest. It will bring together local authorities, government agencies and other actors who can provide the infrastructure and require them to dedicate a certain amount of their budget to this venture. With the infrastructure put in place, leading private sector companies will dedicate their skills, their research and development and other forms of investment towards these sectors, secure in the knowledge that there will be major contracts forthcoming in these sectors and that the French Government would like, within European rules, to award them to French companies where possible.

### **Strategic Industrial Sectors**

7.24 The industrial sectors highlighted by ‘New Industry, New Jobs’, such as advanced manufacturing, composites and plastic electronics, are clearly sectors with great future potential. All will be vital as we seek more environmentally friendly industry. Indeed, the Low Carbon Industrial Strategy set out in 2009 is vital for the UK’s industrial future.

7.25 Yet industry will only believe we have a truly active industrial policy if that policy creates high volume industries, providing high volume jobs, in the United Kingdom. Any work to take ‘New Industry, New Jobs’ to the next stage must include strategies for aerospace and automobiles. Rightly or wrongly, these industries are symbolic and they send a sign to business, academia, trade unions etc that governments take industrial policy seriously. Volkswagen, BMW, Mercedes Benz and Porsche are symbolic brands in Germany, as are Renault and Citroen in France and Fiat, Alfa Romeo and Ferrari in Italy.

7.26 The UK has a thriving motor industry, albeit based on foreign brands. They are not all foreign, of course, with MG, for example, continuing to produce here. However, Nissan and Toyota’s UK operations have been hugely successful, as has, more recently, BMW’s operation in Cowley, which builds the new Mini. Ford, General Motors and Honda have major manufacturing plants in the UK. Taken together, in 2006, 1.4 million cars and 208,000 commercial vehicles were built on these shores. What is more, British success in Formula One is not confined to the last two winners of the drivers’ championship being British: brands such as Brawn GP (now part of Mercedes GP Petronas), Williams and McLaren are based here.

7.27 The motor industry in Western Europe, including the UK, employs millions of people directly and in its supply chain, so this is not an argument for holding onto dying industries for reasons of prestige.

### **State Aids**

7.28 In the re-industrialisation that will take place after the financial crisis and as Europe meets the challenge of globalisation, it is necessary to look again at state aid rules. According to ‘The Guardian’, 4<sup>th</sup> December 2009, Lord Mandelson is pushing for the European Commission to relax state aid rules to make it easier for governments to provide funding for key low carbon industries. This approach is surely correct and, in a sense, addresses the point made by President Sarkozy to the European Parliament in October 2008 and quoted in paragraph 1.15 above. This is not to question the value of competition in the European Union, nor to undermine the importance of state aid rules. Yet there have always been other elements to the European project, apart from competition, and the building of sustainable industries must be one of them.

### **‘Building a better balanced UK economy’ – IPPR**

The French are not the only ones thinking about these issues. An important contribution to the debate about the future of UK industrial policy has been offered by the Institute of Public Policy Research (IPPR). This comes in a document entitled ‘Building a Better Balanced UK Economy: Where will jobs be created in the next economic cycle?’ by Jonathan Clifton et al, published in July 2009.

This document seeks to identify a vision of a more balanced UK economy. It makes important proposals, such as for an Ideas Bank and an Infrastructure Bank. The paper makes valuable observations about the need for a culture of innovation, a greater commitment to skills training and, particularly pertinent to government, the importance of support for infrastructure, if such necessities as industrial clusters are to be developed.

On manufacturing, however, this paper is not ambitious enough and certainly does not have the ambition of the French. The IPPR argues that China and the other BRIC economies represent a challenge to the UK’s ability to capture the high end niche markets in manufacturing, pointing out, for example, that by 2001 China had nearly three times as many workers in Research and Development as Germany. The IPPR is correct to identify this as a massive challenge, but wrong to suggest that it is a challenge which cannot be met. The IPPR is also correct to say that countries such as Germany and Denmark have an established base in green tech manufacturing, but that is only because their governments have actually built such a base. There is no reason why the UK government cannot do the same.

The IPPR calls on the government to have a vision of the future shape of the economy and to target its actions accordingly. The IPPR also rejects the false dichotomy between a hands-off government and a government that picks winners, as does the French Government. It argues that there are a number of areas where government can support the market without actually owning firms or making investment decisions. This is true, although if the government has a vision of the future state of the economy, it is likely to have a sense of which industries will be most important. It may not “pick” individual firms (to use an unhelpful phrase) but the logic of the government’s economic vision will have particular consequences for some strategic companies in those industries that will be central to that vision.

The IPPR identifies six broad areas where horizontal government support will be important. Those areas are: innovation; skills; small business growth; high sunk costs and infrastructure; regional policy; and a supportive financial services sector. Environmental sustainability must run across all of these areas.

The IPPR highlights Britain’s existing strengths and comparative advantage in, for example, the creative and pharmaceutical industries and professional services. These strengths are well observed and the IPPR also notes the importance of knowledge-based manufacturing. However, there is a continuing role for the UK as home to major industries in motor cars and aerospace, as well as in these newer sectors. This will not be easy. It is obvious that there is over-capacity in the global motor industry, for example. But the scale of the challenge should not mean that we give up on these industrial sectors. This is one of the lessons from France that we seek to identify in this paper.

### **A British approach to industrial policy**

7.29 How different is the UK approach? Speaking at the SMMT International Automotive Summit on 24<sup>th</sup> November 2009, Lord Mandelson outlined the value of motor manufacturing to the UK: “This commitment to motor manufacturing is not because it exerts some kind of special sentimental tug on Ministerial hearts. Sorry to say it. It’s a cold hard judgement of what this industry means to our skills base, our engineering supply chains, our niche manufacturing skills, especially in design, low carbon and ultra high tech. It’s a measure of what this business means for the UK’s industrial future.”

7.30 Mandelson extolled the virtues of the market: “It’s absolutely vital that that process is guided by commercial logic, not politics. That’s why I put up such a stiff fight against any suggestion that the future of plants in Luton and Ellesmere Port might be decided by political considerations rather than productivity.”

7.31 This is a British approach. The political hegemony in the UK has great faith in markets, more so than in France. Yet it is possible to fashion active industrialism in this context. Mandelson then spoke of a “commitment to making Britain the best place in Europe to manufacture low carbon vehicles” and of “a determined strategy to build strength at all levels and sustain the industry’s critical mass here in Britain.” Furthermore, according to the Daily Telegraph, 25<sup>th</sup> November 2009, Mandelson indicated that he is willing to provide loans or loans guarantees to support General Motors, but warned its plans “need to include good news for the UK if they want to receive UK taxpayers money.” At the end of the day, is this latter attitude so different from Sarkozy’s?

### **A new British Strategic Investment Fund**

7.32 The UK, of course, has a Strategic Investment Fund as well. Announced in Budget 2009, to financially underpin ‘New Industry, New Jobs’, the UK’s Strategic Investment Fund had £750m at its disposal (a further £200m was included in the Pre Budget Report of 2009). This is, of course, a fraction of the 20 billion euros budget given to the Fonds Strategique D’Investissement in France. There are some similarities. The UK fund had bids from far and wide and had to make tough decisions about where to spend its money. However, there are major differences. The UK fund was directed from BIS, rather than being managed at arm’s length. The UK fund made grants, pure and simple, and it was a one-off fund, with no published plans for its extension.

7.33 On 20<sup>th</sup> January 2010, the Fonds Strategique D’Investissement reported on its first full year of operation. It has invested 1.4bn euros in companies such as Meccano, the construction toy maker, and Daily Motion, the internet start up that aims to rival YouTube. 800m euros has been invested directly into 21 companies and 600m euros has been invested through funds. Even its critics recognise that it has proved its credibility with its choice of investments. All are currently profitable.

***7.34 This paper makes the following proposal: now that the Fonds Strategique D’Investissement has reported such a positive start, the TUC calls for a pilot scheme, on a smaller scale, in the United Kingdom. We call for a new Strategic***



*Investment Fund, managed at arm's length in the French style, with a budget of £5 billion, which could be a combination of cash, loans and loan guarantees . This fund should make strategic investments in companies looking for a long-term strategic partner, in exactly the same way as happens in France.*

*7.35 A budget of £5 billion reflects the necessary role of government intervention, as set out in the active industrial strategy, while also reflecting British reticence about an over-active state. Consideration must be given to whether this £5 billion is given as direct funding, as happens in France, or whether some of the money could come from other sources, including private investors or grants from bodies such as the European Investment Bank.*

*7.36 Investments should be made in strategic companies, with the UK investment body taking the same entrepreneurial risk as happens in France. This is emphatically not a plan to give grants to companies. The government should expect a return on its investment over many years. However, as happens in most private sector investments of this kind, there must be an understanding that some investments will provide a poor return. The aim is not to be so risk averse as to back only winners. It is to back companies with potential, with the aim and the expectation that government will get at least its money back (and should return a profit) over a five to ten year period.*

## Conclusions

8.1 From the outset, the intentions of this paper were to explore what lessons might be learnt from the French experience of industrial policy. As was made clear, the TUC does not believe that the French have all the answers; nor do we wish to introduce an industrial policy that mirrors the one in France. We do believe, however, that there are lessons to be learned.

8.2 The UK is not in the position of France in 1945. We do not need to build large industries, either from scratch or to bring together fragmented industrial sites, into concrete entities. But nor are we in the position of Germany, where successive governments, of every political hue, have supported large scale, world class competitive industrial sectors. We still have important motor industry, aerospace, defence and pharmaceutical sectors. We have attracted world class investors, such as Toyota and Nissan. A very important building block, 'New Industry, New Jobs', has led to the development of strategies for composites, plastics electronics, advanced manufacturing and, most crucially of all, a Low Carbon Industrial Strategy. 'New Industry, New Jobs' has now been followed by 'Going for Growth'. Emphatically, we do not begin from a standing start, but we do need to map out the next phase of our journey.

8.3 This paper hopes to have raised some ideas for taking industrial policy forward. Our proposals for the future can be summarised as follows:

- 'New Industry, New Jobs' phase two. This should include statement of industrial intent, by the Prime Minister, setting out the ambition to create and sustain a modern manufacturing sector in the UK. That statement must describe the development of strategies to maintain and strengthen the UK motor,

aerospace, defence and pharmaceutical sectors, along with the vital sectors set out in 'New Industry, New Jobs' and 'Going for Growth'. It should also set out those industries where the government seeks to be a world leader by 2020, such as the offshore wind sector.

- Linked to the above, a Public Service Agreement (PSA) on the future of UK industry. This should set out the state of industry that the government envisages in five years time, regarding strategic sectors, levels of investment, GDP created, and jobs. The TUC is less interested in whether every aspect of the PSA agreement is achieved, word for word, and more on the government setting out its ambitions for industry policy and developing a credible strategy for bringing those ambitions about.
- An arms length strategic investment fund, as described in paragraphs 8.24 and 8.25 above, to invest in strategic companies in those sectors, along the lines of investments made by the Fonds Strategique d'Investissement. As with the FSI, this investment should expect to break even or, better still, make a profit over a period of 5-10 years. Its investments must be made in companies with potential and decisions should be guided by an investment panel, including representatives of trade unions and business. Its overall aim should be to support the statement of industrial intent and the PSA target as described above.
- A pharmaceuticals industrial strategy, describing the long term procurement needs of the NHS, should be developed, giving certainty to producers of medical equipment to plan and invest over many years. Other, similar industrial strategies must be considered.
- A revamp of UK procurement rules, so that public sector contracts are presumed to support efforts to upskilling the workforce, unless there are compelling reasons why they should not, as well as to develop environmentally friendly public services, such as through greener modes of local transport. A recent government initiative, the Policy through Procurement Action Plan, supported the role of procurement to promote skills, youth unemployment and carbon emissions reductions, although such actions were voluntary. If voluntary action does not deliver the required outcomes, mandatory targets should be introduced.
- There must be dialogue at a European level to develop a European Industrial Policy. Whilst there are many areas of legitimate competition between European nation states, and that competition should remain, there are other industries such as the motor industry, where governments such as the US Government intervene in a way that European governments cannot. In such circumstances, a unified European response is necessary. This European level dialogue must also consider the future of the Lisbon Strategy, a major plank of which must be to build a programme to develop European industry over the next 10 years within the EU. It must also address the future of European state aids, so that legitimate competition is protected but national or European level efforts to develop or sustain industries is respected.

**Appendix Five: Paper Two – Page, T. (2012), ‘German lessons: developing industrial policy in the UK’**

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## German lessons: developing industrial policy in the UK



## Foreword

*by Brendan Barber, TUC General Secretary*

The British economy is at a crossroads. With growth stagnating and the public finances facing an unprecedented period of retrenchment the imperative of boosting British manufacturing and securing export growth is greater than it has been for decades. But even without the economic downturn of recent years questions would still persist about Britain's ability to survive and thrive in an era of globalisation. Since the end of the 1970s, Britain has moved away from its manufacturing heritage and focused instead on the service industry – financial services in particular. Whatever the benefits of success in these sectors there is concern at the decline of manufacturing, particularly the impact this has had for specific communities and regions. Many decent, well-paid jobs for skilled manufacturing workers have been lost and the economy has faced growing regional and sectoral imbalances.

The TUC believes that a strong manufacturing sector belongs at the heart of the British economy, and has for many years championed the need for the development of a comprehensive and modern industrial policy. So while we have welcomed the government's recognition of manufacturing's importance, we also know this will require a commitment to actively support its growth. This report sets out some ideas about how this might be done.

Our research was aimed at understanding the practical measures the UK could take to rebalance our economy in the years ahead. The search for expertise led to Germany, a powerhouse of the European economy and a country that has never lost sight of the value of its manufacturing sector. Through meetings with senior managers, works council members and trade union officials in leading German companies, including Volkswagen, Siemens and BMW, we tried to see how the UK could learn from German manufacturing successes.

Our conclusions are wide ranging. We call for a new manufacturing ecosystem for the UK: a range of policies needed to bring the country back to its rightful place as a major manufacturing nation. Skills, investment, procurement, helping small firms to expand, finance for strategic sectors and the role of government are all identified as priority areas for action. We also recognise the need for a new economic system that brings management and workers together, rather than pushing them apart, and set out the role of modern trade unions and the value of collective bargaining and of minimum standards.

This report challenges the government to recognise the importance of industrial activism. But we know it is not just ministers, but also companies and trade unions that need to consider the role they can play in achieving change. The prize is significant: a manufacturing renaissance in a rebalanced economy, boosting our industrial strength and enhancing social justice.

## **Contents**

|           |                                                                 |
|-----------|-----------------------------------------------------------------|
| <b>7</b>  | <b>Executive summary</b>                                        |
| <b>11</b> | <b>Introduction</b>                                             |
| <b>13</b> | <b>Industrial policy in Germany and the UK: a brief history</b> |
|           | <i>Emerging from war</i>                                        |
|           | <i>The Golden Age</i>                                           |
|           | <i>Amateurism in British industry</i>                           |
|           | <i>The integration of Europe</i>                                |
|           | <i>German growth in the 1960s</i>                               |
|           | <i>Britain's balance of payments problems</i>                   |
|           | <i>Innovation</i>                                               |
|           | <i>Mergers and takeovers</i>                                    |
|           | <i>The end of the Golden Era</i>                                |
|           | <i>The rise of monetarism</i>                                   |
|           | <i>Helmut Schmidt and Helmut Kohl</i>                           |
|           | <i>German reunification</i>                                     |
|           | <i>New Labour</i>                                               |
|           | <i>Agenda 2010</i>                                              |
|           | <i>The Great Recession</i>                                      |
|           | <i>Summary</i>                                                  |
| <b>26</b> | <b>Industry policy in the UK and Germany today</b>              |
|           | United Kingdom                                                  |
|           | <i>Spending Review</i>                                          |
|           | <i>Growth Review</i>                                            |
|           | <i>Advanced manufacturing</i>                                   |
|           | <i>The Plan for Growth</i>                                      |

*Manufacturing Advisory Service*

*Technology and Innovation Centres and other announcements*

*Autumn Statement 2011*

Germany

*Wage moderation*

### **34 Evidence from Germany**

Volkswagen

Siemens

Thyssenkrupp

BASF

Airbus

### **57 Evidence from the United Kingdom**

Bentley Motors

Siemens

BMW

Roballo Engineering Co Ltd

### **74 Conclusions**

A new manufacturing eco-system

A new industrial philosophy

Policies to support a new industrial philosophy





## Section one

# Executive summary

1.1 This paper is published at a crucial time in the history of the British, and the wider European, economies. The UK's Coalition government has embarked on a radical path of deficit reduction that its supporters argue is necessary for economic strength in the long term and its critics – the TUC is one – believe threatens to pull the rug from under our recovery from the worst economic downturn since the 1930s. The crisis in the eurozone could undermine the whole concept of economic union. If the eurozone avoids the worst, it will be in no small part due to the support of the most successful economy in Europe, Germany.

1.2 Alongside the short-term need for economic recovery, commentators continue to debate how the Great Recession came about, whether it could have been avoided, and what lessons should be learned. One lesson that seems universally accepted in the UK is that there must be a rebalancing of the economy, away from excessive reliance on financial services, towards other sectors. A renaissance for manufacturing has been discussed in that context. Moreover, even before the economic downturn, the growth of China, India and other new entrants to the world economy were prompting tough questions about how western economies would survive, and thrive, in the 21st century.

1.3 The TUC supported a rebalancing of the economy, and a greater role for manufacturing, long before the economic crisis. We have published several papers on this subject and have been keen to learn lessons from other, successful manufacturing nations. As the economic powerhouse of Europe, there were clearly lessons to be learned from Germany.

1.4 This paper has been produced in co-operation with Unite, the largest union in UK manufacturing, and IG Metall, which represents manufacturing workers in Germany. It begins by charting the key developments in industrial policy, in Germany and the UK, since 1945. It then describes the state of industrial policy in both those countries today.

1.5 Following this, we present evidence from German or German-owned British companies in Germany and the United Kingdom. Interviews have been held with senior managers and trade union officials from five companies based in Germany – Volkswagen, Siemens, ThyssenKrupp, BASF and Airbus – and four in the UK – Bentley (which is owned by Volkswagen), Siemens, BMW and Roballo Engineering (which is owned by ThyssenKrupp). Those senior managers and trade unionists were asked a range of questions about the economic downturn, competition from China, skills, industrial relations, the growth of the 'green' economy and the role of government in industrial policy.

## Executive summary

An interview was also held with Martin Behrens, Head of the European Industrial Relations Unit at the Hans Bockler Stiftung.

1.6 This report tells their stories. The TUC believes that, through their own voices, these managers and trade unionists offer solid evidence and clear arguments for the future of industrial policy in the United Kingdom.

1.7 This report also highlights the positive role of trade unions in these companies. This is particularly important in the UK, where so much of the narrative of the media is of a negative, hostile trade unionism. Company and union voices in the pages that follow attest to strong, vibrant, challenging but ultimately positive relationships. Such relationships are valuable at any time, but during an economic crisis the likes of which we have experienced in recent years, they are of tremendous value to both company and workforce.

1.8 Following our dialogue with these companies, the TUC calls for a new manufacturing eco-system. Tinkering with policy is no longer enough. What is needed is a radical development of an interventionist manufacturing policy, bringing together a number of individual changes to make a coherent whole. These policy changes include:

- The need for an economic model that is widely seen as fair among employers and trade unions. We argue that the German Social Market Economy is culturally cherished in Germany, in much the same way that the National Health Service is culturally cherished in the UK. A version of the Social Market Economy in the United Kingdom, albeit one which reflects the UK's history and traditions, could help to unite our nation around values of equality, fairness and mutuality
- A major role for strong, well organised trade unions and strong employers' associations. In the German system, employee representatives (who are usually trade union members) have seats on Works Councils and Supervisory Boards. They often have the power to block change, but rarely do so. Differences of opinion, even conflict, are recognised and respected, safe in the knowledge that what unites management and union is stronger than what divides them. Trade unions take responsibility for the success of the company. They embrace and manage change, even change of the kind that make them feel uncertain, but bargain hard to defend their members in a changing world. This report contains examples of trade unions at their best: questioning and challenging, but always in a constructive way. It also shows how, specifically, strong unions in the Social Market model were able to support both their companies and their members when it mattered most – during a crisis the like of which the world has not seen since the 1930s. It is in the most difficult of times that our relationships are most severely tested, and the economic crisis - and the way in which unions responded in Germany - highlighted the value of the Social Market Economy in a very particular way
- The understanding that the UK must specialise in a number of targeted, high skill, high value manufacturing sectors where we are or could become

competitive in the age of globalisation. It is not credible for the UK to expect to succeed in all sectors, and skills, R&D and other areas of government support must be aimed at these key sectors. This is not about ‘picking winners’, but it is about making political decisions to support certain sectors, therefore enabling the development of winners within them. Siemens’ work on mega-trends, which is described below, whilst originally implemented at the company level, offers a template for targeting the industrial sectors in which we might specialise

- Support for key industries in the context of tackling climate change. A good example is the need for a package of measures to support the UK’s energy intensive industries, an issue that has already been addressed in Germany
- The need for urgent action on skills. Companies in Germany and the UK speak of skill shortages, but German companies start from a higher base. Apprenticeships must form the cornerstone of industrial skills, and whilst we have a number of reservations, we wish to discuss the role of University Technical Colleges with the government, on the understanding that true ‘parity of esteem’ is needed before anyone pursues a path to vocational education that could be seen as “second best”
- The need to grow small firms, building an economic rationale for medium-sized firms in wider industrial policy. UK policy discussion is focused on large, world-class companies, such as Rolls Royce on the one hand, and small, often micro-businesses on the other, but there is very little discourse about medium-sized companies. The German ‘mittelstand’, the network of thousands of medium sized firms in Germany, is often described as the ‘backbone’ of the German economy and acts as a supplier to larger multinationals. In the UK, small companies are seen as a good in themselves, but no more is expected of them than that they simply survive and provide for their owner or small number of employees. Their place in the wider economy is unexplored
- A procurement policy guided by the principle that every pound of taxpayers’ money should contribute to jobs, skills or the strength of the British economy. government, employers and trade unions should agree on the wider aims of procurement policy, whilst recognising that contracts will always be offered on a case-by-case basis. But a procurement regime that is simply based on lowest cost, offering nothing to the long term development of the British economy, has no place if our industries are to reach new levels of competitiveness
- A recognition that nationality can be important. German companies operating in the UK, described in this report, have made a major contribution to our economy, but it is a simple fact of life that political pressures in ‘parent’ countries will sometimes be an issue
- An understanding that immigration policy can inhibit a company from acquiring much needed specialist skills. Of course, immigration also has the potential to depress wages, especially in the low skill service sector, and can be used as an alternative to proper education and training. Immigration should therefore be seen as positive for high skill, high value businesses, and

## Executive summary

should be accompanied by the restoration of collective bargaining that is implicit in this paper, and the re-regulation of the labour market to ensure equal pay and fair treatment for those at the bottom end

- A recognition that informing and consulting employees, collective bargaining and minimum standards are not either/or policies, but both have a role to play in the modern workplace.

1.9 The conclusions from this report stem from the interviews undertaken with senior managers and trade union officials, but they must be approached in a wider economic context. Specifically, the TUC believes the imbalance in the world economy, between surplus countries who export more than they import (China, Germany, Japan) and countries which run persistent trade deficits (the US, but also the UK, Spain, Portugal and Italy, among others) must be addressed. Furthermore, Germany's trade surplus has been achieved at least in part on the back of wage depression to subdue domestic demand, which is not a model we advocate that the UK should follow.

1.10 This is a commonly held view. Writing in the *Financial Times* on 27th October 2011, the US President, Barack Obama, said: "...each nation must do its part to ensure that global growth is balanced and sustainable so we avoid slipping into old imbalances. For some countries, this means confronting their own fiscal challenges. For countries with large surpluses, it means taking additional steps to support growth. For export-oriented economies, it means working to boost domestic demand."<sup>1</sup>

1.11 This report is firmly of the view, then, that Germany must take steps to boost domestic demand and must be prepared to import as well as export.

1.12 This report also supports IG Metall's call for Germany to introduce a minimum wage. Sixty per cent of German workers are covered by collective agreements, but some workers fall by the wayside of industry negotiations. These workers do not necessarily share in the commitment to fairness and equality that is implicit in the Social Market Economy. Those workers need the support of a minimum wage and UK trade unions would be happy to offer advice and expertise to support its implementation, based on our own experience of this issue.

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<sup>1</sup> "A firewall to stop Europe's crisis spreading", Barack Obama, *Financial Times*, 27 October 2011.

## Section two

# Introduction

2.1 At the time of writing, it is no exaggeration to say that many European economies are in crisis. Events in the eurozone since August 2011 threaten its very survival. The UK economy is flatlining, with stagnant growth and rising unemployment.

2.2 The UK government's *raison d'être*, its overarching narrative since it was elected in 2010, has been to eliminate the UK's structural deficit over the lifetime of this Parliament. Only by deficit reduction, it argues, will economic confidence return. However, the government has come under pressure from critics who argue that it has a deficit reduction strategy, but not a growth strategy.

2.3 The economic downturn has affected all of Western Europe, but Germany remains surprisingly robust. Germany is still Europe's economic powerhouse. Its industries remain strong. Its Social Market Economy continues to emphasise both economic efficiency and social justice.

2.4 Are there lessons here for the UK? Moreover, building a successful industrial model is a fine ambition, but can it be done in such testing times? Competing with the huge market of the United States, adapting to the emergence into the world economy of major players such as China and India – and increasingly Brazil and Russia – would never have been easy. Doing so in the aftermath of the biggest economic crisis since the 1930s, some might argue, is impossible.

2.5 Impossible? The UK and Germany both have excellent industrial heritages. The UK was the cradle of the industrial revolution. British trade unions have expressed concern in recent years at the decline of UK manufacturing, yet the sector still employs 2.8 million people and in 2009 contributed £140bn in gross value added, around 12 per cent of GDP. Major manufacturers such as BAE systems, Rolls Royce, Toyota, Nissan and Diageo have important operations in the UK.

2.6 Germany was seen as Europe's powerhouse economy throughout the second half of the 20th century, mainly thanks to its industrial success. German manufacturing contributed 504.3bn euros of gross value added in 2008. Major German brands include Siemens, Volkswagen, BMW and Deutsche Bahn.

2.7 But the UK needs a step change in its manufacturing performance if it is to remain competitive in the 21st century, while Germany cannot sit on its laurels. The over reliance on financial services experienced in the UK in recent

years has left manufacturing trailing. Other countries have been faster to exploit new markets and to develop tomorrow's technologies. Germany experienced strong growth in 2011, partly driven by exports to Asia. But this is a non-traditional market for Germany and is not expected to continue. Indeed, whilst the German government forecasts growth of 2.9 per cent in 2011, it expects growth of just one per cent in 2012 and, according to Germany's leading economic institutes, it will narrowly avoid a technical recession, defined as two negative quarters of economic growth, over the coming winter.<sup>2</sup> This is due to struggling economies among some German export markets and underlines the case for boosting domestic consumption in Germany to balance its success in exports.

2.8 This paper is designed to explore a new model of industrial activism. By following this model, the TUC believes that Germany and the UK will be well prepared to meet the economic, industrial and environmental challenges ahead. The paper presents recommendations for the future of industrial policy, based on the knowledge gleaned from interviews with senior managers and trade union representatives at a number of major companies in the UK and in Germany. Those companies are Volkswagen, Siemens (in both Germany and the UK), Thyssenkrupp, BASF Airbus, BMW, Bentley and Roballo Engineering. An interview was also held with Martin Behrens, Head of the European Industrial Relations Unit at the Hans Bockler Stiftung

2.9 Before describing these interviews and recommendations, however, the paper reflects on the economic and industrial histories of the UK and Germany in the last 60 years.

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<sup>2</sup> "Germany cuts economic growth forecast", BBC website, 20 October 2011. [www.bbc.co.uk/news/business-15385934](http://www.bbc.co.uk/news/business-15385934)

## Section three

# Industrial policy in Germany and the UK: a brief history

### Emerging from war

3.1 The UK and Germany emerged from the Second World War, exhausted, as victor and vanquished. Yet it was not long before a new geopolitics, that of the Cold War, took hold and began to dictate the pace and direction of world affairs, including the world economy. In particular, the role of the United States had an immediate influence on the immediate post war years.

3.2 As early as August 1940, Sir Kingsley Wood, the Chancellor of the Exchequer, had presented a paper to Cabinet arguing that Britain was virtually bankrupt. After the war, the new Labour government of Clement Attlee sought loans from the United States and Canada.

3.3 Marshall Aid was introduced in 1948, because by that time, the prosperity of Western Europe was seen as crucial to American defence. The UK took its share of the loan but faced difficulty again in 1949, when a recession in the US made dollar exports more difficult. A massive devaluation of sterling, from \$4.03 to \$2.80, was to follow, although it must be acknowledged that other European governments faced the same pressure: Austria, France, Italy, Sweden, the Netherlands and Belgium devalued at this time as well.

3.4 The Labour government also embarked on a major programme of public ownership. The Labour Party supported public ownership because they believed it would prevent unemployment, redistribute wealth, rationalise production and create better relations with industry. There was more cross party support for public ownership at the time and virtually all the industries nationalised had a history of state intervention.

3.5 A White Paper on Wages and Personal Incomes, published in February 1948, was the first of many attempts by post-war UK governments at an incomes policy. It sought to link personal incomes to increases in the volume of productivity, emphasising the need to export to allow Britain to pay its way in the world.

3.6 Beset by fears of a resurgent Germany, in March 1946, the Allies implemented a Level of Industry Plan to restrict German industrial output to one-half of pre-war levels. Of course, the uncertainty created by these measures discouraged investors from committing resources to industrial activity. In



## Industrial policy: a brief history

1947, German industrial production was barely one-third of pre-war levels, below the ceilings imposed by the Level of Industry Plan.

3.7 This situation posed a dilemma for the Allies. Germany was the economic centre of Europe. It supplied the capital goods needed for the recovery and growth of its neighbours. The Level of Industry Plan limited the production of machine tools to 10 per cent of 1936 levels. Ultimately the advent of the Cold War in 1946-47 catalysed a shift in US thinking. It forced even the French to acknowledge that the Allies could not afford to dismantle Germany industry.

### The Golden Age

3.8 The period from 1950 to 1973 is referred to by economic historians as the 'golden age'. During this period, GDP in Western Europe grew at 4.8 per cent per year on average, and GDP per capita grew at an average of four per cent per year. This compares to figures of 2.2 per cent and 1.4 per cent between 1890 and 1913, 1.4 per cent and 0.9 per cent between 1913 and 1950, and 2.1 and 1.7 per cent between 1973 and 1994.<sup>3</sup>

3.9 There were three aspects to growth in the 1950s. These were: the extent of prior industrial development and the scope that remained from boosting productivity by shifting workers from agriculture to industry and services; the productivity gap and the scope for boosting incomes by converging toward technological best practice; and the extent of wartime disruption and the scope for growing rapidly by making up lost ground. Industrial modernisation, to varying degrees, required government policies to co-ordinate a range of complementary investments.

3.10 Germany was already stocked with the relevant range of industries, from coal and steel to transportation equipment and electrical machinery. Between 1950 and 1960, German exports rose from nine per cent of national income in 1950 to 19 per cent in 1960. Investment demand was high throughout Europe, aiding German firms specialising in the production of capital goods. As Germany's expanding industrial sector began diversifying into the production of consumer goods, private consumption surged across Europe, reflecting rising incomes and in turn helping to sustain the growth of German exports. Investment ran at nearly 25 per cent of GDP, well in excess of the Western European average.

3.11 Germany's unions were now organised along industrial lines, national in scope and associated through an umbrella body, the Deutscher Gewerkschaftsbund, or DGB. A de-facto co-ordination of wage negotiations began to take place: the metal workers went first, formulating their demands with an eye towards the anticipated reaction of other unions. The DGB provided a forum for discussions among union leaders, and its researchers

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<sup>3</sup> Feinstein, Temin and Toniolo, quoted in "The Golden Age of European Growth Reconsidered", Peter Temin, Dept of Economics, Massachusetts Institute of Technology, *European Review of Economic History*, 2002.

provided economic analyses to help frame the annual wage round. This enabled the metalworkers to pick a level of wage increases appropriate for the economy as a whole and encouraged other unions to follow.

3.12 By contrast, British economic performance in the 1950s was disappointing. This was partly explicable by pre-existing conditions: Britain had been quick to restore full capacity utilisation after the war; with per capital GDP relatively high in 1950, there was less scope for growing rapidly by catching up to the technological leader; and there was also less scope for boosting productivity by shifting labour to industry from agriculture.

### **Amateurism in British industry**

3.13 During the 1950s, there was a concern that British industry was failing to attract enough young people of high calibre. It was also believed that managers were badly trained compared with their rivals abroad, and that there was too little upward mobility from the shop floor. On the shop floor itself, there was not enough technical training. The American management expert, Dr David Granick, called Britain “the home of the amateur”. He stressed that professionalism was a serious charge against an individual in British industry. British managing directors did not think there was any special experience which was useful to a future managing director, though marketing was favoured by some. Neither foreign experience, nor legal or technological training, were considered essentials. Much of this contrasted with top management in the United States, Japan and West Germany.

### **The integration of Europe**

3.14 The formation of the European Economic Community in 1958 and then the completion within a decade of a customs union encompassing France, Germany, Italy and the Benelux countries was a vastly important development for Europe. Britain, with its historic links to the Commonwealth and the Empire, was hesitant, but was eventually forced to acknowledge that its future lay with Europe. The European Free Trade Association was formed by Britain and six smaller European countries – Austria, Denmark, Norway, Portugal, Sweden and Switzerland – in 1960, but all except Portugal traded more with Common Market countries than with their fellow members. Britain applied for EEC membership in 1961, but was rebuffed by President de Gaulle. It was another 12 years before Britain joined the Common Market.

3.15 A structural change peculiar to Germany was the creation of the Bundesbank in 1957. The Bundesbank was the first central bank to be given full operational independence. This form of central bank has since been referred to as the ‘Bundesbank model’, distinguishing it from, for example, the New Zealand model, which has a goal, in this case an inflation target, which is set by government.

## **Industrial policy: a brief history**

### **German growth in the 1960s**

3.16 As growth had soared to exceptional heights in Germany during the period of post-war reconstruction, there was only one way to go by the 1960s, yet even then, Germany's economic growth was impressive. At nearly five per cent per annum, German GDP growth had actually fallen by more than one-third of the heights scaled in the 1950s, but nearly five per cent still exceeded the Western European average. Germany reassumed its traditional role as supplier of machine tools and other producer goods to the rest of Europe. Investment goods now accounted for more than half of all German exports. Germany's specialism in producer durables in a period when capital formation was booming also helps to explain how the country was in such a strong balance-of-payments position. At home, buoyant export markets and wage moderation encouraged investment. The German investment-GDP ratio rose again, from 22 per cent in the 1950s to 24 per cent in the 1960s.

3.17 This situation could not last, in Germany or in wider Europe. By the end of the 1960s, the special conditions that had made ample supplies of labour available to the modern industrial sector – unemployed labour in European agriculture, the influx of refugees and repatriates from Europe's East and from its overseas dependencies – were largely spent. Wages began to rise faster than productivity, reducing the availability of retained earnings for capital formation.

### **Britain's balance of payments problems**

3.18 British governments in the 1960s had a tendency to run the economy under high pressure of demand that spilled over into balance of payments problems as the country ran out of foreign capital as a result of high demand for imports. The solution, according to politicians from across the political spectrum, was faster growth of UK industry and in order to promote this, governments tried to stimulate demand for domestically produced goods.

3.19 But Britain had supply side problems. The fragmentation of the union movement and the confrontational attitudes of labour, management and government, made it difficult to co-ordinate wages, investment, and public spending. The country lacked institutions for imparting vocational training, making it difficult to adopt Fordist mass production technologies. Labour resisted the introduction of new technologies, fearing that the result would be redundancies rather than more employment in export-linked industries. Management was reluctant to invest in new projects for fear that unionised workers would seek immediately to capture the return in the form of higher wages.

### **Innovation**

3.20 For European companies, competing with the United States was always difficult, and never more so than in the race for innovation. Smaller European

states concentrated on applied research relevant to their existing industrial base. Larger countries, where R&D spending tended to be government- rather than business-linked, concentrated on science-based sectors. Even so, there was no way that Europe could match the United States in the development of science-based technologies. The United States invested more in general education, especially at the postgraduate level. Its universities had closer links to industry. Its securities markets allowed investors to take bets on competing technologies. All this made the US a motor of radical innovation.

### **Mergers and takeovers**

3.21 In January 1966, the Labour government created the Industrial Reorganisation Committee. This was designed almost as a government sponsored merchant bank, designed to encourage efficient firms to take over the less efficient, to encourage mergers and help finance them, etc.

3.22 The most notable takeovers helped by the IRC were CEC's takeover of AEI and English Electric, and the merger of Leyland Motors with the British Motor Corporation. The idea was not just to bail out ailing industries, nor simply to subsidise prestige products, as the Conservatives had done in the cases of Concorde and the ocean liner Queen Elizabeth II. It was to provide Britain with large companies which could compete effectively in international markets. Thus British Leyland, it was hoped, would be able to take on the state owned Renault, and Volkswagen, which had been developed from public funds. British Leyland, formed in 1968, continued to have troubles, resulting from inefficient plant location, overmanning and poor industrial relations, and was only saved from collapse by nationalisation in 1975 on the recommendation of the Ryder Report. The ailing computer industry was also helped, and after a series of shake-ups, International Computers Limited finally emerged as the only British computer firm.

3.23 Finally, industrial training boards were established. They were soon in operation for the road transport, hotel and catering, civil air transport and petroleum industries. Others followed.

### **The end of the Golden Era**

3.24 Economic historians pinpoint 1973 as the year in which the Golden Era came to an end. The most obvious reason for this was the oil price shock following the outbreak of the Yom Kippur war of that year. Of course, as noted above, the ability of European economies to expand as the continent recovered from war was already coming to an end. The reliance of Europe on the Middle East for the bulk of its energy supplies made the oil price hike a serious problem.

3.25 The early 1970s also saw Britain's entry into the Common Market. Labour's Harold Wilson had started negotiations towards the end of his term

## Industrial policy: a brief history

of office. His Conservative successor, Edward Heath, oversaw Britain's entry into Europe in what is regarded as his biggest achievement.

3.26 However, British industry continued to struggle. Back in office in 1974, the Labour government introduced a National Enterprise Board, as part of the Industry Act of 1975. The NEB became a state holding company to administer government shareholdings in companies, acquire additional shares and give financial assistance to businesses in trouble. Under the British Leyland Act, 1975, the NEB acquired 95 per cent of the equity of the company. Ferranti, the electronics and defence company, followed, with the NEB taking 50 per cent of the ordinary voting shares. Rolls Royce, already publicly owned, became part of the NEB empire. Chrysler, which needed a massive cash injection to avoid a total shut down and the loss of about 27,000 jobs, was assisted, although not taken over. The government also took over the ailing aerospace and shipbuilding industries after being forced to drop the nationalisation of ship repair companies to get its legislation through.

3.27 Yet, looking back now, it is clear that government intervention couldn't help if the structure of industry and supply side failures were not also addressed. Dr Frank Jones, an industrialist, calculated in 1976 that total assets per employee in UK manufacturing stood at £7,500. In Japan this figure was just over £30,000 and in West Germany about £23,000. This gap allowed the Japanese and West Germans to manufacture at two or three times UK productivity, according to Jones. Some argued too much capital had been exported over a long period. Others thought British banks could learn from Japanese banks, and from British building societies, on improving methods to ensure the financing of long-term loans to industry. British building societies operated in ways similar to foreign banks by "lending long from short-term deposits ... if such a mechanism were adopted by the banks in Britain for their industrial customers ... Britain would stand to reap considerable growth benefits similar to those experienced by both Japan and West Germany"<sup>4</sup>

3.28 Three writers who had studied German firms emphasised that compared with a UK foreman, the German Meister was better qualified and enjoyed higher status. The relatively poor prestige of professional engineers in Britain was also thought to be a cause for the failure to attract more, and more talented, applicants to university engineering courses.<sup>5</sup>

### The rise of monetarism

3.29 May 1979 saw the shattering of the post-war UK economic consensus, when Margaret Thatcher was swept to power. Thatcher was elected on an anti-trade union ticket and continuous new pieces of employment legislation gradually stripped away many of the rights and privileges enjoyed by trade unions. The middle of her term of office also saw the Miners Strike, the most

<sup>4</sup> *Management Today*, December 1978

<sup>5</sup> Conservative Political Centre, *The Engineering Profession: a National Investment*, July 1978

significant industrial dispute since the General Strike of 1926. For almost exactly a year, the National Union of Mineworkers took on the Thatcher government in a bid, ultimately unsuccessful, to end a pit closure programme. Many mines closed, thousands of miners lost their jobs and the emotional scars of the strike continue to exist in mining communities to this day.

3.30 But Margaret Thatcher's endorsement of a monetarist economic policy was even more distinctive. The post war consensus, based on a largely Keynesian philosophy that sought demand management and was committed to full employment, was overturned in favour of a philosophy based on low inflation achieved by controlling the money supply. The main economic proponents of this approach were Milton Friedman and Frederick Hayek. The Thatcherite experiment was also tried in the United States under President Ronald Reagan, but marked a decisive shift between the Anglo Saxon economic model and the social partnership model of most of mainland Europe, a shift that continues to be evident today.

3.31 Speaking in the House of Commons on 10th July 1980, the former Chancellor of the Exchequer and veteran Labour politician, Denis Healey, said: "British industry is staggering under a savage squeeze coming from four directions at once – high inflation, high interest rates, high exchange rates and low demand. This is a perfect recipe for industrial collapse, and the recipe is working." Healey continued:

3.32 The governments of every one of our major competitors have been giving direct physical help to their own industries to assist them to make ... structural adjustments as rapidly and smoothly as possible... The German government, for example, are giving massive support to the coal, railway and steel industries. The average subsidy per tonne to the German coal industry is £14 compared to £1 in Britain...

3.33 The French government have just embarked on a major programme of support for their telecommunications industry, particularly in viewdata. They are to put three terminals into each of the 20 million houses that they expect to take new telephones over the next 12 years. Japan has already spent £1,000 million in direct support for its electronics industry, £500 million of which has gone to the microprocessor industry... I wish [the Secretary of State for Industry] would travel to Paris at some time and get a little bit of Gallic pepper in his veins, and then make sure that we support our industries in the way that France is supporting hers. All contracts for the supply of this enormous number of new terminals for the French viewdata system, which is costing £3,000 million a year over the next 12 years, are to go exclusively to French suppliers. We should like to see the right hon. Gentleman take a leaf out of the French book.

## **Industrial policy: a brief history**

### **Helmut Schmidt and Helmut Kohl**

3.34 Helmut Schmidt became West German Chancellor when the oil shock was really beginning to hurt. West Germany's GDP fell by 1.4 per cent in 1975, the sharpest fall since the founding of the Federal Republic of Germany. Growth resumed in 1976 and whilst it did not reach the heights of the Golden Era, it was considered acceptable after the turbulence of the previous years. Schmidt became known as a Macher (achiever) and his party won re-election in 1976. Schmidt's success also led to him claiming he had built Modell Deutschland (the German model).

3.35 But the economy staggered through the next few years. Expansion in 1979 and 1980 helped Schmidt to win re-election in 1980, but the upturn was uneven. In 1982, Schmidt's coalition government collapsed after the Free Democratic Party withdrew to join a coalition led by Helmut Kohl, the leader of the CDU/CSU.

3.36 Kohl began to reduce the government's role in the economy. He sought to reduce the federal deficit by cutting expenditure as well as taxes, to reduce government restrictions and regulations, and to improve the flexibility and performance of the labour market. He also carried out a number of privatisation measures, selling almost DM10 million in shares of companies including Volkswagen and Lufthansa. The state role in the West German economy declined from 52 per cent to 46 per cent of GDP between 1982 and 1990, according to Bundesbank statistics.

### **German reunification**

3.37 On 1st July 1990, the two German economies became one. This was a massive economic and social experiment, as the capitalist economy of the west joined with the socialist planned economy of the east. In fact, both concentrated on industrial production, especially machine tools, chemicals, automobiles and precision manufactures. But the poor productivity of the former East German economy proved a very difficult challenge to overcome.

3.38 East German production costs had been very high. The conversion rates of the East German Mark to its West German counterpart often kept those costs high, as did the early wage negotiations, which resulted in wages far above productivity levels. Western German firms found it easier and cheaper to serve their new eastern German markets by expanding western facilities, rather than building facilities in the east. Inadequate infrastructure was another problem that dissuaded potential investors from eastern Germany.

3.39 Unification moved ahead slowly. The economy of eastern Germany went into a slump immediately after unification. Within a year, the number of unemployed people rose above three million. Industrial production in eastern Germany fell to less than half the previous rate: one estimate suggested that, in 1991, the entire production of eastern Germany amounted to less than eight

per cent of that in western Germany. The western German economy, by contrast, experienced a mini boom. Western German GDP grew at a rate of 4.6 per cent for 1990, reflecting the new demand from eastern Germany. Employment rose during the year, from 28.0 million to 28.7 million, but the number of registered unemployed in western Germany only declined by about 300,000, showing that at least half of the new jobs in western Germany had been taken by people who had moved to or were commuting from eastern Germany. The result was that western Germany had a vast new market and a growth of over one per cent of its workforce, as sharp an increase as in the days of the economic miracle.

3.40 New eastern firms were usually subsidiaries of western firms, and they followed western ownership and management patterns: bank participation became customary, so banks installed their representatives on the boards of the new firms and assumed some supervisory functions. government funds were used essentially for two purposes: infrastructure investment projects (roads, bridges, rail) and income maintenance (unemployment benefit, social security and other social costs). The infrastructure projects sustained employment levels and the income maintenance programmes sustained income, but neither had an early growth payoff.

3.41 The Bundesbank become worried about these developments. The sudden financial shifts between east and west led to a jump in money supply. Large expenditures in eastern Europe led to government deficits. Rapid growth in the west was potentially inflationary. Short term interest rates were raised sharply in 1991 and 1992, slowing growth in western Germany from 4.2 per cent in the first quarter of 1991 to 0.8 per cent in the last quarter of 1992. The eastern German growth rate was 6.1 per cent during 1992, well below the 7-10 per cent that had been anticipated for the region.

3.42 The economy registered a negative growth rate of -1.2 per cent in 1993, before lower short-term interest rates for over a year led back to positive growth. The political project of German reunification had exacted a high price in economic terms.

### **New Labour**

3.43 'We were elected as New Labour and we will govern as New Labour', said the incoming British Prime Minister, Tony Blair, on election night, 1997. Blair had been elected following the unhappy tenure of John Major, who had confounded opinion polls to be re-elected in April 1992, only to suffer a run on the pound and the suspension of the UK from the European Exchange Rate Mechanism the following September.

3.44 Blair's New Labour philosophy meant that many of the changes introduced by Margaret Thatcher were here to stay. Blair adopted a policy of minimum standards, so reforms such as the National Minimum Wage



## Industrial policy: a brief history

prevented wages being undercut to poverty levels, but the bulk of Thatcher's trade union legislation was not repealed.

3.45 The New Labour government also adopted a largely *laissez faire* approach to industrial policy. Trade union hopes of social partnership bodies, bringing together companies, unions and government to consider economic, social or political developments – which are common across Europe – were dashed as the government feared the creation of new style Neddies<sup>6</sup>, given the association in the public's mind of corporatism with the failed industry policies of the 1970s. Task specific bodies, such as the Low Pay Commission or the Manufacturing Forum, included trade union representatives, but overarching economic policy forums were not established.

3.46 The language of industrial policy had become the language of “picking winners”. governments, we were told, were not good at assessing which industries were likely to succeed and which were likely to fail as the market did a much better job of identifying growth sectors. In fact, the UK had become increasingly dependent on financial services and the City of London for its economic success. Traditional industries, such as manufacturing, often felt overlooked.

3.47 One of the ironies of the late twentieth century in the UK was that despite John Major's ERM debacle his government bequeathed a benign economic environment to its successor. By the time of his Pre Budget Report of 2006, the Chancellor of the Exchequer, Gordon Brown, reported that economic growth had been positive for 38 consecutive quarters and looked forward to more growth in the following year.

### Agenda 2010

3.48 During the 1980s, the free market economic order promoted by Margaret Thatcher in the UK and Ronald Reagan in the United States became known as the Anglo-Saxon model. It was distinguished from the European Social Model, which believed in a greater role for government in promoting economic success and social solidarity.

3.49 In truth, there was not one European Social Model, with approaches to economic policy in the Nordic countries, for example, having important differences with those of the Southern Europeans. Nevertheless, a view developed in Europe that Anglo Saxon economies were more responsive to change and, in the age of globalisation, the European model was in danger of leaving European nations behind. Technological and demographic developments encouraged this view further. Germany's economic model, with its high labour costs, was sometimes described as ‘sclerotic’.

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<sup>6</sup> Neddy was the acronym used for the National Economic Development Council (NEDC), set up by a Conservative Chancellor, Selwyn Lloyd, in 1962, and which brought government, industry and unions together to consider economic issues.

3.50 In the early part of the 21st Century, the German Chancellor, Gerhard Schroder, put forward a series of reforms aimed at reforming the German social system and labour market. There were three main areas of focus for Agenda 2010: the economy, the system of social security and Germany's position in the world market.

3.51 Agenda 2010 included a 25 per cent reduction in the basic rate of income tax. A series of changes to the labour market, known as Hartz I-IV, beginning in 2003 and ending in 2005, affected unemployment benefits and job centres in Germany, and the very nature of the German system of social security. Hartz IV, in particular, was generally considered to be the largest cut in the German system of social security since the Second World War - though it still left German benefits for unemployed people substantially more generous than Jobseeker's Allowance, their UK equivalent.

3.52 There was cross party support for Agenda 2010 but, paradoxically, it split the German Social Democratic Party (SPD), of which Schroeder was leader. The German trade union federation, the DGB, which was historically interwoven with the SPD, led the opposition to Agenda 2010 outside parliament.

3.53 Immediately after the Agenda 2010 reforms were implemented, German unemployment increased, but joblessness began to fall in the medium to longer term. Its supporters claim that Agenda 2010 succeeded in reducing unemployment in Germany. To its detractors, however, it promoted social inequality. A study conducted by the Friedrich Ebert Foundation in late 2006 argued that four per cent of Germans in West Germany, and 20 per cent in East Germany, lived in "precarious" socio-economic conditions.<sup>7</sup>

3.54 The debate over Agenda 2010 is the closest Germany has come to mirroring the debate over the rise of free market economics in the UK.

### **The Great Recession**

3.55 2007 saw the emergence of what has come to be known as the Great Recession. Put simply, the world suffered the most extreme downturn in living memory, second only to the Great Depression.

3.56 The details of the downturn and its consequences have been set out many times. What is interesting from the perspective of this paper is the government response. The UK Prime Minister, Gordon Brown, along with the German Chancellor, Angela Merkel and other world leaders moved quickly to rescue the world economy. Fiscal stimulus programmes were put into effect in major countries. In the UK, this focused on tax cuts for consumers, but also on investment in infrastructure, as the economics of Keynes came swiftly back into fashion and politicians moved to shore up demand. A car scrappage scheme was popular and helped sustain the automobile industry. This meant that

<sup>7</sup> *Gesellschaft in Reformprozess*, Rita Muller-Hilmer, July 2006.

## Industrial policy: a brief history

buyers of new cars could claim £2,000 towards the cost of a new vehicle in exchange for scrapping an old one. A budget of £300m was initially set aside for this programme, which ran until March 2010.

3.57 One interesting detail of UK politics at this time was the return of Peter Mandelson, a close confidante of Tony Blair. In his role as Business Secretary, Mandelson introduced the most interventionist industrial policy since the 1970s. ‘New Industry, New Jobs’ set out key strategic industrial sectors and aligned government policy with supporting the growth of those sectors. ‘New Industry, New Jobs’ included a Low Carbon Industrial Strategy, as well as support for growing technologies, such as composites. A small amount of government money (£950m in total) was matched by a co-ordinated government effort to support the ‘New Industry, New Jobs’ initiative.

3.58 One major difference between the British and German fiscal stimuli was that Germany introduced a short-time working subsidy. Trade unions in the UK called for such a subsidy, but the UK government rejected this idea. Germany is considered to have been successful in keeping down unemployment through this measure. At its peak in May 2009, 1.5 million workers were working reduced hours, with support from the German government. BMW, for example, had up to 24,000 employees on its short time working scheme at one point.

3.59 It is impossible to prove a negative, but most economists agree that without the fiscal stimulus in the UK, Germany and across the world, the global economy may have faced an even more severe downturn, perhaps mirroring the situation of the 1930s.

3.60 Both the UK and Germany resumed economic growth in 2010. Germany’s growth has been remarkable, - 4.7 per cent in 2009 having been replaced by a rate of 3.7 per cent in 2010.

3.61 Germany’s economic model is dependent on exports, so its fortunes remain tied with economic recovery across the world. Indeed, problems in the eurozone are partly to blame for lower German growth in 2011 and projected very low growth in 2012. As noted above, it is a widely held view among economic commentators that Germany must modify its export-led model, being prepared to import more and to boost domestic demand (and therefore the wages of German workers). The economic stability that this export-led model has delivered for Germany is clear for all to see, but it has come at a price, both to German workers and to the wider global economy.

3.62 The UK economy grew in 2010, but critics feared that this figure was boosted by the previous government’s stimulus package. Sure enough, following the beginning of the Coalition government’s programme of spending cuts, the UK economy grew by just 0.5 per cent over the year from September 2010 to September 2011.

### Summary

3.63 The second half of the twentieth century saw Germany become the economic powerhouse of Europe. Germany remains the strongest economy in Europe to this day. In fact, post-war Germany was building on a longer industrial tradition in that country. Germany's incredible economic growth in the fifties and sixties partly reflects the low base from which it started that period, but also its industrial heritage. Germany has also enjoyed high investment, a long-termist culture, a recognition of the value of professionalism, and an industrial relations system that allows for difference, but promotes consensus.

3.64 It is these lessons that this report seeks to learn. However, what is clear from the report is that, historically, the UK and Germany do not have vastly differing political, economic and industrial cultures. Free market economics, either in its 'blue blooded' Thatcher or Cameron forms, or in its Blair and Brown varieties, have been with us for thirty years, but for thirty years before that, the UK adhered to a greater balance between social justice and economic growth, understanding that this balance could only be achieved if political choices were made to support specific industrial sectors.

3.65 Supporters of free market economics are quick to condemn the failures of the 1960s and the 1970s in the UK (the story of British Leyland is a favourite when this issue is raised), while being slow to recognise its successes (such as the role of government in saving Rolls Royce, now one of the most successful companies in the world). Moreover, there are serious lessons about the supply side in British industry in the 1950s, 1960s and 1970s, especially in skills and professionalism, that may explain why industrial policy is often believed to have 'failed' in the UK, but to have 'succeeded' in Germany, during these years.

3.66 So where do we go from here? Specifically, how do we create an economy that combines economic success and social solidarity? That is the question that this report seeks to answer.

## Section four

# Industry policy in the UK and Germany today

## United Kingdom

4.1 The UK's Coalition government is not in favour of an activist approach to industrial policy. Whether this is because of its focus on deficit reduction, which limits the amount of money available to support such an approach, or is the result of an ideological attitude to government intervention, is unclear. In truth, it is probably a mixture of the two. Either way, there is no successor to the 'New Industry, New Jobs' approach of the previous Labour government.

4.2 The policy community in the UK had expected a Growth White Paper to be published, either in conjunction with or shortly after the Comprehensive Spending Review (CSR) of 20th October 2010. The CSR was the flagship announcement of the government in 2010, encapsulating its top priority of reducing the UK's fiscal deficit. Critics argued that taking such a large amount of spending out of the economy without a corresponding growth strategy was risky. In the event, there was no White Paper, but a Growth Review was published in November 2010.

### Spending Review

4.3 The Comprehensive Spending Review committed £200m a year by 2014-15 to support manufacturing and business development, with a focus on supporting potential high growth companies and the commercialisation of technologies. Giving evidence to the Business, Innovation and Skills Select Committee, the Business Secretary, Vince Cable, said that money would be spread three ways: to support the Manufacturing Advisory Service; to provide funding for growth hubs, to support growing companies; and to support Technology and Innovation Centres.<sup>8</sup>

4.4 The creation of a network of Technology and Innovation Centres (TICs), to help commercialise new and emerging technologies, was a flagship government announcement. These TICs will be based on the German Fraunhofer model.

4.5 The Fraunhofer Gesellschaft brings together public and private funds: pure research, as practiced at universities, is almost 100 per cent funded by

<sup>8</sup> *Comprehensive Spending Review*, BIS Select Committee, 26 October 2010.

government, whereas industrial research and development, up to prototype level, is largely funded by industry. There are more than 80 research units, including 60 Fraunhofer Institutes, at different locations in Germany. 1.65bn euros, 1.40 billion euros of which is generated through contract research, is available for annual research through Fraunhofer Gesellschaft in Germany. In the UK, there will be far fewer institutes and, with £200m of public funding over five years, a much smaller budget.

4.6 October 2010 also saw the publication of a 'National Infrastructure Plan', the government's strategy to "unlock" some £200 billion of public and private sector investment over the five years from 2010 to 2015, incentivising private companies to deliver the infrastructure the UK needs for the 21st Century. Critics, including the TUC, are concerned that this is a huge amount of money to "unlock" from the private sector without greater government support and fear that it cannot succeed, leaving the UK trying to compete internationally with inadequate infrastructure.

4.7 The government is also committed to the setting up of a Green Investment Bank, a commitment that appears in the Coalition Agreement. Budget 2011 confirmed £3bn of capital support but with borrowing powers delayed until 2015 and even then to be contingent upon debt falling as a percentage of GDP. The TUC has long supported the principle of a Green Investment Bank, although we believe that the initial capitalisation is insufficient and the limit on borrowing powers should be lifted to help drive the major investments required for a low carbon economy. Our support for the government's initiative may also be qualified by the nature of the government owned assets that will be sold off to capitalise the bank.

4.8 The Local government White Paper, *Local Growth: Realising Every Place's Potential*, was published on 28th October 2010. This set out details of the proposed Regional Growth Fund, which is worth £1.4bn from 2011 to 2014 and (despite its value totalling only one third of the amount previously available to the UK's network of Regional Development Agencies under the previous government) has been welcomed by trade unions and business:

4.9 The Regional Growth Fund will be used to encourage private sector enterprise, create sustainable private sector jobs and help places currently reliant upon the public sector make the transition to sustainable private sector led growth. It will complement, without duplicating, other rebalancing interventions, such as access to finance, banking reform, the work programme and other mechanisms to promote sustainable growth, including the Green Investment Bank.

4.10 The Spending Review also included specific measures to support the wind energy industry.

## Industry policy in the UK and Germany today

### Growth Review

4.11 *The Path to Strong, Sustainable and Balanced Growth* was published alongside the Autumn Statement in November 2010. This announced a rolling Growth Review to consider structural reforms and how to tackle barriers to growth in different sectors. The government's approach to growth, as set out in this document, is based on four pillars:

- providing stability for business
- making markets more dynamic by removing barriers to growth
- focusing the government's own activities on providing the conditions for private sector growth and investment
- ensuring that strong growth is fairly shared and sustainable in the long-term.

4.12 The review said the government would promote greater access to finance, introducing a new bank-led £1.5bn 'Business Growth Fund'. It would also attempt to introduce so-called 'better regulation', with a "one in, one out" system of business regulation.

### Advanced manufacturing

4.13 'Advanced manufacturing' was one of six specific industrial sectors chosen for consideration in the first phase of the growth review. The consultation on advanced manufacturing was published in December 2010.

4.14 The government describes the characteristics of advanced manufacturing as being: intensive in the use of capital and knowledge; requiring long-term investment decisions to develop processes and buy equipment (that can take more than a year to manufacture); using high levels of technology and R&D and intangible investments (training, improvements to business process) to support innovation; requiring a flexible workforce with strong specialist skills in the areas of science, technology, engineering and mathematics and design; and competing in international and domestic markets.

4.15 Examples of successful UK advanced manufacturing sectors include: aerospace; life sciences; automotive; pharmaceuticals; chemicals; food and drink; and construction products, materials and systems.

4.16 The government's stated goals for advanced manufacturing, over the next 10 years, are to:

- grow manufacturing in the UK
- make the UK Europe's leading exporter of high value goods and related services
- increase the proportion of the workforce seeking, and capable of, a career in manufacturing.

4.17 The government has identified the following barriers to advanced manufacturing growth:

- innovation and knowledge transfer
- accessing skills and training
- access to finance
- exporting
- regulatory issues
- energy costs and security of supply.

### **The Plan for Growth**

4.18 The *Plan for Growth*, published alongside the Budget in March 2011, set out four overarching ambitions. These were to:

- create the most competitive tax system in the G20
- make the UK one of the best places in Europe to start, finance and grow a business
- encourage investment and exports as a route to a more balanced economy
- create a more educated workforce that is the most flexible in Europe.

4.19 The *Plan for Growth* also set out a number of ‘actions’ to encourage growth in the advanced manufacturing sector, following consultations as part of the growth review:

- extending the capital allowances short life asset regime for plant and machinery from four years to eight years, from April 2011, more closely aligning tax and economic depreciation
- expanding the University Technical Colleges (UTCs) programme, to establish at least 24 new colleges by 2014
- launching a high value manufacturing Technology and Innovation Centre
- funding nine new university-based centres for Innovative Manufacturing by 2012
- funding a programme of new Manufacturing Fellowships
- bringing forward the launch of the new enhanced Manufacturing Advisory Service with an additional £7 million to deliver its services over the next three years
- a £74 million programme of targeted support to help smaller employers access Advanced Level and Higher Apprenticeships
- supporting the development of a new degree-equivalent Higher Level Apprenticeship which will include incorporating engineering status and professional recognition for successful apprentices when they graduate



## Industry policy in the UK and Germany today

- a strengthened strategy for promoted STEM [Science, Technology, Engineering and Mathematics] skills
- a high profile industry showcase alongside the 2012 Olympic and Paralympic Games and roll out of a programme of ‘Made in Britain’ exhibitions
- promoting a new international prize in engineering, working with private sector partners to create an endowment to support such a prize.

### Manufacturing Advisory Service

4.20 The *Plan for Growth* announced that the government had committed £50 million over three years from April 2012, to provide an enhanced Manufacturing Advisory Service, tailored to suit the needs of individual businesses and the local economic environment.

4.21 In October 2011 the government announced that the MAS would become nationally rather than regionally provided, and that it would specifically focus on SME growth.

### Technology and Innovation Centres and other announcements

4.22 In October 2011, the Department for Business, Innovation and Skills announced a £170m package to drive future growth. The package included:

- £140m over six years to fund a high value manufacturing Technology and Innovation Centre, formed from seven research and technology facilities from across the country
- a competition of nearly £18m run by the Technology Strategy Board to fund products inspired through new discoveries and breakthroughs, such as advanced materials, biosciences and nanoscale technologies. The funding for this competition comes from TSB (£15m) and the Scottish Executive (£2.75m)
- a £15m competition for investment into research and development of low carbon vehicles, to be run by TSB and the Office for Low Emission Vehicles and funded through these organisations
- the launch of ‘See Inside Manufacturing’, a new initiative piloted by the automotive sector, where the sector “opens their doors to students and young people to help change the perception of careers in the sector and attract the next generation of engineers and technicians”.

4.23 The government has also announced its intention to increase the proportion of tax revenues from environmental taxes. In August 2011, the government outlined a range of policies to support the green economy in its report, ‘Enabling the Transition’, and has established a high level, tripartite Green Economy Council to advise government on its strategy.

### Autumn Statement 2011

4.24 Alongside the Autumn Statement of November 2011, the government published actions from the second phase of its growth review, its National Infrastructure Plan and an update on every measure announced in *The Plan for Growth*.

4.25 Elements of the second phase of the growth review included:

- creating a £20bn National Loan Guarantee Scheme, to lower the cost of loans to small businesses, and a £1bn Business Finance Partnership, which will lend to mid-sized businesses and SMEs in the UK through non-bank channels
- increasing the Regional Growth Fund by a further £1bn
- providing £45m of support to UK firms wishing to export, doubling from 25,000 to 50,000 the number of SMEs supported and making similar support available to mid-sized businesses
- making 100 per cent capital allowances available in six Enterprise Zones (Black Country, Humber, Liverpool, North Eastern, Sheffield and Tees Valley)
- making available around £250m from 2013 to support energy intensive industries manage the costs of electricity, including increasing the relief from the climate change levy on electricity for Climate Change Agreement participants to 90 per cent
- an additional £200m for science capital investment.

4.26 The National Infrastructure Plan included a new approach to financing infrastructure, by leveraging £20bn of private investment from pension funds.

4.27 Alongside the Autumn Statement, the government announced that it will invest as UK Green Investments (UKGI) in green infrastructure projects from April 2012, ahead of obtaining state aid approval for the Green Investment Bank. Non domestic energy efficiency will be one of the priority sectors for UKGI, which will make available up to £100m in the next financial year for commercial and industrial energy efficiency projects.

4.28 On 17th November 2011, the Prime Minister, Deputy Prime Minister and Leader of the Opposition launched a new £1m Queen Elizabeth Prize for Engineering, which has been endowed by a range of private sector partners and will be awarded bi-annually, starting in Spring 2013, by the Royal Academy.

4.29 On procurement, the Minister for the Cabinet Office announced on 21st November 2011 a package of measures, including: publishing £50bn of potential business online; making it 40 per cent faster to do business with government, and collaborating with business at a much earlier stage in the procurement process.

## Industry policy in the UK and Germany today

### Germany

4.30 It is, perhaps, a misnomer to speak of German industrial policy, because of the central position of industry in the German economy: the entirety of German economic policy is geared around the strengthening of its industry. World renowned major corporations, such as Siemens, Volkswagen, Allianz, SAP and BASF, which are listed on the German share index (DAX) are supplemented by tens of thousands of small and medium-sized enterprises (employing up to 500 people) in manufacturing. These are the 'mittelstand', they are regarded as the backbone of the German economy and they provide the majority of apprenticeships for young people. In Germany, five million people work in industrial companies.

4.31 There are, however, a number of features of German industrial policy, loosely termed, that should be borne in mind. First, Germany currently spends around 2.6 per cent of its GDP, clearly above the EU average of 1.9 per cent (2008) on research and development. Together with the federal states and business, the Federal government is planning to increase spending on R&D to three per cent of GDP by 2015.

4.32 Second, Germany enjoys broad commitment to the Social Market Economy. This is less a distinctive government policy, more a generally shared attitude, yet it relies on support from government to make it work. According to the 'Facts about Germany' handbook from the German Embassy in London:

4.33 Germany is a social market economy, in other words: The state guarantees the free play of entrepreneurial forces, while at the same time endeavouring to maintain the balance ... The social partnership of trade unions and employer associations is enshrined in the institutional settlement of conflicts as outlined in the collective labour law. The Basic Law guarantees employers and trade unions independence in negotiating wages, and they accordingly have the right themselves to select the working conditions.

4.34 Third, co-determination, a concept which goes back to the 19th century, ensures the right of workers to participate in the management of the companies they work for. Known as Mitbestimmung, the modern law on co-determination is found principally in the Mitbestimmungsgesetz of 1976. The law allows workers to elect representatives (usually trade union representatives) for almost half of the supervisory board of directors. The legislation is separate from the main German company law Act for public companies, the Aktiengesetz. It applies to public and private companies, so long as there are over 2,000 employees. For companies with 500-2,000 employees, one third of the supervisory board must be elected.

### Wage moderation

4.35 More controversially, critics argue that wage moderation has been a major feature of German economic policy in recent years. According to this

view, Germany has enjoyed a competitive advantage by keeping wages low as part of an export-driven industrial policy.

4.36 Germany's export success is undoubted. Germany was the world's largest exporter until 2010, when it relinquished this position to China. It is also true that German wages have remained low, although the reasons for that are disputed.

4.37 Martin Behrens is Head of the European Industrial Relations Unit at the Hans Bockler Stiftung, the research body financed by employee representatives on Supervisory Boards. Martin describes criticism around German suppression of wages as a "hot debate". He believes that German workers have faced real wage losses for at least ten years, but there is no single reason for this. German union density is now below 20 per cent of the active working population, although 60 per cent of workers are covered by collective bargaining. In some instances, German wages are lower than they would otherwise be because unions do not have the negotiating strength to improve them.

4.38 Martin says: "Some critics from the unions' left say this is part of an economic model which is not sustainable because it is an export driven model and it is a lack of solidarity vis-a-vis workers in other European countries.... On the other hand, some of the union representatives who signed these collective agreements which are accused of wage moderation say, 'Do you really say that we as a union voluntarily leaving the bargaining table with money still being on top of that table ... is this a story you want to tell us?' In other words, Martin believes that wage moderation is often more a reflection of the fact that unions do not have the bargaining power than some believe them to have.

## Section five

# Evidence from Germany

5.1 The following section presents evidence gained from interviews with senior managers, trade union officials and works council members in five German companies: Volkswagen; Siemens; ThyssenKrupp; BASF; and Airbus. Interviews were carried out between June and October 2011. They covered a range of issues, including the economic downturn, the rise of Brazil, Russia, India and China, skills, industrial relations and the role of government in supporting industry.

## Volkswagen

5.2 Volkswagen AG is one of the largest automotive manufacturers in the world. It has a total of 65 plants, 13 of which are in Germany. As of 31st December 2010, it employed 168,000 people in Germany and 215,000 elsewhere in the world. In 2010, it had a turnover of 126.9bn euros and made a profit of 7.1bn euros. In September 2010, the number of employees in vocational training across the Volkswagen Group exceeded 10,000 for the first time. Its brands, apart from Volkswagen itself, include Audi, Skoda, Seat and Bentley. Examples of Volkswagen cars include the Polo, Golf, Passat and the iconic Beetle.

5.3 Volkswagen's intention is to be the biggest motor company in the world, an intention it believes to be realistic. It plans that this will be achieved partly through acquisition, such as the integration of Porsche, but also through organic growth. This year, VW has increased its production by 1.2 million cars, equivalent to the total output of Audi.

5.4 The two biggest immediate industrial challenges facing firms in the UK are recovering from the economic downturn and competition from the BRIC (Brazil, Russia, India and China) economies. Neither of these challenges have caused significant problems for Volkswagen.

5.5 Martin Rosik, VW's Human Resources Manager, sees globalisation as an opportunity, not a threat: "The Chinese market is important. The South American markets, the BRIC in general. We are in Brazil already. We have had a factory in the US and we have gone back there now. We were one of the first car producers that went to China. We have two big joint venture partners. We are doubling our factory capacities and have strong growth in Russia."

5.6 Mr Rosik adds: "But the other thing is new cars for segments of the market we were not in before, for example the pick-up truck Amarok. This is promising a growth of 100,000 to 150,000 cars per year in a market we are

not in yet. So growing markets, recovering in old markets like the US and attacking new segments of the market that we are not in yet. Small cars are another segment that we attack right now and adjust to local needs. So if there is a piece of technology that is needed in Germany but we could leave out in India, that could allow a competitive price at the level of technology that is needed in India.”

### **‘The Platform Strategy’**

5.7 Central to Volkswagen’s productivity levels is the Platform Strategy. This allows large sections of the generic make-up of several cars to be produced on one production line, with additional parts then added to give each car its distinctive characteristics. Martin Rosik says: “the basic part you perhaps buy five million times, but by buying additional parts and modules you can put it into a big number of different models. If you are able to have shared parts for 50 per cent of the car, it is still a different car, very much a different car, but it is an extraordinary advantage in pricing.” Such economies of scale assist VW’s competitiveness: “It is a big problem for BMW, because Audi [BMW’s competitor car] has the big Volkswagen company behind it, and has shared parts with Volkswagen, Skoda, Seat and so on, and able to have shared parts.”

5.8 The Platform Strategy links with the Volkswagen Weg (‘Volkswagen Way’). According to management, the Volkswagen Weg combines a high degree of standardisation with a significant amount of independence for teams and individual workers. Dr Frederic Speidel is a full-time IG Metall official who works at Volkswagen in Wolfsburg. Dr Speidel says: “The Volkswagen Way was introduced in 2005. It is influenced by the Toyota Production System, but also by Audi, which belongs to the VW group but has a very autonomous way of dealing with issues like production.” Before the Volkswagen Weg, VW was comparatively unproductive, needing perhaps twice as many hours to build a Golf as Toyota needed to build a Corolla. One senior manager had ideas around selling parts of Volkswagen and even perhaps ending car production in Germany, an idea described as “the horror scenario” from a trade union perspective. Such ideas were not pursued, but some, less radical suggestions were.

5.9 Volkswagen enjoys excellent industrial relations, but the Platform Strategy has caused tensions. Dr Speidel says, “The Works Council and IG Metall agreed to improve processes, but did not accept a pure adaptation of the Toyota Production System. We did not agree with 100% standardisation, we said this way was not compatible with co-determination. To us it was very frightening.” A new phase of the Platform Strategy, called the ‘modular transverse toolkit’, is due to begin in 2012. It will be possible to build more than 40 models on such a platform. Dr Speidel says, “IG Metall is looking at this with concern and will try to regulate this introduction. We will say yes, but at the same time you have to guarantee all the existing jobs in Wolfsburg.”

## Evidence from Germany

### Industrial relations at Volkswagen

5.10 The Works Council and Supervisory Board at Volkswagen are both very important, even by the standards of German industrial relations. Because of its size, there are 65 Works Council reps (62 of which are IG Metall members) and 20 members of the Supervisory Board, 10 from management and 10 employee representatives. Any decision needs a majority, meaning that there must be at least one Works Council member to vote for it. However, if there is no majority for a decision after a first round of consultation, a second round takes place. At the end of the second round, the Chairman has two votes, meaning management's proposal can be pursued. In practice, decisions are rarely taken on that basis. Furthermore, the state of Lower Saxony is a shareholder in Volkswagen, giving it two management seats on the Supervisory Board. Given that Volkswagen has five plants in Lower Saxony, the state's interest is often in employment issues, making it likely to be sympathetic to union concerns. Finally, major decisions like the opening of new plants or the relocation of plants require two thirds majorities, so can be blocked by trade unions.

5.11 In practice, this changes the way both management and trade unions operate. If management want to make changes to increase the success of the company, they have to ensure that they convince the Works Council that this is their intention and the changes proposed are likely to be successful. From a union perspective, the power to say no may be there, but it must be exercised judiciously, otherwise the company may simply end up being unproductive and unprofitable. The outcome is that major decisions affecting the fortunes of the company are discussed and major decisions taken before votes come to pass.

5.12 Martin Rosik says: "From my point of view, co-determination does not make it more difficult to take important decisions, but it depends on the way this kind of influence is used by the labour representatives and the company. There is a big common sense that competitiveness and labour welfare are directly linked to each other." Mr Rosik adds: "Labour representatives expect the company to be competitive, they force the company to be competitive, and take care of the interests of their members. Here you don't have the classic understanding of what is whose role in this game. It's a question of how the unions use their influence. They use it in a way that is not combative, it is handled in an aggressive way if necessary, but it is co-operative. If you have a conversation on a matter of importance, and you have a partner and you discuss with this partner, if he only gives you the answers you expect to hear, you wouldn't ask him anymore."

### Skills

5.13 Skills are a big issue for German companies. There is widespread support for Germany's 'Dual System' of training provision (discussed below), but world class companies compete for the best talent. Volkswagen realise that

young engineers or technicians, especially the most talented, have other companies to choose from and need to find ways to attract them. The falling birth rate also means that fewer young trainees will come through in future years.

5.14 The number of teenagers coming to Volkswagen is regulated by a collective agreement, which has existed since 2005. The last five years has seen the growth of a vocational training system that includes academic elements, called the Dual Academic System. 1,250 young people start their vocational training at Volkswagen in Wolfsburg each year, of which about 150 are academic trainees. Volkswagen understands the need to upgrade its vocational training system.

5.15 Dr Speidel says: “There is a high demand for vocational trainees in Volkswagen and Volkswagen tries to anticipate this development. We will have a demographic situation in 10 years and there we might have a shortage of young vocational trainees and in order to anticipate this shortage, VW has said every year we will employ 1,250 trainees. There is always an issue of how to find and to keep good engineers here. Volkswagen is competing with Siemens, the other car makers, with other regions in Germany which seem more attractive to young academics. This is a challenge for Volkswagen, to be able to get the best qualified people from universities and polytechnics, not so much vocational trainees. Vocational trainees, we might get 10,000 applications and one tenth can start here, but it is a bit different with the high potentials.”

### **The economic crisis**

5.16 The economic crisis did not cause major problems for Volkswagen. What is more, it has reaffirmed the importance of traditional industries in the German consciousness. Thymian Bussemer of Volkswagen’s Industrial Relations Department, says: “According to the standards of the EU25, Germany’s public budget is quite OK, and it is in the traditional industries where all the jobs have come up. This is a really major shift. Before the crisis, the overall mindset was to say that the traditional industries were almost over, but now we have a heavy return to the politics of appreciating industrial policy. We are an industrialised country and we will remain that way for several decades.”

5.17 Martin Rosik says: “With the crisis, we went back to Keynes. It was a perfect example of a Keynesian economy, what we did in the last two years. At the moment, we face the most difficult part of Keynes, which is to recover the deficit spending. The surprising thing is that it works, from my point of view. In Germany, if you look at the unemployment rate, it’s crazy but it needed a worldwide bank crisis to recover the German unemployment rate. This worldwide crisis led to more or less worldwide co-operative policies, demand increase policies, and obviously it works. Unemployment is below three million



## Evidence from Germany

and it is years since we had that. The tendency is that it will be better this year.”

5.18 Dr Speidel says: “In 2008-9, we were alarmed, the whole of Germany, because demand crashed within a couple of days. The machine tool industry in southern Germany was in a disastrous state. The luxury car companies, such as Mercedes and BMW were in a very bad way at this time. The Grand Coalition allowed a lot of good direct communication between trade unions and the government. We were able to bring in our politics, our ideas, our trade union concerns. We could provoke the government to introduce two very good things in order to maintain employment, to inhibit a huge wave of collective redundancies.” Germany's social market model provided the country with an important means to respond to, and mitigate the impacts of, the global financial crisis.

5.19 Dr Speidel continued: “The law on short time working, which was limited to six months, was extended so that companies could have short time work for 18 months. It was eventually extended to two years. Mercedes had over one year of short time work. VW only had one week. Demand did not go down because of the second measure, which was state subsidy for old cars. A subsidy of 2500 euros if you got rid of your old car. VW added an ecological subsidy, making this up to 5,000 euros. This was about 25 per cent of the cost of the car.”

5.20 In addition to these two measures, Dr Speidel believes support programmes elsewhere in the world came to Germany's aid: “Other countries like the US, other countries in Europe were intervening in the crisis and these programmes were very important in keeping demand in Germany alive. It was not only German virtue which saved the industry, but also Keynesian politics worldwide.”

5.21 Relations between the German SPD and trade unions had cooled under the Chancellorship of the reformist Gerhard Schroeder between 1998 and 2005 and Dr Speidel believes that, ironically, this strengthened the unions during the crisis as it meant both sides had an incentive to work hard to rebuild their relationship and show each other they could work together: “One year after this time, we would have had a liberal-conservative government and we wouldn't have been half as influential on the government. That was a very good window of opportunity ... When the crisis happened, the SPD had a very bad conscience towards the labour movement, so this was a good opportunity for the SPD to show the workforce, ‘We are still your advocates’. In fact, for resolving the crisis, it was good that we had this problematic past.”

## The environmental agenda

5.22 The other major challenge for the motor industry is the ‘green’ agenda. This could be interpreted simply as a fall in demand for cars, as people try more and more to use public transport. Or it could be seen as the race to build

green cars. From the perspective of industry more generally, there is also the issue of using green, or greener, production techniques.

5.23 Martin Rosik believes it is of growing importance to try to be the greenest carmaker. He says: “That is related to the development of the public mindset. Only in the last five years have we made changes that increase fuel consumption by 10, 15, 20 percent. There you can see we were not focused on this development before, but with the changing mindset this became our focus and obviously there is a lot of opportunity, even to help with conventional motors adjusted to new means.”

5.24 The Volkswagen Passat is built at the company’s factory in Emden. This has introduced a range of green energy processes, of which the company is very proud. Indeed, the plant hopes to achieve CO<sub>2</sub> neutral status for its production processes. It’s most recent project began at the end of 2009, when an “energy forest” was planted across a previously unused area of the plant, covering 400,000 square metres. The forest, in which fast growing trees are planted, is designed to be harvested every three to five years and in the future, environmentally friendly heat will be generated from this biomass. For each year the forest is harvested and for every hectare cleared, the biomass from the trees will replace the need to use some 5,000 litres of heating oil, saving up to 18 tonnes of CO<sub>2</sub> emissions in the process.

5.25 Volkswagen Emden has also been home to one of Lower Saxony’s largest photovoltaic plants since 2007, when the investor and operator KP-Solar installed 2,300 solar modules on the roof, covering a total area of 3,000 square metres. These solar modules generate 350 megawatt hours of power every year, the equivalent of the annual power consumption of 100 four-person households. The modules also help to save over 187 tonnes of CO<sub>2</sub>.

5.26 Meanwhile, the world’s most powerful wind turbine was recently installed at Emden. This has a nominal capacity of six kilowatt hours, equivalent to the energy requirements of around 5,000 private households. This latest turbine brings the number of wind turbines at Emden to eleven.

5.27 IG Metall recognises the green challenge, and the positive attitude of the company towards it, but questions whether enough is being done. Controversially, the pressure to be environmentally friendly has raised the question of whether Volkswagen should diversify away from cars. Dr Speidel says: “Volkswagen tries to see the environmental agenda as an opportunity, a challenge. Volkswagen knows that it can only grow with a strategy which is aware of the ecological question and introduces ecological concerns into the company strategy. The engine policy is relatively innovative in that respect, other things have been introduced, but it is still not enough and the deciders among the Works Council know that.”

5.28 Dr Speidel adds: “We need to add to the classic field of building cars. There is a huge debate on going into new products, it is controversial. The

## Evidence from Germany

Head of the Company has said we should be very careful, past experience shows that companies which diversify do not succeed, we must be the best car maker. This is the rhetoric. We would say we have to be the greenest car maker. But if you look behind their publicity, what is there? We still have the problem of CO2 emissions, which will be regulated by Europe. The ecological question is omnipresent.”

5.29 “I would say we are still at the beginning of bringing this question into the company. Electric cars, smaller engines, but there are still a lot of uncertainties towards electric cars, we still don’t have a battery to make this a mass strategy. VW would say we need several types of engines for the next 10, 20, 30 years, every region needs its special car type.”

### The role of government

5.30 Having survived, even thrived, during the economic downturn, it is unsurprising that managers at Volkswagen do not seek greater government intervention to support industry. They have no need. They are critical of the role of the US government in stepping in to support General Motors, believing that the economic downturn was used as an excuse to do so. Martin Rosik says: “government should not repair the mistakes of management, as an economist I would say this is where industry has to learn the lessons. There you can discuss the US and look at General Motors, where the state stepped in. It’s worth discussing whether they should have let them down.”

5.31 Interestingly, Thymian Bussemer, believes the government has a role in supporting the Social Market Economy: “This is very strong in Germany, which means that there is a very close interaction between enterprise, especially big ones, the welfare state, the unions. We saw that in the crisis. The main contribution of the German state is to provide stable industrial relations and to provide the welfare state which linked up with the companies.”

### Siemens

5.32 Siemens is an integrated technology company and is one of the best-known engineering companies in the world. It has a presence in 190 countries across the globe. 336,000 Siemens employees work in 1,640 locations around the world, including 176 Research and Development facilities. One of the largest private sector companies in Germany, Siemens employed 128,400 people there in November 2010. Siemens in Germany had revenue of 11.4bn euros during the fiscal year 2010. New orders totalled 11.9bn.

5.33 Siemens in Germany was not badly affected by the economic downturn, partly because of unrelated activities taking place just before. Siemens was reducing jobs and costs, transforming its processes, so in the words of Harald Kern of the Siemens Works Council at its Nuremberg plant, “We were prepared for something completely unprepared”. Short term businesses were

affected and some jobs were lost in Siemens plants outside of Germany and outside of growth markets, such as China, India, Russia etc. The company in Germany was prepared to use the government's short time working policy if necessary, but then saw orders coming in, making this unnecessary.

5.34 Siemens has a policy of time accounts, so during very busy times, employees can credit hours rather than being paid more. Then, when work levels are much lower, employees can work less hours, with their credited hours making up the difference. A local agreement was reached at Siemens' Nuremberg plant, allowing for the building up accounts for a long period of crisis. It was planned to exhaust the accounts before resorting to the short time working scheme. In fact, large accounts turned out to be unnecessary in Nuremberg.

### **Siemens and the BRICs**

5.35 The other great challenge for western companies, the rise of the BRIC economies, is seen as both an opportunity and a threat by Harald Kern. Harald says, "Siemens offers the German art of engineering," before adding, "China is buying certain products today, but Siemens has to ask what they will be buying in three or four years. Then we are able to have a decent living for our colleagues". Guenter Drindle, the Head of the Factory, agrees, arguing that Siemens is more and more a global player. Its factories in Russia and China are very important. A factory like Nuremberg has the task of supporting those factories. Drindle says: "Sure, work will go from Germany to countries like Russia and China, but in every order we have a chance to bring a little part back here. It is more important to be the technology leader, to develop knowledge here."

5.36 Harald Kern sees the future of Siemens in cities. The company is involved in technology clusters. Globalisation and the infrastructure needs of great cities all over the world are seen by Siemens as influencing the future of its business. Certain technologies, for example electromobility or the question of the smart grid (seen by many as the future of IT), which will mean that every individual is able to communicate all over the planet: "The future will be the systems, meaning, for example, the grid, or your household, are able to communicate with each other, this is the next step, so something like intelligent products, these are the technology clusters that we are interested in."

5.37 Kern develops this theme further: "There are mega-trends, one of those are the cities of the future, those mega-cities, are becoming more obvious. Have a look at London, for example. We try to answer the question, what will London look like in 2020 or 2025? What are the major things that need to change in a city like that? For Siemens, that is a kind of a headline, a possibility to develop business. All those things that are changing, regarding infrastructure, smart grid, locally engineered energy sources, waste water, I can go up the list, this is the business of Siemens. You have to grasp it in the right

## Evidence from Germany

way because it is becoming more and more important. The questions are the same but the answers are different, depending on where you are. It is different if you are in London than if you are in Mexico, for example.”

5.38 Like Volkswagen, a great challenge for Siemens is to attract the best young talent. The Nuremberg plant has about 200 apprentices, although it trains apprentices for other companies or other parts of Siemens (around 50 apprentices are trained specifically to work at the Nuremberg plant). It also has a special department on site whose job is to maintain contacts with different universities and research institutes. Contact with students is important, in order to attract them to the company. The main industry competitor is Alstom, although geographically, the main competitors in Bavaria for highly skilled and talented young workers are Audi and BMW.

5.39 As with Volkswagen, Siemens has introduced a production system based on the Toyota model. This system covers the whole of Siemens in Germany and is regulated by the Works Council. The Works Council recognises the difficulty of change in a company like Siemens, given the number of people it affects and the cost it implies. The Works Council also understands the importance of productivity and competitiveness to company success and, therefore, jobs. Harald Kern says, “Productivity and things which change the cost basis are the question for the future or our colleagues. Responsibility for this is management’s, but needless to say we influence it.” Kern adds, “We see on the side of the Works Council that we have to improve the situation because if we lose that possibility, we lose our model as a lean factory. If you [implement the production system] in the right way, there is more space for employees. It depends that the employees are very involved in the system, they accept it and they work with the system. It is also the main problem to convince the people to do this. There is a general fear of change. Always a problem, for everyone, change.” This can be the fear that productivity will lead to job losses.

5.40 Both Harald Kern and Guenter Drindle speak favourably of industrial relations at Siemens in Nuremberg. Drindle, like Martin Rosik at Volkswagen, sees the Works Council as a route to meaningful dialogue which, ultimately, strengthens the company: “You have to know what your team are thinking. There are always some situations that your team members are discussing on the shop floor and with the Works Councils they can discuss these with members of management. It is important to share these opinions, to share thinking.”

5.41 Paradoxically, both management and unions recognise that there is a “conflict of interest” between their two positions, but it is this recognition, and the understanding of the legitimate interests of the other, that makes the relationship work. Harald Kern says: “Someone has to deal with the interests of the company, in terms of the management, and on the other side in terms of the employees. This is a conflict; the question is how do you handle the

conflict. If you have respect you resolve in personal ways, these are basics, the question is do you have a language in common? I think when I look over the other side of the Channel, this is the beginning of your problem, because you don't have a language with each other. If you have a conflict, you have to speak about the same thing, mean the same thing when you talk about it. You have to be crystal clear. You have to be at eye-level with each other and say, OK, this is our point of view, this is your point of view."

### **Siemens in Germany and in Europe**

5.42 Harald Kern believes that Europe will have to work more closely together if companies like Siemens are to continue being successful. Harald says: "Our problem is the internal market in Germany. I don't think we would have a chance as a single country, in five or ten years, Germany's productivity is due to the situation that we are so highly networked into the European system... Our success is a European success." He also believes that it is important for companies to remain well linked into global markets: "if we want to cope with some big players like China and the US and India, our globalised economy is based so much on networking with each other we cannot say we don't bother with what is going on in China."

### **The 'green' economy**

5.43 Guenter Drindle argues that the green economy is providing opportunities for Siemens. At Nuremberg, the company is producing motors and equipment for electric cars and for hybrid buses. Harald Kern says that Siemens' major idea is to become a green company. In his words: "Green means everything that has to do with energy efficiency. The question from the client is always: What is the reason I should pay something or should I buy something from Siemens? In your product you have more than just what you sell. We have high efficient turbines, we have our own wind generators, we have solar panelling, so the answer [to the question of whether the "greening" of industry is important] is yes, yes, yes."

5.44 The German government is co-ordinating discussions between unions, employers, the government and universities, to address the implications of policy decisions such as the electrification of cars and the closing down of nuclear plants. Of course, this creates winners and losers and powerful companies, from the energy and automotive sectors, which are important to the German economy, are making their voices heard. Siemens is in the strange position – "between the bark and the tree trunk", as Harald puts it – where if electrification and denuclearisation go ahead, this creates opportunities for Siemens' products, while companies currently operating in those sectors are also Siemens' clients.

## Evidence from Germany

### The 'Mittelstand'

5.45 Harald Kern argues against deindustrialisation, saying that an industrial base is vital for a strong service sector and this is something that Germany got right: "That was quite a struggle between the trade unions, the government and the employers, but there is also an understanding that you have a middle class economy that is very important in Germany, these are the small[er] companies and I think this is something that is [different] in the UK, they don't have that kind of role. This is something we thought about. I don't think things should be the same everywhere, there should be space for individual historical structures."

5.46 Harald believes the UK made major mistakes by de-industrialising in the 1980s and allowing finance to play such a central role in the economy. So what should be done? "The first thing a government has to do is to say we have a problem. I haven't heard that [in the UK] yet... The first step would be to say that something is wrong, we need industry, we need the backbone of the small[er] companies over the country. Where are the people who are making the investments, who are innovating, who are developing the companies of the twenty-second century, in the UK? ... Globalisation is nothing new, the big difference is the globalisation of financial markets and their interests in easy and very big margins."

### Lessons for Germany

5.47 So what could Germany do better? Identifying a common problem between Germany and the UK, Harald Kern laments the privatisation of energy: "We also have the problem that we privatised the energy sector over 20-30 years ago and as a result there is no money put into the networks, the grid. You have the same situation in the UK."

5.48 Harald is also aware of Germany's export led industrial policy and its consequent low wages, although he argues that this is more of a problem for unorganised workers: "We have a situation where we are the focus of our European colleagues, and because of that, in the last two or three years we have [earned] a bit more, so we don't have a problem where we have general agreements, our problem is where we don't have agreements and so we have contract workers. That was the working market that was rising very fast in the last two years. In those low wage areas we have jobs where people cannot get a living out of it. This means they get money from the government, so in the end the employer gets cheap workforces. For me it is quite funny, because these are the same people who believe in the forces of the market, but they make a market of their own and I don't think this is either fair or very positive."

5.49 Harald would also like to see better co-operation between universities and industry across the eurozone: "German universities are very old fashioned and I think co-operation might be an answer to a lot of problems we have, to

get more people interested and getting something like a push into the innovation system. Within the eurozone university system, there is a chance for work students, when they study they have some time in a factory in an industrial area. This is something young people are carrying for themselves. A programme to take those things forward, so that when the people are just qualified, it might be possible to work with universities so that one year they get a break to improve their knowledge and then get the back into industry to operate on certain projects, this is an area where we could improve.”

## Thyssenkrupp

5.50 Thyssenkrupp is an integrated materials and technology group. Among its products are steel and stainless steel, and elevator and components technologies, including for the automotive industry and marine systems. In the 2009-2010 fiscal year, Thyssenkrupp generated sales of more than 42bn euros.

5.51 Headquartered in Essen, the company employs 178,000 people worldwide, in around 80 countries. Just over one-third of Thyssenkrupp’s total workforce, around 66,000 people, work in Germany. Thyssenkrupp employs another 40,000 people elsewhere in Europe (35,000 of them in EU Member States), while the remainder of its employees, totalling 72,000 people, work outside of Europe. These include 20,000 employees in Brazil, 18,000 in the US and 12,000 in China. In the words of Norbert Kluge, the co-ordinator of Thyssenkrupp’s European Works Council, “it is more or less a German-European company, going Far East and America”.

5.52 In the tradition of the German Social Market Economy, Thyssenkrupp is governed by a Supervisory Board comprising 20 members, 10 being from management, one being a representative of executive staff, and the other nine being employee representatives. Among the latter, there are three trade union officials from outside the company and six Works Council members. On the current Supervisory Board, all Works Council members are also trade unionists, a trade union aim that has been achieved. One of the full time trade union officers, Bertin Eichler, is Vice Chairman of the Supervisory Board. What is more, nobody could become the Labour Director at Thyssenkrupp without the support of IG Metall. This means that the he or she will have close relationships among the trade unions and, indeed, the current Labour Director, Ralph Labonte, has worked for the company, at a corporate level, for a long time, but originally was a trade union officer. He has never lost his contact with the union.

5.53 There are more than 104 members of the European Works Council, covering about two-thirds of Thyssenkrupp employees (i.e. those based in Europe). Half of these are German and half are from elsewhere in Europe. There are 45 members of the Group Works Council in Germany. There are seven business area Works Councils, then there are local Works Councils, 230 across Germany as a whole, within the various Thyssenkrupp businesses, from



## Evidence from Germany

a one-person council to 35 person committees. Once a year, there is a meeting of 350 senior Works Council members, 250 from Germany and another 100 from European Works Councils.

### Responding to the economic downturn

5.54 Like other countries, Thyssenkrupp was hit by the downturn, but the company began to find flexible ways to deal with the crisis without resorting to redundancies. Thyssenkrupp's components technology branch is a big supplier to Germany's automotive sector, so its prospects were tied up with those of the motor industry. Pressure was put on politicians to respond flexibly to the situation. Norbert Kluge says, "There was the great big coalition between the Christian Democrats and the Social Democrats, and the Labour Minister was a Social Democrat, and we made them aware simply that they needed the highest interpretation of the German labour market rules to help these people." Such help included protection of wages, as well as initiatives around skills training, which Norbert believes were successful: "I think this is why you read in the newspapers everyday that German industry came out of the crisis better than others."

### Globalisation

5.55 Globalisation, particularly the entry of China, India, Brazil and Russia into the world economy, is seen as an important new source of market growth by management at Thyssenkrupp. Charlotte Platzkoster, the co-ordinator of the Group Works Council at Thyssenkrupp, says: "India and China... this is the growth market and this is what the Executive Board always tells us." Such an attitude has an obvious effect on the company in Germany. Charlotte says: "All the investment money goes to these states and, of course, this means a kind of threat for us because they invest in Brazil and China in huge new companies and less investments are made in Germany ... we can't compare with Brazil, the plant they have is brand new, they have the best standards in technology... so this is the threat, not globalisation and growth in those markets in general."

5.56 Under a more adversarial approach to industrial relations, such a situation might make trade unions defensive, but in the German Social Market Economy model, employee representatives try to judge such developments from the point of view of both the health of the company and the need to protect the interests of the workforce. Norbert Kluge says the Works Council members recognise that Thyssenkrupp can only remain competitive in the world, in its niche area, if it gets bigger. Thyssenkrupp is the seventh biggest steel producer in the world, but for a company with its ambitions, this is not good enough. So the Works Council members unanimously backed the investment in Brazil, putting aside any doubts and concerns about this decision in support of a better global company perspective. But they used their bargaining power to argue that, in return, some reassurance was needed for

German workers. They sought agreement that an investment of 1.7bn euros could be made in Brazil, provided that an investment was also made in the German steel plants, to make them fit for the future.

5.57 In fact, problems with the Brazil investment, coupled with the timing of the economic downturn, meant that the German investment has not happened. The amount of money needed to make the Brazil plant competitive rose, finally costing Thyssenkrupp 5.8bn euros. What is more, retrenchment at the time of the downturn meant that, with such a large investment in Brazil, there was no money left for Germany. This led to great criticism of management from employee representatives and the situation is still ongoing, with employee representatives arguing that, before any more money is invested abroad, the agreement to invest in Germany should be honoured.

5.58 More generally, components technology must travel with the industries it serves. Prospects for growth in the automotive sector are in the Far East and America; expectations of growth in Europe are modest by comparison. This means that components must be produced in the same country as the motor cars in which they are used. This is true for the main clients of Thyssenkrupp components technology, which are the German premium car manufacturers, BMW, Mercedes, even Volkswagen and Audi. It means Thyssenkrupp must go with them, to China, to Malaysia, to the US, to Brazil.

### **Apprenticeships and the shortage of young people**

5.59 Thyssenkrupp has about 1,600 apprentices in Germany, with more in other countries. However, in the German steel plants, the company has what Charlotte Platzkoster describes as “a huge demographic problem and it will get bigger within the next years”. One problem is that different sections of the business are not considered to be adept enough at learning from the success of others in attracting or retaining talent. Another is that the steel sector, a major part of the Thyssenkrupp business, is considered by potential new entrants to be dirty, compared to other industries. Charlotte says: “I think some of them think, ‘Why should I do an industrial job, where I get dirty, where the temperatures are from 10,000 degrees to minus something, and its loud, why should I do that if they don’t pay me that much, because there is demographic change and I could probably get another job, which is more easy?’” Norbert Kluge believes the company should offer longer term contracts to attract young workers into less glamorous industries.

### **Structural change within Thyssenkrupp**

5.60 A new Chief Executive, Heinrich Hiesinger, formerly of Siemens, is set to restructure Thyssenkrupp, selling some units and seeking strategic partners for others, with a view to cutting debt and investing in emerging markets. Under his plans, Thyssenkrupp would sell one-fifth of its businesses, covering 35,000 employees worldwide. Again, this has led to difficult discussions on the

## Evidence from Germany

Supervisory Board. Some employees feel that if there is no money to invest, they would fare better in another company, but there is inevitable uncertainty. Charlotte says: “We just see that a company wants to get rid of activity to gain money, to satisfy the shareholders, and we don’t know what is going to happen now, especially within Germany and Europe.” Norbert also believes this is a decision designed to satisfy the shareholders: “I think the idea behind here, I heard it very often said that Thyssenkrupp will change into a provider of technology, of engineering, maybe of materials, but it is not any longer the idea to be an industrial manufacturer, it’s a provider, this is something the investors will eat.”

### The green challenge

5.61 The Works Council believes Thyssenkrupp should be doing more to enter into green markets, such as wind energy. It sees an opportunity for Thyssenkrupp’s marine division to move into the building of ships to service offshore wind parks. The company could also build platforms, not just ships. In an echo of arguments put forward by energy intensive industries in the UK, the Works Council believes that whilst the production of steel may not be green, the end product is sustainable. For example, materials now used in motor cars allow the car to be used for 10-15 years, which was unthinkable previously. The Works Council argues that producing this kind of material is a success of Thyssenkrupp. Europe is introducing carbon taxes which may push the production of products such as steel outside of the EU, to countries where there are no such pressures on energy intensive companies. This phenomenon, known as ‘carbon leakage’, is a threat in Germany as well as in the UK.

### Industrial policy

5.62 Thyssenkrupp is based in the region (Lander) of North Rhine Westphalia, where politicians understand the importance of core industrial sectors such as steel. This means that the Lander government supports the company to a far greater extent than some other, Berlin based politicians. Charlotte says: “I think the discussion ... in other parts of Germany would be completely different, where they don’t have that much industrial production, they don’t see that it is a working place and they just see that it is dirty.”

5.63 In particular, the fact that Germany pursues the most ambitious environmental standards in Europe, while at the same time its breathtaking recovery from the economic downturn, based on traditional industries, has led to conflicting priorities. Norbert makes the case for traditional industries: “You can see a kind of recovery of industries because of the crisis, the fact of Germany, like ... France and Poland, these are big European countries with a certain [type] of industries, yet they served better out of the crisis. We are not like UK, or like, Netherlands or so on, maybe this is something we should foster, we should be more careful about...”

## BASF

5.64 BASF is a world-leading chemical company. Its products range from chemicals, plastics, performance products and agricultural products, to oil and gas. The BASF Group employs 109,000 people worldwide, 50,800 of whom work in Germany and 69,800 in Europe as a whole. It has subsidiaries in more than 80 countries, including the United Kingdom. In 2010, BASF posted sales of 63.9 billion euros and income from operations of 7.8 billion euros.

5.65 The world's largest chemical complex, and the site of BASF's global headquarters, is in Ludwigshafen. 33,000 people work for BASF SE in Ludwigshafen, making it the largest employer in the Rhine-Neckar metropolitan region. BASF SE is the largest company in the BASF group and holds all the shares, directly or indirectly, of all the companies that belong to the group. In 2010, BASF SE bounced back strongly from the economic downturn, with sales growing by 47 per cent, to 20,741 million euros compared with the previous year.

5.66 BASF operates six Verbund sites. This concept is designed to intelligently link production facilities, energy flow, logistics and infrastructure. This allows the company to increase production yields, reduce logistics costs and save resources and energy. A significant feature of the Verbund concept is the Know-How Verbund, in which BASF employees worldwide can share knowledge.

5.67 In common with all large companies in Germany, BASF SE operates a Supervisory Board. This is made up of twelve members. Lord Green, Minister of State for Trade and Investment in the UK, was a member of the BASF SE Supervisory Board until he took up his Ministerial position at the beginning of 2011. It is common for Executives from other countries to serve on Supervisory Boards in Germany and Lord Green served in his capacity as Group Chairman of HSBC Holdings plc.

### **The economic downturn**

5.68 BASF makes a contribution to many industries, while not necessarily being known for any one in particular. BASF products can be found in products as diverse as motor cars, sun tan lotion and even Coca Cola. Many people struggle to identify exactly what the company does.

5.69 Consequently, BASF's fortunes during the economic downturn varied according to the sector that its products were supplied for. Thomas Peter, a full-time Works Council member based at BASF SE in Ludwigshafen, says that the problems of the automotive industry during the downturn were well known, but healthcare, personal hygiene products and agriculture saw fewer problems.

## Evidence from Germany

5.70 Nobody lost a job at BASF during the downturn. There was some short time working, with government funding to make up wage falls, as happened elsewhere in Germany. Thomas believes this is a key reason that Germany exited the crisis more quickly than other countries. German companies did not lose key workers, who sustained the plants. Some workers went to different plants to their usual workplace and some went into the supply chain, but jobs were not lost.

5.71 The Works Council at BASF has also worked to ensure that job security was maintained. Sonja Daum, who is also employed by the Works Council in Ludwigshafen, describes the agreement that was reached between management and the company at BASF SE, an agreement which will run for five years, until 2015:

5.72 It's a political contract, a political agreement, about qualifications, about training programmes, about learning programmes, about health and safety. It is very important for the employees, because [under the terms of the agreement] it is not possible to give a dismissal to employees because of economic problems. Only if the economic problems are at a very high level, then they can give a dismissal. But if they have a normal economic situation, a good situation or a more-or-less good situation, it's not possible until 2015 to give the employees a dismissal because of the economic problem. If they want to organise this site in another way, [that is considered to be] an economic topic and so it is not possible to give a dismissal to the employees, so it is a very important political agreement for the employees.

5.73 This negotiation takes place every five years. A key objective of the Works Council will be to enshrine this agreement into any new contract.

## The growth of the BRICs

5.74 Between 2011 and 2015, BASF is planning investments of 12.6bn euros, and is active in growth markets in order to continue to grow profitably. BASF has a Verbund site in Nanjing, China, which is a 50:50 joint venture with the China Petroleum and Chemical Company, Sinopec. 1,560 employees work at BASF in Nanjing. As in the companies described elsewhere in this report, BASF workers in Germany fear that plants in growing markets will take work from Germany, although 90% of the products produced in Nanjing are currently produced for the Chinese market. Indeed, Thomas describes China's market as "like a sponge", adding that products made at Ludwigshafen are for the European market.

## Skills

5.75 In common with other major German companies, BASF competes for skilled workers. The company speaks of a "war of talents". BASF is currently training over 2,400 young people in more than 60 occupations in 16 countries.

In 2010, 1115 young people started apprenticeships and traineeships at German Group companies and in the BASF Training Verbund.

5.76 Like the companies mentioned above, BASF faces competition for talent from local rivals, in this case from Porsche. Thomas Peter says it is hard to attract an engineer to a chemical company. The company needs engineers, administrators, marketing, financial and legal skills, and whilst the company is attractive to those wishing to work in the chemical sector, engineers are often more attracted to Porsche. The fact that BASF does not make a final product that is easily recognisable also makes things difficult. Sonia Daum says, “Nobody knows what product BASF makes. If you drive a car, there is something from BASF inside. If you drink Coca-Cola, there is something from BASF inside”. But the lack of a recognisable final product means that people do not relate to the company in the way that they relate to Porsche.

### **Chemicals and the green challenge**

5.77 A further challenge for the company is that lack of green credentials enjoyed by the chemical industry. The sector is a high intensive energy industry and BASF has its own energy infrastructure. This means it is not taxed at as high a rate as a private individual: Thomas Peter says he pays about five times as much to light his home as BASF pay for its energy, adding that if BASF had to pay the same price, Ludwigshafen would be “dead”. This example provides an important insight into the way the German government is willing to lift the energy cost burden on its energy intensive industries. European developments relating to the price of carbon affect BASF, because the carbon use from chemicals is also high. However, in an argument reminiscent of the case of high intensive energy industries in the UK, Thomas says: “Chemicals are not green, they come from oil normally. No one wants to have chemicals, it is the name of chemicals, but we cannot live without them.” Thomas cites the role of foam for home insulation and the role of chemicals in the making of lighter cars. Thomas argues that chemicals can improve the built environment, but they are still seen negatively. As in the UK, energy intensive companies such as BASF provide vital inputs that can support the transition to a low carbon economy.

5.78 Thomas believes that one way to start to address this would be to develop a greater understanding of chemical processes at school. He argues that people think of chemicals as being dangerous in a way they do not think of motor cars as being dangerous, even though thousands of people die in motor accidents every year. This does not lead for calls for cars to be abolished, but it does lead to a quest for ever-safer cars, and he feels this attitude should be applied to the chemicals sector.

## Evidence from Germany

### Political priorities

5.79 Both Sonja Daum and Thomas Peter believe that companies struggle with the changing priorities of government. Companies wish to invest in the long-term, but shifting political priorities, which have implications for business, makes it difficult to do this.

### Airbus

5.80 Airbus is a leading aircraft manufacturer, the largest in a family of companies owned by EADS, a global operator in the aerospace and defence sectors. Airbus's products include the single-aisle A320, the wide body, long range A330/A340, the A400M military aircraft, the next generation A350 and the ultra-long range, double-decker A380. Airbus is directed from Toulouse, France, although Paris and Munich are the headquarters of EADS, Airbus's parent company, according to Siegfried Balduin, IG Metall's co-ordinator for Germany's aerospace industry. The company has four founder nations: the UK, Germany, France and Spain. Between 30 and 40 per cent of Airbus's employees and workshare are situated in Germany and the same percentage are situated in France. This balance is very important, politically, for both countries. The UK and Spain have smaller shares (although the UK's share is still impressive: 10,000 people work for Airbus in the UK and a further 100,000 jobs are supported through its supply chain).

5.81 According to Siegfried Balduin, "The history of Airbus is a history of the competition with Boeing". More specifically, there are three factors that affect Airbus's success. The first of these is the state of the world economy in general. Passenger volume is very precisely affected by changes in global economic fortunes. The second is the exchange rate between the dollar and the euro, which is, in Siegfried's words, "a dramatic issue all the time", since 95 per cent of the company's business is handled in dollars. The third factor is the quality of the product.

5.82 The impact of the economic downturn was less than the company expected. Cost cutting efficiency programmes were implemented, but there were no redundancies.

### The rise of the BRICs

5.83 Siegfried describes the entry of Brazil, Russia, India and China into the world economy as "no real danger for both Boeing and Airbus in the next years. In the longer term everybody knows China will come. We have no doubt because they have the means and resources. China, Russia and Brazil will compete with their new products directly against the single aisle family of Airbus, but it takes an industry like aerospace a long time to build up confidence and competence. In the meantime, Airbus has a factory in China, it has invested in a partnership with China and there is an assembly line in

China... It's always a risky issue but it was a strategy. This is the whole vision of EADS, they want to follow the new market and that means you cannot deliver old ones from Europe. You have to build up facilities that are near to the countries and customers. That is the globalised perspective."

5.84 Siegfried remains confident that the future aerospace sector will be big enough to accommodate Airbus's European operations, even if its major growth area is outside Europe: "The market share will be lower in the future but in a framework or environment of growth. It must not become a risk for employment... It could be a problem if management does not invest enough in the future of the engineering and production facilities in Europe. Our strategy is okay, we told them all the time you can invest worldwide, no problem, but it must be clear that we have guarantees for the European core sites. There is no doubt that we cannot accept another strategy, if you have a worldwide strategy you have to safeguard the jobs here and the core competences."

5.85 This shows once again the strategy adopted by IG Metall, whether in the automotive, the steel, the chemical or the aerospace sectors: there will be huge industrial growth in China, but this is not to be opposed. It is to be supported, as part of a strategy to grow world-class companies. However, in return for union support, the companies in question must commit to some support for industry in the core German sites.

## **Skills**

5.86 Like other German companies, Airbus experiences skill shortages. These are particularly acute with regard to specialist skills and, as mentioned by other companies within this report, link to a wider pattern of demographic change. Siegfried says: "Skill shortages are a general problem. In Germany, we have around 16-17,000 employees inside Airbus. The number is rising because the production numbers are rising and they have problems, particularly in engineering. In engineering there is a clear shortage of special skills. That is a real challenge for the whole industry in Germany. The shortage of highly qualified people and we have an age problem. We call it a demographic bomb."

5.87 IG Metall is trying to support skill development at Airbus, with a particular emphasis on the personal development of employees: "They are starting to expand the numbers of apprentices. They are starting new initiatives in cooperation with universities and public authorities at the regional and local level, to make the study in aircraft engineering more attractive ... As a union we are trying to start also initiatives to help that development coming forward because it's interesting to us, it will be a real practical factor in the personal development. What is the perspective for the people in the next years, how can we help them to improve their skills to get better competencies and chances for their personal careers? That is an issue we are discussing with our



## Evidence from Germany

representatives of the factories and it's a very important both for the management and us and that is subsidised by the government..."

### The Airbus Supervisory Board

5.88 With 16,000 employees in Germany, Airbus has a Supervisory Board of 16 people, eight of whom are employee representatives. Of those eight, two are from IG Metall (one of whom is Siegfried Balduin), five are representatives of the workforce at Airbus and the last one, according to co-determination law, is a representative of senior management elected by all employees. At present, of the five workforce representatives, all are IG Metall members.

### The role of government

5.89 Siegfried sees a clear role for government, working with companies, to support the development of industry. He says: "They subsidise special programmes, development programmes for new technologies. Future problems, the greening of industry, there are a lot of activities, partly funded by the government, partly funded by Airbus... You could say yes, the general way in Germany is to support strategic industries by funding new developments in key issues. That is one side. The second one is on the regional level, they do the same. They have special programmes to bind that company and strengthen the industry in their regions. Sometimes there is a support on the local level too. Then there is the European level, there are European programmes and generally a lot of special projects."

5.90 Who decides what industry is strategic and what industry isn't? "There's a political debate and clearing process. Decision-making processes are the result of interests of activities, but in general the government elaborates programmes to secure the industrial future of Germany: What are the strategic industries? What are their strategic targets? What do they want to support for the future? Under that umbrella there are starting programmes to stimulate activities and developments in that area. There is no doubt [that] there is no conflict about the role of the aircraft or aerospace industry in Germany and Europe."

5.91 This is, of course, very different to the Anglo Saxon approach, which is to support the general conditions in which industry operates, but to allow the market to decide which industries will grow and which will not. Siegfried says: "We haven't followed the radical ways of neo-liberal thinking, which says the market knows what's going on and what's best for the future. That was never the majority here in Germany. The political majority. It wasn't the position of management either. The tradition is that it's private sector [led], of course, but there is a sense of co-operation and an active role of the state on a different level in improving the general conditions, the framework, the environment for the development of that industry ..."

5.92 Does this mean that Germany ‘picks winners’? If so, where would this leave an entrepreneur that wanted to start a business in a non-chosen sector? Siegfried says: “In the last 20 years, it’s a start-up philosophy. The founder initiatives, building up technology parks, I think you find it everywhere in Germany. It’s not a centralised strategy, it’s not the federal government, it’s the local and regional idea to build up small silicon valleys and to look at what is strategically interesting... I think that's like a permanent competition here in Germany and it’s a highly developed structure between research institutes, independent research structures, strategically orientated and they are looking for new trends and ways to help new industries coming forward. You will find this kind of technology park in the cities or regions, they help these start-ups over the first years of their development.”

5.93 He continued: “I think that's not new. I think in England you find that too. Maybe the kind of structure which has taken a lot of decades to be developed, there's a research infrastructure, a development of industrial clusters in different regions, combined with facilities of research and development that may be specific for Germany and now in the last two decades this cluster-building in the regions with specific orientation to different, new industries, you could say. Germany was all the time industry-orientated. They haven't changed the mindset so much to services. There's a tradition to strengthen industry in every kind.”

### **Long-termism**

5.94 Siegfried also attests to the long-termist culture that continues to exist in Germany: “The German tradition is to say we have to strengthen the longer term perspective and with our influence in the supervisory boards ... we are always trying to counterpart the purely short-term perspective. When we are looking for long-term investments, long-term perspective, what are the core competencies? Where is the industry going? What do you need to have a chance in the future? That is our philosophy, our practical philosophy and we try all the time to help our members in the works council to understand that perspective and organise that process in their environment. It’s a core issue of our policy. It’s a part of the German mindset. The management, okay they are changing all the time. They are realising that financial markets are stronger than in the past and they try to cope with that requirement. That is a permanent challenge. It’s one reason that Germany compared with the USA or maybe the UK as well, that we are not so affected now by the actual crisis because the industrial base is a little bit stronger.”

### **Daimler and Airbus**

5.95 Airbus’s parent company, EADS, is unusual in its ownership structure. The French government currently owns a 15 per cent stake in EADS, while the French media group Lagardere owns a further 7.5 per cent. Until recently, this was matched by Daimler’s ownership of 15 per cent, plus 7.5 percent held by

## Evidence from Germany

some private and public institutions under the industrial leadership of Daimler. The German government did not own a direct stake, but had a strong interest to keep the balance between France and Germany to prevent jobs and influence moving abroad. However, Daimler announced that it wishes to sell 7.5 per cent of EADS, as a next step. After a year-long search for a private investor, the German state-owned bank, the KfW, bought Daimler's share of EADS, a purchase that will become effective next year.

5.96 The fact that Germany and France owns an equal stake in EADS is considered to be politically essential. On 6th September 2011, the *Financial Times* reported: "France and Germany believe that these shareholdings are vital to protecting their industrial interests. They argue that EADS, with its defence and space operations, is of national strategic interest. Thus both sides insist that management and shareholdings must be equally shared."<sup>9</sup>

5.97 Speaking before the KfW bought Daimler's share of EADS, Siegfried Balduin argued that IG Metall was opposed to Daimler selling a part of its stake in the company: "We don't like it because Daimler is an anchor in our perspective and we don't think Daimler needs the money. They have a lot of cash in their books, but it's their strategic decision." Siegfried continued: "It is a political debate at the moment in Germany, because the Free Democrats, one part of the government, prefers a private solution and that means they don't want to accept state ownership. The problem is there's no private investor who is interested to take that share."

5.98 In a UK context, Daimler would sell its stake, to a non-British company if necessary, but Siegfried says in the case of EADS and its special background it must not happen: "You have to secure that position, otherwise you get political turmoil... You cannot give up a strategic company, a strategic industry. If you define that as a strategic industry then you cannot leave it without safeguarding your national interests i.e. because it's a political problem. If France left as well then it's another situation. But we don't see any signals that the French government will leave or sell their shares. Not at all. I don't believe it."

5.99 How much is EADS a special case? Would the KfW step in to buy any other strategic company in similar circumstances? Siegfried says: "The normal position of the government is that it's not their job to keep private companies from their decisions." But some companies are national symbols: Daimler is one. Siemens is another. "If Siemens decided to say our future would be in London, that would be a great conflict, because that's a contradiction to the interest of the people."

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<sup>9</sup> "Let EADS fly solo", *Financial Times*, 6 September 2011.

## Section six

# Evidence from the United Kingdom

6.1 The following section presents evidence gained from interviews with senior managers and trade union officials in four British companies: Bentley; Siemens; BMW; and Roballo Engineering. All of these companies have German parent organisations. Interviews were carried out between July and September 2011. Again, they covered a range of issues, including the economic downturn, the rise of Brazil, Russia, India and China, skills, industrial relations and the role of government in supporting industry.

## Bentley Motors

6.2 Bentley, the iconic British motor manufacturer, employs around 4,000 people worldwide. Founded in 1919, the company's manufacturing headquarters are based in Crewe, Cheshire, its home since 1946. In 1998, the company was bought by Volkswagen AG, who invested £500m in improving the factory and supporting future production development. The company sold just over 10,000 cars throughout the world in 2007.

### **The economic downturn**

6.3 2007 was, of course, the year that the economic downturn hit the world and this hit a Bentley that was growing in confidence. Following its investment from VW, Bentley's increase in production had been profound: the company went from building 1,000 cars to 10,000 cars in the space of just two years. This had led to significant recruitment as well as the introduction of a nightshift. But in August 2008, in the words of Leonie Williams, Bentley's Head of Personnel Manufacturing and Skill Development, "It all started to fall off a cliff". With a significant percentage of the company's volume sold in the United States, the first country to experience the adverse global economic downturn, Bentley felt the impact straight away.

6.4 The company went back to one shift but, by the end of 2008, had lost a significant number of UK employees. However, Bentley also had a time banking agreement, which meant that if there was no work, employees could go home on full pay but their time was debited, to be paid back when work returned. Leonie Williams says: "We sat down with the trade unions and between us I think we did a very good job, but we had to make some very difficult decisions that impacted on our workforce. Those decisions were really

## Evidence from the United Kingdom

made with the utmost conviction that we were doing the best for the business and the long-term security of not only our business but also our associates.”

6.5 In fact, whilst Volkswagen also had a time banking agreement, Bentley introduced theirs first. Leonie says: “Our key objective was to protect the income of our employees, but at the same time, all employees knew they had to pay those hours back to the company, so when they worked overtime in the future they would not get paid, it would be deducted from their time bank.”

6.6 Stuart Davis, a Unite rep at Bentley, praises the efforts of the union and management to develop the time banking system: “I think at the time we introduced it we were pioneers in the motor industry ... I wasn’t on the negotiating body then, but the people who were, they [described the way it was achieved as] ‘close the doors, we’ve got this problem and we are not going out of the room until it is sorted’. The lads came up with this and each time it is run it saves jobs, it saves money.”

6.7 Leonie continues: “We had seven weeks of time banking, we also fixed a week’s holiday from associates’ flexible holiday entitlement and we closed early at Christmas, everyone had a ten per cent pay cut, that was from the board right the way through, it was either ten per cent or another 300 jobs. Some associates found that very difficult to accept, but from a company and a trade union perspective, we believed our priority was to protect jobs.”

6.8 The ten per cent pay cut hit the workforce very hard. An overtime culture also meant that, with time banking, workers lost more money as future, longer working weeks were rewarded with basic pay. What is more, Bentley Motors combines various functions, including manufacturing, engineering, marketing, styling and design, quality, purchasing and logistics, all on one site, and whilst some areas were short of work, others were not. Leonie says, “While manufacturing had a reduced workload, engineering were busy designing the next generation and we all accepted that we needed the new product to be ready to respond when the upturn came.” Stuart adds: “We are quite unique in the motor industry like that, so manufacturing, it was obvious they were going to get hit straight away. It caused problems then and it still does now, because they see people coming in for five days a week and working, they saw people doing overtime, it was very difficult, it was hard. I myself work in maintenance, so my department was in for seven days a week, but then you are representing people on the line, they were in for three days, it was very difficult.”

6.9 Volkswagen supported the company throughout. Leonie says: “The feedback we got from VW was that we were doing everything that we could to support ourselves and therefore VW would do everything that they could to support us.”

## **The rise of the BRICS**

6.10 Whereas the rise of China, India and other large manufacturing nations is seen by many as a threat, for Bentley it is an opportunity. Bentley's competitors are other luxury motor manufacturers such as Aston Martin, Ferrari, Rolls-Royce and top-end Mercedes. No Chinese company is manufacturing such cars and Bentley, following its heavy focus on the US, is keen to capitalise. Leonie says: "We are opening a number of dealerships in China over the next three years, we'll open a regional sales office in Beijing and we are looking to employ about 50 people in that office to support the dealer network that we are introducing. We've also got dealerships now in India, Russia and other emerging markets."

6.11 Will production stay in the UK? Leonie says it is the objective of the UK company to retain manufacturing in Crewe, although she accepts that as part of Volkswagen, wider group decisions could have an influence, especially under specific circumstances: "When we made 10,000 cars, VW had opened a factory in Dresden called the Glass Factory; it was a showcase factory that had been significantly financed by the German government to build the Phaeton. The volumes fell short and the factory had significant capacity. During 2007 Bentley could not produce the full volumes and VW arranged with Bentley that they would take some of our volume and build it in Dresden. This was very difficult for us but we had to understand the fact that we are part of a bigger organisation, we know production can be moved in that respect, but in terms of the full manufacturing of a Bentley, I would like to think it would always be done here."

## **Skills**

6.12 Bentley recruits apprentices, as well as having a graduate scheme, industrial placements and summer placements. The company currently takes on 20 apprentices a year, but is looking to increase that by 50, to 70 a year, next year. This will mean that, on a full year programme, Bentley will have over 200 apprentices at any one time, which is a reflection of significant, planned volume growth, based on a proposed third model line. Leonie says: "We still have to present the business case for the third model to be built here and it is important that we plan to develop our workforce to ensure that we have the right people with the right skills at the right time to develop the new product here, we are planning that now."

6.13 Bentley works with Loughborough, Cranfield and Keele Universities, as well as local colleges. The company is also looking to strengthen links with international universities. Technology clusters are also important and, again, Bentley looks to work with other Volkswagen brands, in particular Audi and Porsche.

## Evidence from the United Kingdom

### Industrial relations

6.14 A Bentley Company Council includes members of senior management and senior shop stewards. Leonie says “The people on it are the decision makers, they are the ones that make things happen, so it is a key group from an employer and an employee perspective.” She describes the members of the Company Council as “a very good bunch of 14 people who have worked together for more than 10 years, there is a relationship there that has been built up over time and that is very, very important.” The company has about 30 local stewards, who elect the senior stewards every two years.

6.15 Stuart Davis agrees that relations are good: “We have a good working relationship, it would be wrong to say otherwise, we have regular dialogue with the company, on lots of levels.” This includes a weekly meeting of two trade unionists, Leonie Williams and another human resources manager, known as “two-on-tuos”, as well as company councils and policy reviews. Four times a year, the full company council meets, including all 30 local stewards.

6.16 In a significant move by Volkswagen, Bentley has been asked to develop a model of co-determination, similar to that which exists in Germany. After discussions with the various bodies in Bentley, including the company council, a proposal will be presented to VW. However, this will be co-determination in a UK context. Leonie says: “What we have done is, and we have been very clear about this, we have written to VW describing our intention to achieve co-determination, but we will do this in the context and the framework of the UK environment. It is important that it fits within our culture.”

6.17 Stuart believes co-determination could lead to information being shared more quickly on occasions: “If anything, sometimes, if there is a criticism, it’s only minor, we get information, sometimes you think I could have just done with that a little bit earlier, and can I really influence that, and that’s a difficulty sometimes, and you sit back and think, has that decision already been made, and with the facts, we could work a little bit better like that.”

6.18 Of course, in spite of good relationships, difficulties occur. Leonie and Stuart both admit that the ten per cent pay cut was a huge challenge. When the difficulties caused by the economic downturn had passed, according to Leonie, “we knew that our associates had been through a lot and we wanted to acknowledge that through a pay deal which was 4.75 per cent, but it wasn’t enough. We had demonstrations in front of the factory, we had some very tough negotiations, but that’s the way things go and I think we have to acknowledge that the workforce were very sore about what happened to them”. Stuart agrees it was difficult to carry the workforce, who rejected company offers twice. They were eventually forced to confront the fact that if they continued to reject the deal, they would have to take industrial action.

The 4.75 per cent agreement lasted for one year and further negotiations will happen again soon.

### **The role of government**

6.19 Leonie would like government to be more proactive in its support for skills, as well as helping smaller businesses that could (and perhaps should) form a greater part of the supply chain.

6.20 On skills, Leonie says: “From an apprenticeship perspective, we are now being asked to fund a lot more than we were asked to fund before, there is a lot of government support for apprenticeships but more of the funding is now the responsibility of the employer. I can appreciate that from one perspective, but if government want to increase UK manufacturing output and have a successful UK manufacturing industry that’s sustainable, then it is a partnership, it shouldn’t be all one way. We have an adult apprenticeship programme, the funding that we’ve had for that has now been withdrawn but we’ve made a commitment that fifty per cent of our workforce will be skilled, by 2015 and we will carry on and deliver on our commitment, but smaller local employers, how do they find the resources to do that?”

6.21 Stuart is sceptical about government claims to support manufacturing: “Manufacturing doesn’t appear to be high on this government’s agenda at all. They say it does, but when you know what’s gone down, at Bombardier at Derby, we’ve got a Bombardier plant across the road, that’s had nothing. They say manufacturing matters, but they don’t seem to prove it, or put their money where their mouth is...”

### **The role of Volkswagen**

6.22 Bentley is a company with a British heritage, but is now a daughter company of Volkswagen. To what extent is that positive and is there any way in which it is negative?

6.23 Most obviously, the £500m pledged to modernise Bentley is believed to have saved the company, quite literally. More specifically, VW’s investment modernised Bentley. Stuart Davis says: “I don’t know whether it is a Volkswagen culture, but something has changed, definitely something has changed. Going back [to the] Rolls Royce days, just the manufacturing side of it, it was very, very slow, everything was half-built, the car was physically pushed down the line to the next station, and Volkswagen put in massive amounts of money and automated the line. Generally, people are more buoyant with it now. Just the money that goes in, you can’t not be positive.”

6.24 The downside risk is that VW will want to bring work, and jobs, back to Germany. This could, of course, be compounded by political pressures to do so. Leonie Williams says: “We have to justify to Volkswagen everything that we do, they don’t just give out a blank cheque and sign it for us.



## Evidence from the United Kingdom

### Siemens

6.25 As noted above, Siemens is an integrated technology company employing 336,000 people around the world. It has had a presence in the UK since 1843 and currently employs 16,000 people here, including about 6,000 in the manufacturing sector. Last year's revenues were £4.1 billion. Siemens has offices throughout the UK, with its headquarters in Frimley, Surrey and factories in Cannock, Congleton, Manchester, Poole, Hebburn, Newcastle-upon-Tyne, Lincoln, Wollaton and Eynsham.

6.26 Siemens operates in four main sectors: Infrastructure and Cities, Health Care, Energy and Industry. It designs and manufactures products and systems ranging from traffic control systems, and building technologies in Infrastructure and Cities to the superconducting magnets used in medical scanners in the Health Care Sector. In the Energy Sector Siemens manufactures gas turbines but also supplies products and services for the rapidly growing wind energy companies. Finally in the Industry Sector Siemens provides the drives and programmable controllers that are behind many of the UK's manufacturing plants. All of the above examples are manufactured or assembled in UK and with more manufacturing planned for the coming years turnover is split more or less evenly between product and service.

### The recession of 2008

6.27 Siemens in the UK has benefited from a global corporate strategy that led to the company being well-positioned when the downturn happened. As noted in the section on Germany above, Siemens is focused on future global economic and social challenges, so-called 'mega-trends'. Energy supply, climate change, the future of healthcare and the growth of mega-cities are four such mega-trends the company has identified. About sixty per cent of the world's population will live in very large cities that need to be safe, have transportation systems and traffic control systems, and these have increasingly been the focus of the company.

6.28 Toby Peyton-Jones, Siemens Director of Human Resources in the UK and across North West Europe, says: "These markets are where the government is facing these problems and just because we are in a tough economic climate, it doesn't mean they can stop addressing them." Before the credit crunch, Siemens ran a cost cutting exercise, protecting front line activities but cutting central functions. Toby says: "We took these actions twelve months in advance of the downturn. That means although we have not had a painless experience we have had three very good years. It has been tough, tight and we don't think we are out of the woods at all, in terms of sluggish economic growth, but overall, I think, we are in good shape."

6.29 Of course, different parts of the business face different challenges. Siemens Traffic Control Systems is based in Poole, Dorset. This part of the

business is in an unusual position in that the economic downturn has not particularly affected it, but may affect it in the next two years. This is because the company sells traffic control systems to local authorities, who are experiencing steep spending cuts now and must decide how to prioritise their existing budgets. As well as traffic control systems, the company makes systems, predominantly for motorways, which it sells to the Highways Agency. Again, this work could come under pressure as spending cuts hit.

## **Globalisation**

6.30 The rise of the BRIC economies are seen by Siemens as both an opportunity and a threat. The company has moved from a position where the majority of its turnover and its employees were based in Germany to one where they are more evenly dispersed across its global sites. Siemens has had a presence in China for over 100 years, but has hugely reinforced its presence in the last 20 years. A similar situation exists with other markets, such as Brazil, Russia and the United States. Most of the revenues for Siemens come from outside Germany, although a lot of the headquarter function is still there, as is, according to Toby Peyton-Jones, “a lot of the DNA for the company, the cultural DNA”.

6.31 Siemens has close relationships with the Chinese government, working with them not only on orders, but on helping them develop their government, their legislative frameworks and on education. Similarly, in the UK, the company works closely with the UK government, on topics like education, the skills development agenda, and on energy policy. Toby says: “All of these things are being what we would call a local player, fully integrated, and that means we put manufacturing, we put R&D out there, because then you can benefit from the local environment. Actually in China when you start to look at the price of a project manager, a good one, it will probably be the price of a project manager anywhere. They still have this low cost manufacturing advantage, but for Siemens that will go in a relatively short time, actually, we have world factories in UK that already compete on an equal footing with China USA or other European countries. We do very high end manufacturing and China is learning very fast, and there are things, I am sure, that we should be able to learn from them as well as them from us.”

## **Skills**

6.32 As is often the case in UK companies, the availability of skilled young people is an issue. For example, Siemens in Poole has an ageing workforce and for a long time found it difficult to recruit young people to replace those retiring. The company doesn’t just look for graduates, who are needed but don’t always show the same loyalty as employees who come via the apprenticeship route. Siemens seek young people with ‘hunger and desire’. The company has ramped up its apprenticeship programme in recent years, but still has a lack of employees in the age group of 28 to 40.

## Evidence from the United Kingdom

6.33 This is one area where the UK could learn a lot from Germany. Toby Peyton-Jones says: “If you look at what’s different in Germany to here, it is that they have a stable long term strategy, regarding skills and apprenticeships. That doesn’t mean that the content doesn’t change. But it does mean everybody knows ... the frameworks for academic achievement, how these are going to be structured... our input to government has been about actually playing a long game in this topic, getting real stability and buy in from all parties, not the next flavour of the month, some short headlines and then move on...”

6.34 It is also important not to confuse two important aims, those being to develop apprentices and to address long-term unemployment. Toby stresses the importance of “not degrading the brand of apprenticeships. They should be a technical qualification that can proudly stand alongside any academic qualification”. Addressing long-term unemployment is also essential, but “I’m old enough remember YTS, and trying to turn apprenticeships into some kind of YTS scheme would be a big mistake. We are of course working with the government on the long-term unemployed as well but we should take care to protect the Apprenticeship brand from erosion.”

6.35 Colin Gosling, a Unite Rep at Siemens, believes we need more graduates in engineering. He argues that, with tuition fees of £9,000 per year, the government should be offering tax breaks to students applying for science and maths, or offering bursaries, to make such courses cheaper and more attractive. Toby Peyton-Jones agrees: “I would like to see a bias for students that want to go into STEM skill education. Why should it cost the same if you want to do left-handed basket weaving or if you want to do engineering? I think you should be offered a discount, because these are the areas where the country really has a skills gap that will hold back the economy if it is not addressed. I don’t think that would be difficult to do and I think everyone could understand it...”

### The green economy

6.36 The growing green economy offers opportunities for the company. Colin Gosling says that Siemens’ energy group is investing heavily in wind turbines and, as part of its cities and infrastructure work, is involved in train transport, trams and buses. Locally in Poole, the company manufactures low voltage controllers that drive traffic lights and has recently been rated the most sustainable company in the Diversified Industrials Sector in the Dow Jones Sustainability Index.

### Industrial relations

6.37 Colin Gosling said that at a local level, in Poole, relations between management and unions are very good. Colin spoke of good levels of co-operation, understanding and the sharing of information. However, none of

the German attitudes towards co-determination that exist in Siemens in Nuremberg are replicated in the UK.

6.38 Toby Peyton-Jones argues that Siemens in the UK has grown both by acquisition and organically, which means it has different businesses in different markets, with different trade union histories. The company has not seen the value of “aggregating this all up to a Siemens plc relationship”, although Toby describes the company’s relationship with unions as “very close and very strong.”

6.39 Colin is a strong supporter of co-determination. As a member of Siemens’ European Works Council, he sees its operation in practice. Colin says: “In Germany, they have co-determination, but what you also find, from a trade union background, is that (in) a lot of the Scandinavian countries, there is still a lot more national negotiations and national bargaining, so therefore people are talking to people who actually make political decisions at that level whereas, I’m afraid in the UK, I am talking to people that have got no more influence in changing my future or their own, I do find that frustrating.”

6.40 Colin also believes that co-determination helps to get more people on-side: “The more people understand where you need to be going, the more people you can take on-board and the fact that people aren’t suspicious and the fact that (they know they are not) just there as a means to an end, to make money for other people, and I think that does help.”

6.41 Toby takes a more nuanced view of co-determination: “The advantages are that you get continuity and you get a kind of growing together, the disadvantages, and I think Germany would also say this, is they are much slower to be able to respond. One of the exciting things about the UK, it’s really how you set your stall out, is one better than the other, here people will come and invest in the UK, because actually the risk when you set up is less, and the flexibility of the workforce is greater, and your ramp up is faster, the skills are there or are quickly learned, and investors will come here. Making a virtue out of being agile is a viable strategy and I think we are envied in that way, our ability to actually move people from one area, re-skill and get them working and productive in other areas, we are much, much faster. That’s because people take much more responsibility for their own lives, they don’t think that someone is going to do it all for them.”

6.42 Toby continues: “What I like in the co-determination model is the working on a joint agenda and I think these aspects can be translated, but not maybe in their exact format, but that idea about building a common agenda with the government, building a common agenda with industry, especially where there are very aligned situations”.

6.43 Colin Gosling wishes to see the UK government introduce a level playing field regarding employment rights: “We tend to be the poor man of Europe as far as industrial relations are concerned. Germany has co-

## Evidence from the United Kingdom

determination, France has its national legislation, but in the UK (if faced with a company closure) we are given ninety days notice and the taxpayer picks up the bill. The previous administration said we need to be flexible and if we do that it will bring work into the country, but in my experience it has proved the opposite.”

6.44 Toby is concerned about bank lending, especially to SMEs, which he compares unfavourably with the situation in Germany. He believes the government is moving in the right direction, in terms of rebalancing the economy, and they are working very hard on apprenticeships and unemployment, although they need to simplify the skills structure. He is most critical of government attitudes towards immigration: “It is a very hot topic. The government has hugely missed their targets on immigration, that is purely because they never could control them. Most immigration happens because we happen to be part of the EU and they can’t stop people coming in or leaving the country... Because they can’t control the big numbers they are trying to control the very small numbers.” This affects Siemens ability to bring employees, such as project managers or engineers, to the UK without huge bureaucracy.

## Lessons for Germany

6.45 Germany is a world leader in industry, but it has not got everything right, and Toby Peyton-Jones can see one area in which Germany could learn from the UK. He says: “The UK does have in our DNA, creativity and innovation. I don’t think there is another country in the world that has got the vision, the desire, the capability, that our education system and our culture brings in this area. If you are in Formula One and need a new car every race, you put your headquarters in the UK. You’ve got to do it. You look around Cambridge or other universities and you can see what is springing up. In terms of innovation, our flexibility of thinking, our flexibility also with skills, and in terms of our management style are all huge strengths. In Germany a strength is implementation. They set their mind on something and then they walk steadily towards it and if all the data is saying something else, they don’t change their mind. In UK we will innovate on the way, we will improve our idea on the way, and it’s our downfall but it’s our strength. You don’t see many German companies leading the mobile phone or IT markets where the innovation cycles are just too fast for the culture. So we can learn a lot from Germany about implementation but they can learn a lot from us about agility creativity originality insight and design.”

## BMW

6.46 The BMW Group employs about 8,000 people in the UK motor industry. It has four production plants in UK: the engine plant at Hams Hall near Birmingham, which employs around 800 people; MINI Plant Swindon,

which employs around 800 people and produces the MINI body panels and some sub-assemblies: MINI Plant Oxford, with around 3,700 employees; and Rolls-Royce Motor Cars Ltd, in Goodwood, which employs a further 850 people and is the only place where Rolls-Royce motor cars are built.

6.47 The MINI plant produced its two millionth car in August 2011. Oxford is the Heart of MINI production and currently produces four models – Hatchback, Clubman, Convertible and Coupé. It will soon begin production of the Roadster model. Around 80% of cars made in Oxford are exported. In 2010, the Countryman model was introduced, which is made in Austria.

### **The economic downturn**

6.48 The economic downturn affected the MINI plant in a number of ways. Ironically, during an economic downturn, customers tend to want smaller cars, both in terms of the actual size of the car and in terms of its engine size. This gave a boost to the MINI, as well as other smaller models, such as the Ford Fiesta and the Vauxhall Corsa.

6.49 Chris Bond is the Unite Convenor at the MINI plant. Chris, who worked at the Oxford plant when it was owned by Rover, says of the company: “They're doing remarkably well. For 10 years... with MINI all we'd ever seen up until 2009 was a constant increase. Then the recession hit, and it caused a problem. Having said that, we recovered very quickly, not to the figures and volumes we'd had prior to 2009, but we've managed to maintain a stable workforce.”

6.50 One impact of the economic downturn was the release of around 500 agency works from Plant Oxford. Chris believes that this sort of situation is unlikely to happen again.

6.51 MINI continues to benefit from its iconic status. Chris says: “When it was first mooted that they were going to relaunch the MINI, it was going to be just a trial of 120,000. Then it took off and nobody could imagine the interest. It's got better and better because it is such an iconic car. From the Sixties, when it was used by the stars, everybody wanted a Mini. It's the same today.” Erich Thanner, Human Resources Director at MINI Plant Oxford, says: “It's a smart car to look at and fun to drive. It really does have that go-kart feel, the drive is exceptional.”

6.52 The design of the MINI is, of course, iconic, but Erich is clear that design in itself is not enough: “Design attracts you to a product, but if the substance of the product doesn't deliver or meet your expectations, you're disappointed.” But it is not just MINI. The BMW brand is also attractive. Chris Bond says: “People do want to work for BMW Group. There is that kudos. That's why we attract so many people. We get agency people coming from the four corners of Great Britain because it's such a prestigious company to work for.”

## Evidence from the United Kingdom

### Globalisation and the growth of the BRICs

6.53 As noted with Volkswagen earlier, most growth in car sales is taking place outside of Europe, and especially in emerging countries such as Brazil, Russia, India and China. Is this an opportunity or a risk for BMW Group? Erich Thanner says: “It’s a chance and an opportunity. We are selling a huge amount of cars in China”

### BMW’s value-oriented production system

6.54 Most car companies have a modern production system that owes something to the Toyota model. BMW Group has introduced the Value Oriented Production System (VPS).

6.55 Erich says: “Some principles are quite similar, others are different because we think it doesn't quite work for us.” How does VPS work? “It’s about organisation of the workforce on the shop floor, working in smaller groups. We are introducing a supporting lead associate, not a manager, who is able to deal with all the daily problems. We call it core production and outside this core production we have other shells where support functions kick in, such as maintenance, planning, HR. That’s one side. On the other side, we are looking at processes and make them measurable. We want to improve the processes by taking out waste and improving delivery time.”

### Skills

6.56 Erich Thanner believes that talented school-leavers have been put off manufacturing, believing it to be dirty. Instead, they have been attracted to financial services, insurance and business. Erich says: “We need to improve the image of manufacturing. It can be quite a challenging job and producing cars with the latest technology is an exciting challenge.” The BMW Group manufacturing plants have been very active in the second half of this year in support of the Automotive Council UK’s initiative, ‘See inside Manufacturing’. Erich says: “We have invited careers advisors and hundreds of students from local schools/colleges to come into the plants and see first-hand that a career in manufacturing is a valid option. Many of the visitors simply did not understand what working in the automotive industry could offer them. Hopefully, we have changed perception and created an interest for future apprentices.”

6.57 BMW Group has approximately 100 apprentices in the UK and the Oxford plant takes on about 30 each year. Dave Reed, a member of the trade union team at the MINI plant, says: “We take, on average, across the group in the UK, between 40-50 young people every year.” Dave adds: “My biggest concern with apprentices is that they're not always guaranteed a position at the end of their training. I have a view that they should be, with the skills they've attained, or the company should do something to protect the investment

they've made in those young people." The retention rate of apprentices across the BMW Group UK manufacturing sites is 97% and this figure takes into account apprentices who decide not to continue with their apprenticeship at BMW. Chris Bond adds: "They've introduced a mature apprenticeship scheme so people are now taking up the opportunity of apprenticeships. It's for internal candidates only, but you've got people on the tracks who have the capability and are now being given the encouragement to develop, which is a good thing."

### **Industrial relations**

6.58 How is the relationship between the management and the workforce? Chris Bond says: "It's good. I can't say it's not good. Like any relationship you're going to have ups and downs. You're not going to agree on everything. Although it can get quite heated, we always end up with a negotiated settlement. It's no good banging the table. To achieve anything in life you have to make compromises on both sides, whether it's the trade union or the company. We have adopted jointly an attitude where we're always trying to achieve a win-win situation."

6.59 Erich Thanner agrees that the relationship works well: "We have a very constructive relationship. We meet every other day almost. I think this is typical BMW Group. Not only in the UK but in Germany. This helps a lot in critical situations. I'm convinced in the long term we have similar goals"

6.60 However, both Chris and Erich note a subtle difference in the way industrial relations work in the two countries. In Germany, works council representatives are elected and then have more autonomy to make decisions than their UK counterparts. Erich says: "In Germany the legislation around the works council is much more detailed than it is in the UK. At the end of the day it puts the works council in a stronger position in comparison to our plant joint committees. If I had a negotiation about a working time shift pattern in a German plant and I reach an agreement with the works council, we sign it and it's done. In the UK, you need to ballot. This makes it sometimes more difficult in the UK to deal with topics in comparison with Germany. I don't know what's better, but it's different."

6.61 Norman Gough, a member of the trade union team, prefers the UK approach: "The main aim [in industrial relations] is to keep people in work and also keep up their wages and conditions. I don't believe it's quite like that in Germany. It seems, in a lot of cases, the negotiating body gets round the table with management, agrees something and more or less tells the workforce this is what we've agreed, this is what you're going to do. Whereas here the members have the last say. They have the vote on that. We put it to the members and that's what it's all about when you're representing a body of people. You're working for them so you have to go back to them and consult."



## Evidence from the United Kingdom

### The green challenge

6.62 When asked if the challenge of more sustainable manufacturing was an opportunity or a threat, Erich Thanner was in no doubt: “Opportunity. First of all, you can’t change it anyway. We need to face the challenge, we as humans on the earth need to deal with our environment. Being a car producer we have a definite responsibility to deal with the environment, not only related to our cars and the effect they have on the environment, it’s also relevant for our production processes. This is a huge thing we are doing and its one of our major focuses here to reduce our carbon footprint.”

6.63 Chris Bond agrees: “Take the electric car, the MINI was one of the first. Although it’s not gone into production, for testing purposes the MINI proved the way forward is electric. We tested it, drove it, an incredible car. Within the car industry there is a way forward and development should be towards greener energy. At the moment it’s expensive technology and there’s a reluctance to spend that sort of money, but give it a couple of years and it will start bedding in and we’ll start seeing a development.”

### What more should the government do to support industry in UK?

6.64 Erich Thanner highlighted a number of areas where the UK might focus in order to strengthen its industrial base. He argued that regulation should be built around basic principles as orientation marks, or guidelines, with the expectation that companies operate within those guidelines, before adding, “If a company doesn’t operate within those guidelines, of course, there needs to be some action. Based on my experience, the regulations tend to be too precise.” Erich also believes that more needs to be done to enhance the image of manufacturing.

6.65 Erich went on to speak about the value of middle-sized companies: “In the Germany industry we have the “Mittelstand”, the medium sized companies, and especially in manufacturing they have a very important role. In Germany there is a saying that these medium-size companies are the engine of the German economy. From my observation, this is different in the UK.”

### Roballo Engineering Co Ltd

6.66 Roballo Engineering is a manufacturer of large diameter antifriction bearings, or Slewing Bearings. It is located in Peterlee, County Durham, is a part of the Rothe Erde group and is a member of the ThyssenKrupp organisation.

6.67 Roballo Engineering covers three business sectors: military, comprising aerospace and defence; construction, which covers excavators, mobile cranes and, more recently, renewable energy; and wind, tide and solar energy. Roballo Engineering employs 65 people in Peterlee, although the wider

ThyssenKrupp group employs 6,500 people worldwide. Roballo's turnover in the last fiscal year was £12.8 million, of which £500,000 was profit.

### **Recent economic events**

6.68 Ray Carr, the Sales and Procurement Manager at Roballo Engineering, believes the factors affecting the company in the last three years have been fairly straightforward: "One of the biggest impacts this recession has had, has been on housing. Housing has a massive effect on our business, because 60-70% of our business is excavating equipment, the majority of which are used in some form for house building, heavy construction. It's had a big impact on us." Ray also identifies the change in government and, more specifically, "the strategic defence review (SDR), military contracts, very high value. We've been involved in military business for as long as I know and we've always had a very steady military turnover that tended to be somewhere in the region of £5 million a year just on military business. The SDR has caused some of those projects to be deferred or cancelled, which has had the net effect on our forecasting for future projects, which have been deferred or cancelled."

6.69 "The economic effect on Roballo (has been that) prior to the recession we had six days, 24 hour shifts here and people in on Sunday as well. We never had enough hours in the day to do what we needed. We had business coming out of our ears. We had our domestic markets which were really going very well. All areas, very busy. The effect was that this plant became very full. It was also assisted by our parent company's plant being full. That in turn pushed work back on to us from them because they had very little capacity to build so they were offering business to the group companies of which we are very cost effective, so we were getting quite a lot of the business. The downside is when the recession hit, the first thing that went was they pulled all that business back in, because the numbers had reduced or gone."

6.70 The result was that Roballo lost its fourth shift, which covered weekend working, together with its third night shift. Joe Peacock, the Works Manager at Roballo, says: "We didn't want to lose anybody at all. When the recession bit at its worst we should have gone down to possibly one shift, but because we didn't want to lose anybody and there was always going to be an end, we wanted to come out of the other side ready and not have to start looking for people. We ensured where we could, we kept everybody we could, and to do that, the company gave loans to its staff where people were feeling hardship. They were interest-free loans with quite a low payback over an extended period, whereas we didn't have to give them top-up on their wages, people only worked three days but they got four days pay to try and ease the situation for everybody."

6.71 The union at Roballo recognised the support they were receiving from the company. Neil Gardiner, the Unite Steward, says: "We didn't ask for a pay rise that year. We'd just lost two shifts and we understood. We have pretty

## Evidence from the United Kingdom

good relationships. We try to keep it fair so the manager wins a little bit and loses a bit. We didn't go in asking for anything... We could have interest free loans that people have just finished paying back now. When you were on a three day week, you could have X amount of money to make your pay up, or a four day week, then pay it back at about £10 or £20 a week throughout the year after you got back on full-time. They protected us really."

### The growth of the BRICs

6.72 Roballo Engineering sees a clear opportunity with the rise of Brazil, Russia, India and China, arguing that Roballo is often more competitive than its German parent company. Ray Carr says: "The fastest emerging countries are Russia, China, Brazil and India... We've always done business with them and the fact that we're getting business back from China is testament to how we can manufacture here and testament that shows guys out there how we can build and be competitive with these countries. We compete with the Chinese... Our partners in Germany can't. They quite often come to us and ask us to compete. They've got competition from Korea or China, they can't offer a price, but we can... I keep telling the guys in Germany when they get enquiries for this product, it doesn't matter where it is, they should always consider us as a supplier. If they can compete and get the business okay, it's their market. If they can't they shouldn't shut the door. They should come to us and say do you want to price this? Nine times out of ten we can do something. We can compete."

### Skills

6.73 Roballo doesn't have a big problem with skill shortages, because it is one of the highest paying employers in the area. It has lost staff to Rolls Royce, in Sunderland, in recent years, but is still able to recruit and retain skilled workers. It trains its workers to try to reach their potential and is proud that its current engineering manager began his working life as a Roballo apprentice. The company has four apprentices and is seeking two more. They are trained to a minimum of Higher National Certificate, but those who show prospects can go further. The company plans to support two of its current apprentices to degree level.

### Industrial relations

6.74 Roballo has about 99 per cent union density. Both management and union agree that the relationship between them is strong. Joe Peacock says: "We have one trade union here, its very very good. We have an honest and open relationship. It hasn't always been the same in the past but nowadays for the last eight years it's been really good. If you go back there's never been a withdrawal of labour by the union from this company. The door's always open if they want to talk about anything, they can talk to us whenever they like."

6.75 Neil Gardiner agrees: “Yes it’s not like the old fashioned, Arthur Scargill union. We try and get the best terms and conditions you can get for yourselves... Obviously I have disagreements with people and they have disagreements with me and the way we see things and the way to go forward but you've just got to get over it....”

6.76 Joe Peacock adds: “The unions have got a lot more moderate and smarter than they used to be. The first sign of any problem it used to be, ‘we'll withdraw our labour’. It doesn't work. You've got to talk to people and I think that's why we get on so well with our union, because we are prepared to talk. There are times when it comes to the point where you can do all the talking you want and it’s not going to make any difference, but you can maybe go to arbitration. In the main you can talk to them...I know our union guys are always talking to either the local people or the TUC on general policy in the area or the country. It does make it easier for them and for us.”

### **The role of government**

6.77 Management at Roballo Engineering believe a short-time working scheme would have been of benefit during the economic downturn.

6.78 Joe Peacock says: “The company, what profit it was making, which wasn't a lot at the time, it was ploughing back into its people, by paying them an extra day’s pay to try and ease their problems and giving them top-ups. The company was using its own money to try and keep everybody in a job. The Italian labour laws are different. I think they're entitled to 90% of their wages if they're on short time. I understand it’s something similar in Germany... I like to think that some assistance should be given for UK manufacture. Everyone knows there's always a start and end to a recession. Do the government really want all these fellas drawing income off the government, when they could easily keep that benefit by keeping them employed by the company...?”

6.79 He continued: “Are there ways the government could have helped but didn't? The likelihood is we lost a third of our workforce and the other two thirds went on to short time working. Really by rights this company should have gone down to one shift and lost another 20-30 people. So the company decided we can't do that, we'll keep them and pay them what we can. Anybody who goes on unemployment benefit will get £49 a week. We're in a redundancy situation here. We're on short-time working. We're going to try and keep these people, can we have tax relief for these people and ourselves? Could the government not have paid half the unemployment benefit towards us keeping those people on? The government would have saved money in benefit it didn't pay and it would have helped the company to keep more people on. These are the things a government should be looking to try and do what they can to help people.”

## Section seven

# Conclusions

## A new manufacturing eco-system

7.1 The TUC, unapologetically, seeks a renaissance for British manufacturing. If we are to move forward, government, industry and unions must agree between them what a renaissance for manufacturing actually means. Do we expect to have a much smaller share of manufacturing, given the growth of China and India? Has the decline of recent decades been inevitable? Or is there an agenda for manufacturing that is bold, recognising that, whilst we may never again be the “workshop of the world”, a strong manufacturing sector, across a variety of high skill, high value industries, is both achievable and desirable?

7.2 Trade unions have, for many years, campaigned against job losses in manufacturing, but this paper goes further. We not only want to see jobs maintained, we wish to see new ones created. We believe there are manufacturing sectors based on high skills and high value, most obviously but not exclusively in environmental technology, where the UK can become a world leader.

7.3 What is clear from the interviews described above is that the rise of China and India are as big or as small a threat as we wish them to be. There is nothing “inevitable” about high-skilled jobs moving to China and India. Globalisation is changing the world and, as internationalists, trade unions wish to see growing wealth in many countries entering into the world economy. But with a growing Chinese middle class, this country is a marvellous export opportunity for British business, so long as our attitude is not defeatist. The German companies quoted in this report were quick to describe China as an opportunity, rather than a threat.

7.4 However, this paper believes that if a renaissance in UK manufacturing is to occur, it is necessary to develop a new manufacturing eco-system. Individual initiatives will not be enough. Instead, based on the research presented above, this paper recommends a number of separate, but inter-linked, actions which, taken together, can lead to renewed manufacturing success.

## A new industrial philosophy

### **An acknowledgement of the UK position**

7.5 The UK de-industrialised in the 1980s and, as the UK's reliance on financial services at the time of the economic downturn demonstrates, this has left a gap in our economic profile that is not experienced by our major competitors. We could blame this politician or that government, although such apportioning of blame wouldn't achieve much. Instead, if we are to turn this situation around, we must acknowledge the scale of the problem.

7.6 Addressing the Society of Motor Manufacturers and Traders on 8th June 2011, the Business Secretary, Vince Cable, recognised that in the UK, manufacturing as a percentage of the economy fell from just over 18 per cent in 1990 to around 11 per cent in 2009. In fact, in 1970 it was more than thirty per cent, according to the economist Roger Bootle.<sup>10</sup> Cable acknowledges that the UK's fall is the most rapid of any developed economy and this is the UK's problem. Some of this decline is due to international demographics, but it is not accurate to dismiss it all as being the result of changes in the world economy. Put simply, government policies allowed this to happen and, if we want a manufacturing renaissance, government policies will be crucial in leading the way.

7.7 Harald Kern of the Siemens Works Council in Nuremberg made this point: "The first thing a government has to do is to say we have a problem. I haven't heard that [in the UK] yet... The first step would be to say that something is wrong, we need industry."

7.8 Modern day economic policy discussion is dominated by the attitude of the markets rather than on the potential that governments have to influence and support market behaviour. The TUC believes, in fact, that this can militate against long term investment, especially in less-traditional industries. However, it is true that investors put their money where they expect the best returns and this is why, if we wish investors to put their money into a revived British manufacturing sector, they must be convinced that we are determined to create that sector. It is important, therefore, to be realistic about the scale of the challenge we face, but also to communicate the genuine political ambition to meet that challenge.

### **Picking winners or spotting trends? A new industrial philosophy**

7.9 If we are to seek a greater focus, including a greater political focus, on manufacturing, we need to be clear about what areas of manufacturing, in particular, we expect to grow. This breaks with the Thatcher-Major-Blair-Brown consensus on the supremacy of the market, but it is necessary. To argue

<sup>10</sup> [www.telegraph.co.uk/finance/comment/rogerbootle/7604386/British-manufacturing-is-bigger-than-you-think-and-its-likely-to-grow.html](http://www.telegraph.co.uk/finance/comment/rogerbootle/7604386/British-manufacturing-is-bigger-than-you-think-and-its-likely-to-grow.html)

## Conclusions

that all manufacturing sectors are of equal value is simply not credible. To argue that the UK can become a world leader in all sectors even less so. What is more, we must align our abilities and our potentials with long-term world trends if we are to succeed.

7.10 Of course, one of the major arguments used against industrial policy in the UK, over decades, has been that it is not the role of the government to ‘pick winners’. The TUC, by contrast, has argued that industrial policy should focus on those industries where the UK is or could become a world leader in the future. So how much of this is picking winners and how much of it is spotting trends to which our industrial capabilities are aligned?

7.11 Siemens, in both Germany and the UK, spoke to us of ‘mega-trends’. These could be geographical, biological or ecological, but whatever category we put them in, they are going to happen. For example, the global population is going to rise and that will have consequences. As it does, more and more people will live in large cities, which has implications for the way those cities are designed.

7.12 As Harald Kern put it: “Have a look at London, for example. We try to answer the question, what will London look like in 2020 or 2025? What are the major things that need to change in a city like that? For Siemens, that is a kind of a headline, a possibility to develop business. All those things that are changing, regarding infrastructure, smart grid, locally engineered energy sources, waste water, I can go up the list, this is the business of Siemens.”

7.13 This does not mean that Siemens can predict micro-detail about the future. It does mean that it can assess where economic, political, social, technological and ecological developments are taking us and use this assessment to develop its business.

7.14 This is surely the correct approach. We cannot predict micro-detail, but we can identify trends that are inevitable. Siemens is one of the most successful engineering companies in the world and much of its recent success has been predicated on identifying future engineering needs and using its excellence to meet them.

7.15 What would this mean for policy? It would mean that government, assisted by experts, should try to combine an analysis of world trends that could impact on the demands placed on industry over the coming ten, twenty or thirty years. The government should commission research into how those trends will change demands from industry and align this with an assessment of the industries in which the UK has or could have comparative advantage. Those are the industries on which government must focus. That might have implications for tax policies, or policies to support skills or R&D in those sectors.

7.16 A balance must be struck between supporting strategic sectors and creating an environment where other sectors might continue to grow. Germany

focuses particularly on the automotive and ICT sectors, for example, but this doesn't mean that other industries or entrepreneurs cannot get help to develop in Germany. However, what is clear is that a focus on strategic sectors is a political decision in Germany. The fact that the UK may have done this badly in the past is not a reason to refuse to recognise its value, indeed its essential place, in the industrial policy of tomorrow.

7.17 The UK government's decision to create a Green Economy Council and its commitment to developing green economic growth, for example with the Green Investment Bank (albeit poorly capitalised), is actually a good example of this approach. There are a number of clear manufacturing opportunities linked to our climate change commitments, from low emission vehicles and wind turbine manufacture, to emerging proposals in support of our own energy intensive industries. It is the job of government to get behind these opportunities, particularly by developing an industrial strategy for the energy intensive sectors.

### **Capitalising on the trends: A strategic investment bank**

7.18 The industries of the future will need to be funded and, whilst some of that funding could come from traditional high-street banks, experience shows that some key sectors, especially those that are not in tried and tested, 'safe-bet' industries, cannot get development capital. The UK's major international competitors have strategic investment banks, whether based on a model such as Germany's KfW or France's Fonds Stratégique D'Investissement. As described above, the Coalition government is committed to establishing a Green Investment Bank, specifically to focus on growing environmentally friendly industrial sectors. The TUC has long supported the development of a Green Investment Bank, although we are critical of some aspects of the current government's proposal. Nevertheless, the question of how to fund future strategic sectors, that are not particularly associated with low-carbon growth, is one that must be grappled with.

7.19 A strategic investment bank could make use of existing government holdings in the banking industry. There is a clear need to leverage additional investment in a wider range of sectors and to help reduce our dependence on property and finance. A strategic investment bank would be able to raise large amounts of money on the commercial markets, backed by a smaller capital base provided by government. It could be set up on a commercial basis, to be run by an independent board, with all stakeholders represented, including trade unions, subject to a remit to generate a long-term return, based on investment in British business in a diverse range of sectors and in infrastructure.

7.20 This paper calls for a strategic investment bank. The TUC has previously supported the establishment of a UK investment bank developed on



## Conclusions

the French model<sup>11</sup>, whereby the bank takes a minority share in companies in which it invests. We still see the attractiveness of this model, but we seek the widest consensus on the shape, scale and operating status of a UK investment bank.

7.21 It is UK government policy to establish a Green Investment Bank and it is possible that such a bank could form part of a wider Strategic Investment Bank, so long as the development of green industries was safeguarded as part of its remit. However, if we are to compete with countries such as France and Germany, a bank that can lend to strategic industries, in the long term, is essential.

### Growing SMEs: A UK Mittelstand?

7.22 An interesting dimension to an industrial renaissance would be the necessity, or otherwise, of a tier of middle sized companies to act as suppliers to the kind of large companies that feature in this report.

7.23 When manufacturing is discussed in the UK, the companies that are often used as examples of Britain at its best include Rolls Royce, BAE Systems, Nissan and Toyota. In Germany, examples would include the companies interviewed for this report, e.g. Volkswagen, Siemens, etc. Additionally, in the UK, public policy is focused massively on small companies. Indeed, it could be argued that small firms receive a disproportionate amount of political attention. What is more, whilst small companies may be a good in themselves, they are assigned little role in a wider economic strategy. A man or woman starting their own micro-business need only provide for themselves and their family. This is deemed to be a good thing and a sign of healthy capitalism. Yet growing small companies into medium sized enterprises, which might employ more people and provide the components and parts that larger companies might need, is seldom part of the narrative.

7.24 In Germany, by contrast, the ‘mittelstand’, the network of medium sized companies that act as suppliers to large firms, is central. Erich Thanner of BMW told us: “In German industry we have the “Mittelstand”, the medium sized companies, and especially in manufacturing they have a very important role. In Germany there is a saying that these medium-size companies are the engine of the German economy. From my observation, this is different in the UK.”

7.25 In fact, this issue is a high priority for the Automotive Council, which published ‘Growing the Automotive Supply Chain: The Road Forward’ in March 2011. This reports that the supply chain represents about 40 per cent of the retail price of a passenger car, which means that vehicle manufacturers buy in 60-75 per cent of the value from the component supply chain.

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<sup>11</sup> *Developing UK Industrial Policy: Lessons from France*, December 2009

7.26 Growing small firms is also the focus of the CBI report, 'Future Champions: unlocking growth in the UK's medium-sized businesses', published in October 2011. The TUC welcomes this report. We fully agree with the comments of the CBI Director General, John Cridland, when he says, "I want the UK to have its own version of the German "Mittelstand" - a backbone of medium-sized firms which export, innovate and generate growth."

7.27 We are interested in the CBI's observation that many medium sized companies lack the confidence to grow. Linked to this, and described in the CBI report, is that medium sized firms often "don't have the same identity that much larger and smaller firms enjoy". It may well be true that small companies do not have the confidence to grow, but we are not convinced that policy makers in the UK have had the ambition for them to grow either. We need a stronger narrative about the need to grow small firms, and the role of medium sized firms in the UK.

7.28 The CBI suggests a number of credits, reliefs and incentives for small firms to grow, and whilst the TUC is sceptical that lowering business taxation (which in some way or another is so often the default position of the business lobby) will have the intended impacts, we agree that these should be examined. However, more interesting, in our view, is the suggestion that the Department of Business and the CBI encourage large companies to work with medium sized firms in their supply chain, to impart best practice in leadership, innovation, recruitment, exporting and financing, to strengthen that supply chain. So they should, and trade unions working in those large companies should also be part of this process.

7.29 For the TUC, this last point is vital. In our view, it is important to ask the question: why do we need to grow small firms? Growing them may be a good in itself, but there is a better reason. An industrial economy, with large, strong, world class companies, underpinned by a platform of medium sized supply companies, offers us the opportunity to rival the leading industrialised nations in the world. That is a prize worth striving for.

7.30 Yet this debate must be tempered in reality. The majority of small companies fail in the first five years. That is rarely acknowledged, but it is true. First, then, we must consider those companies that succeed, and ask why they succeed. Second, we must consider what type of companies we particularly need to grow to support a rebalanced UK economy and what we need to do to grow them. It will undoubtedly be true that some companies work best as small firms while others will reach their potential by growing into medium sized companies.

7.31 *Government must consider how it supports the growth of small firms into strategic medium sized enterprises.* Germany enjoys more devolved government than the UK and some support may be available at regional and local level. There could be a role for some of the money available to the Green Investment Bank and any strategic investment fund to be administered locally

## Conclusions

or regionally. Structures would need to be established or adapted to make that possible. *The TUC offers no final word on this subject at this point, but we do believe it is an area where more work is necessary.*

7.32 Finally, in the UK the ‘big six’ high street banks account for 90% of the sector, whilst in Germany such banks have a market share of just 12.5%. There is evidence that Germany’s more diverse and more regionally focused banking sector favours small and medium sized firms, has led to a higher level of economic development in the regions and supports more sustainable, long term business decision-making. If we do wish to grow more small firms into medium sized companies, it might be an idea to examine the case for regional banks.

### The case for a social market economy

7.33 In so many respects, this report highlights the value of a social market economy, a role for strong trade unions and a positive approach to industrial relations. A social market economy would also imply a strong role for employers’ organisations.

7.34 This report covers some of the best companies in Germany and the UK and it is surely no coincidence that these companies are able to provide excellent examples of unions working positively with employers. This is perhaps no surprise in Germany, where the Social Market model encourages dialogue, but in a UK context, where the role of trade unions is so often portrayed negatively, it is worth highlighting.

7.35 So the Bentley Company Council, in the words of the company’s Head of Personnel, is made up of “the ones that makes things happen” and “a very good bunch of 14 people who have worked together for more than 10 years”. Siemens UK has a relationship with its unions that is “very close and very strong”, according to its HR Director. BMW has “a very constructive relationship” with its unions. Roballo Engineering, with 99 per cent union density, enjoys “an honest and open relationship”.

7.36 Thymian Bussemer, from the Industrial Relations Department at Volkswagen, told us: “This [the Social Market Economy] is very strong in Germany, which means that there is a very close interaction between enterprise, especially big ones, the welfare state, the unions. We saw that in the crisis. The main contribution of the German state is to provide stable industrial relations and to provide the welfare state which linked up with the companies.”

7.37 Many other interviewees attested to the value of the German model in helping their companies through the crisis. This is especially important, given that it is during the most difficult times that relationships are tested. In particular, the strong, independent employees’ voice, exercised through the Works Council and through Supervisory Boards, were emphasised.

7.38 Martin Rosik of Volkswagen wanted to be challenged by employee representatives: “If you have a conversation on a matter of importance, and ... you discuss with [your] partner, if he only gives you the answers you expect to hear, you wouldn’t ask him anymore.” Harald Kern of Siemens spoke the language of conflict of interest, which would immediately ring alarm bells in a UK context, but is simply an expression of the truth that sometimes the immediate interests of management and those of the workforce are not the same. Indeed, Harald believed that the inability of the UK to grasp this concept puts us at a disadvantage: “This is a conflict; the question is how do you handle the conflict... do you have a language in common, I think when I look over the other side of the Channel, this is the beginning of your problem, because you don’t have a language with each other. If you have a conflict, you have to speak about the same thing, mean the same thing when you talk about it. You have to be crystal clear.”

7.39 But if German management and unions are comfortable in recognising their conflicts, this is because they are also aware of their strong common interests. Paradoxically, by acknowledging conflict, they are able to put aside traditional roles when these are in the interests of both sides. Witness Martin Rosik again: “Labour representatives expect the company to be competitive, they force the company to be competitive, and take care of the interests of their members. Here you don’t have the classic understanding of what is whose role in this game. It’s a question of how the unions use their influence. They use it in a way that is not combative, it is handled in an aggressive way if necessary, but it is co-operative.”

7.40 Of course, the German co-determination system is not perfect: the example of Thyssenkrupp’s investment in Brazil, agreed to by the Supervisory Board on condition that investment would also be made in Germany, the latter of which is still not forthcoming, shows that that it can fail. The temptation to see this model as some kind of modern day nirvana must be resisted. Even so, it has many qualities that are preferable to the situation in the UK, where management and unions too often try to speak as if they have one agenda, because it is not acceptable to do otherwise, whilst papering over their differences.

7.41 Some in the UK are sceptical of the German approach. Toby Peyton-Jones of Siemens UK sees a paternalism in co-determination that he believes works against self-reliance: “The advantages [of co-determination] are that you get continuity and you get a kind of growing together, the disadvantages, and I think Germany would also say this, is they are much slower to be able to respond... making a virtue out of being agile is also a viable strategy and ...our ability to actually move people from one area, reskill and get them working and productive in other areas, we are much, much faster. That’s because people take much more responsibility for their own lives, they don’t think that someone is going to do it all for them.”

## Conclusions

7.42 Norman Gough, a Unite rep at BMW, also believes the British approach to be more democratic: “It seems in a lot of cases [in Germany] the negotiating body gets round the table with management, agrees something and more or less tells the workforce this is what we've agreed, this is what you're going to do. Whereas here the members have the last say. They have the vote on that.”

7.43 The German model may be about to be tested in the UK, as Bentley are to set up a co-determination system, albeit in a UK style. The TUC will be very interested to see how this works. More generally, this report believes that in those companies where unions are strong and relationships with management are secure, co-determination offers a new, exciting way of operating, that could have valuable results for the members we represent.

7.44 Germany's Social Market Economy is culturally cherished, in a way that perhaps the National Health Service is culturally cherished in the UK, because it safeguards a high degree of equality and fairness among the population. The TUC believes there are valuable lessons for such a model in the UK, but that cannot be done without strong unions. In turn, strong unions require employer trust in our motives. Co-determination, whilst empowering unions, empower them for a different way of operating. This report encourages policy-makers to consider the value, and the possible drawbacks, that such a model could offer the UK economy and society. It could, for example, provide one means of reducing the UK's growing problem of employment polarisation (the 'hollowing out' of middle income jobs).

## Nationality

7.45 The importance or otherwise of “British” companies has long been a subject of debate. The TUC has tended to be pragmatic about this. We have seen foreign companies taking over UK firms and investing heavily in them, improving their competitiveness and their potential to create and maintain jobs. Volkswagen's acquisition of Bentley is a good example of this. The investment of £500m that modernised Bentley was vital to the company's success and some workers at the company believe they owe their jobs to Volkswagen's investment. As Unite's rep, Stuart Davis, said, “Just the money that goes in, you can't not be positive,” and it is hard to disagree with this.

7.46 Of course, if a foreign takeover of a UK company leads to asset stripping or other activity which devalues the company, the TUC is much more hostile in its response.

7.47 On balance, on the evidence presented in this report, the role of German companies operating in the UK is very positive, but there was sometimes a sense of companies looking over their shoulders. We heard that this can lead to managers in the UK feeling under pressure, fearing that, if they are no longer deemed to be sufficiently competitive, work will be transferred to German plants.

7.48 Whether we like it or not, there is political pressure on companies to create jobs and wealth in their home countries. It is unrealistic to believe that a UK plant owned by a German parent will not sometimes find itself at the centre of these tensions. This fact simply goes to demonstrate that ownership and nationality is important, not for jingoistic reasons, but for reasons that are both patriotic and practical. Patriotic because citizens are proud of the major companies of their country; practical because “British” companies based in the UK will not be subject to political pressures from another country. None of this is to decry the excellent UK daughter plants of German parents described in this report. Nor is it to criticise those parent companies. It is simply a fact of political and industrial life and it needs to be acknowledged realistically.

7.49 The situation regarding Daimler’s decision to sell its stake in Airbus, and the fact that the German government, via the KfW, has now bought that stake, is a fascinating one. The Free Democrats, the junior partner in the German government, wanted a private sector solution, but there was not one to be found. Airbus is considered to be so strategic that the government has bought Daimler’s stake.

7.50 The TUC believes that, in such circumstances, this is the correct decision and, once again, it highlights a difference of attitude between Germany and the UK. In recent years, the UK has come to believe in the free market at any cost; Germany believes in the free market, but accompanied state support and appropriate regulation improve its functioning, and allow the government to recognise strategic interests where the government will take a role. In such circumstances, the free market can be suspended. *The TUC calls on the UK to follow this approach, recognising the UK’s strategic industrial interests and balancing them with its commitment to the free market.*

### **Political certainty**

7.51 It sounds trite to call for political certainty. In a democracy, governments change from time to time and it is quite right that policies will change with them. Sometimes, as with the election of Clement Attlee in 1945 or Margaret Thatcher in 1979, elections bring not just a change of government, but also a radical change of political philosophy. Moreover, political change does not just affect democratic political systems. China has gone through huge political change in recent decades. And, of course, change happens. The world is changing rapidly, irrespective of political events.

7.52 Yet respondents spoke to us of political certainty. Sonja Daum and Thomas Peter of BASF felt that companies struggle with the changing priorities of government. They said that companies wish to invest in the long-term, but shifting political priorities, which have implications for business, makes it difficult to do this. In the chemical sector, especially given the prevalence of ‘green’ economic issues in Germany, this is an important issue.

## Conclusions

7.53 In a world of change, absolute certainty is impossible, but governments can try to cushion change. government must keep talking to business (and unions). Consensus, not always possible in a world of Punch and Judy politics, is nevertheless desirable, at least on some issues. This report has highlighted how the German Social Market Economy is defended and nurtured by all sides of German politics. This provides a huge advantage to business.

7.54 What is more, whilst certainty may be impossible, sudden, avoidable change makes life incredibly difficult for some companies, even whole industries. A good example is the announcement in the UK in October 2011 that feed-in tariffs to support the burgeoning solar industry are to be more than halved. The industry had always expected the tariff to be revised in line with falling installation and running costs, but by failing to give people and organisations time to plan ahead and adapt, this announcement has caused major problems for the sector.

## Creativity

7.55 Whilst this report seeks to make recommendations for change, it is also important to acknowledge what we do well. Toby Peyton-Jones of Siemens referred to the UK's creative instincts. He said: "UK does have in our DNA, creativity and innovation. I don't think there is another country in the world that has got the vision, the desire, the capability, that our education system and our culture brings... In terms of innovation, our flexibility of thinking, our flexibility also with skills, and in terms of our management style."

7.56 This report sets out a number of changes that we wish to see, but those changes should be introduced in such a way that this creative potential of the UK is recognised and nurtured. Industrial policy should support this potential.

## Policies to support a new industrial philosophy

## Skills

7.57 The battle to attract and retain skilled workers is a constant issue in discussions about industry. There is no magic bullet and it is clear from this report that Germany struggles with this too.

7.58 Germany's situation is different, in the sense that attracting people into industry in the first place is less of a problem. In the UK, talented young people have wanted to go, or have been lured, into finance and business, with industry being seen as a lesser option. Germany, by contrast, enjoys a situation where a career in industry is seen as attractive and exciting.

7.59 Germany also has the dual vocational training system. This forms the core of vocational training, which usually lasts for three years. Every young person who has completed full-time compulsory education has access to dual vocational training. A characteristic of this training path, which some 53 per

cent of young people in a cohort complete, is two places of learning: the company and the vocational training school. Successful completion provides recognition or employment as a qualified skilled employee.

7.60 The dual system has many admirers and for good reason: it has formed a major part of Germany's skills regime and has helped to deliver the industrial success that Germany has enjoyed over decades. That does not mean, of course, that it doesn't face challenges of its own. Critics argue that it must link better with universities, it must embrace new growth areas of the economy, and it must increase the participation of migrant companies in training.

7.61 The problem of industrial skills plainly cannot be seen in isolation. As noted above, the UK has been through a process of deindustrialisation and young people will need to know that companies, and government, are serious about industry if they are to consider careers there in any great numbers.

7.62 The TUC has been critical that UK government attempts to boost manufacturing have focused so much on the image of the sector, under both Labour and Coalition Administrations, believing there are more pressing, long-term problems, but that does not mean that image has no part to play. Charlotte Platzkoster of Thyssenkrupp in Germany spoke of an attitude among young people that said, 'Why should I do an industrial job, where I get dirty... because there is demographic change and I could probably get another job, which is more easy?'" Thomas Peter of BASF spoke of the problems of attracting talent into an industry which is seen as dirty in both the physical and environmentally friendly senses. Clearly a greater understanding of how industry really works among young people is necessary.

7.63 Of course, pay and other rewards are an issue. Roballo Engineering, whilst feeling the heat of competition from Rolls Royce, can attract young talent because it can offer good wages. Norbert Kluge of Thyssenkrupp in Germany argued for longer term contracts to attract young people.

7.64 The funding of apprenticeships has always been a partnership. government makes a contribution, as do employers, and apprentices earn a lower, trainee wage during their apprenticeship. Some employers expressed concern at government cuts to apprentice programmes. Leonie Williams of Bentley said: "... We are now being asked to fund a lot more than we were asked to fund before, there is a lot of government support for apprenticeships but more of the funding is now the responsibility of the employer... We have an adult apprenticeship programme, the funding that we've had for that has now been withdrawn but we've made a commitment that fifty per cent of our workforce will be skilled, by 2015 and we will carry on and deliver on our commitment, but smaller local employers, how do they find the resources to do that?"

7.65 TUC support for high quality apprenticeships is almost as old as the TUC itself. We are currently trying to drive forward this agenda on two fronts:



## Conclusions

7.66 Helping unions to build on their acknowledged strengths in supporting and protecting apprenticeships at work and in negotiating a greater take-up of trainees among a wider pool of employers;

7.67 Pressing government to introduce measures to tackle some key policy challenges, in particular to improve quality of training, equality of access and employer demand.

7.68 Apprenticeships must be addressed in terms of quality and quantity. According to the OECD, in the dual system German-speaking countries (Austria, Germany and Switzerland) at least 40 per cent of school leavers are taken on by employers in three year apprenticeships leading to a recognised qualification. In England, only six per cent of 16- to 18-year olds were in apprenticeships in 2010 and apprenticeships last on average just over one year.<sup>12</sup>

7.69 Apprenticeships must be high-quality, holistic career development opportunities and should not be viewed simply as a means of subsidising employers to deliver occupation-specific training.

7.70 The challenge facing policymakers is that it is difficult to impose an apprenticeship quality standard across sectors in a wholly voluntaristic skills system and in the absence of a social partnership approach. This fact reinforces the need for more widespread collective bargaining that is a feature of this report.

7.71 Procurement policy can be used to drive apprenticeships, as it was under the ‘Policy Through Procurement Action Plan’ pursued by the previous Labour government. Other incentives could also be considered to encourage employers to invest more. For example, employers could be required to include a short summary of their training provision in annual reports to better inform customers, employees and shareholders. The government could also review the current arrangements for tax relief for work-related training. Unionlearn, the TUC’s learning arm, estimated in a recent policy paper that the total cost of this relief to the Exchequer is in the region of £5bn per annum, with little available data on how it is being used by those employers who qualify for it. This relief could be much more effectively targeted, for example, to give much greater priority to accredited training, such as apprenticeships.

7.72 Another concern is that in the UK, about two-thirds of trainees are engaged in level 2 training, and it appears that two-thirds of them do not progress to a level 3 apprenticeship. A person who trains for a level 2 qualification, followed by a level 3 qualification and then a long term career in the sector in which he or she trained is the exception rather than the rule.

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<sup>12</sup> Quoted in “Challenges and Change: Apprenticeships in German-Speaking Europe”, Hilary Steedman, in *Rethinking Apprenticeships*, IPPR, 2011.

7.73 The Coalition government has made a welcome commitment to tackling barriers to progression and to increase opportunities for people to achieve a level 3 apprenticeship and to progress to higher education. The TUC believes that all apprentices who have the aptitude and desire to progress should be given the opportunity to do so.

7.74 Many small and medium sized enterprises (SMEs) feel that they lack the capacity to take on apprentices. Collaboration is the answer to this. The TUC supports the model of Group Training Agencies (GTA), which allow apprentices to be directly employed by the SME but within a 'pooled training' resource. The GTA model offers a valuable vehicle for supporting groups of employers to come together, often with union support, to develop high-quality apprenticeships. Of course, the German practice of large companies often training more apprentices than they need and then allowing, even encouraging, members of their supply chain to take on their excess apprentices is another model to be considered, especially in a co-determination model, where union representatives can ensure the quality of the jobs those excess apprentices are going on to.

### **University Technical Colleges**

7.75 A major recent development in education in the UK is the establishment of University Technical Colleges (UTCs). These are designed to offer 14-19 year-olds the opportunity to take a technically oriented course of study at a specialist college. That college will be sponsored by a university, often in partnership with a college of further education. It should offer a clear progression route into either higher education or further learning at work. Under the proposals, students would study technical subjects, alongside English, maths, science and IT. Technical studies might include engineering, product design, health sciences, construction and building support services, land and environmental services, and food technology.

7.76 There are already two UTCs open and three more have been approved. Another 24 are expected to open by 2014, with a further 100 predicted by the former Secretary of State for Education, Lord Baker, to be opened by the time of the next General Election.

7.77 The TUC welcomes both the recognition that much more focus needs to be given to vocational skills and that some pupils are ill-served by the education system in its current form. Of course, in the current political environment, we are concerned at the funding of education generally, and would be doubly concerned if money was diverted either from current schools or from colleges of further education to pay for UTCs. There is an obvious further fear that UTCs become seen as "second best". Until there is genuine 'parity of esteem' between academic and vocational qualifications, this will always be a concern. The TUC would oppose any return to selection, be it at 11 or at 14 and any two track system.

## Conclusions

7.78 In fact, if that were to happen, employer trust in UTCs would be lost quickly. Toby Peyton-Jones of Siemens was surely correct in the warning he gave about the potential misuse of apprenticeships, in an attempt, however laudable, to address long-term unemployment. Toby stressed the importance of “not degrading the brand” of apprenticeships, adding that they “should be a technical qualification that can proudly stand alongside any academic qualification”. In our view, this fear also applies to UTCs.

7.79 Trade unions are sceptical about any governance system drawing on the academy model, as is currently the case with UTCs. However, we also recognise the value that UTCs could bring and, if introduced properly and carefully, we believe that all of the above objections could be avoided. We would welcome a dialogue with the government on this issue. There is a clear value in the concept of UTCs that could be exploited, if they are introduced in a way that is properly funded and is not divisive.

### The image of manufacturing

7.80 Too much of manufacturing has an image problem. It is too often seen as dirty. There is too little understanding of what it actually does. For some companies, this is more difficult than for others. Client facing companies, in particular, have more brand recognition. Most people know what Volkswagen and Bentley make. Siemens and Thyssenkrupp are recognisable if people look for their products. Roballo Engineering is a middle sized company that is a player in its local area, even if it is not widely known nationally in the UK. Most people will have heard of BASF, but may not have any idea what it actually makes. BMW, on the other hand, have it relatively easy. Not only is its name well-known, but its product is so attractive that engineers compete to work for it.

7.81 Some companies will always be more attractive than others. BASF competes for local talent with Porsche, a company whose brand recognition would be difficult for anybody to compete with. Yet a greater understanding of the reality of manufacturing would be very helpful. Of course, showing manufacturing in a positive light does not mean being dishonest about its role and its potential. As noted above, the UK has deindustrialised over 30 years, so politicians telling people of its great success is more likely to make them cynical about politicians than enthusiastic about manufacturing. Instead, the UK’s pockets of success should be highlighted as a sign of potential, but we should be realistic about our current problems.

7.82 The TUC supports efforts to highlight the positive impact of manufacturing, as part of a wider strategic renaissance for manufacturing. But a stand-alone image of manufacturing campaign would be seen as a gimmick. Moreover, in the quality press, especially in their business pages, there are often reports of manufacturing excellence. Instead, there should be a campaign in schools. Business leaders should be encouraged to visit schools to talk about

manufacturing. This should be a long-term project. If the other measures recommended in this report are implemented, we would expect to see an improvement in the prospects of UK manufacturing over time, and for this to be reported. It will take years of patient work, but gradually the image of UK manufacturing can be rebuilt.

## Procurement

7.83 There are serious problems with the implementation of public procurement policy in the UK. The TUC has campaigned for a more intelligent procurement strategy for many years and we are pleased that this issue, in particular, is one in which there is very little difference between our views and those of employers, both individual companies and employers' organisations. Put simply, across industry there is a view that the UK's attitude to procurement is a wasted opportunity for British business.

7.84 Specifically, there is a concern that we do not make procurement work for the benefit of our economy or industry. The controversy over the decision not to give the contract to supply trains for the Thameslink project to Bombardier of Derby has put the issue of how procurement supports British industry in the political spotlight.

7.85 There is also a lack of trust that European procurement rules are applied consistently across Europe. It is believed that 'the French will always buy French and the Germans will always buy German', while Britain naively opens up its markets to companies from across the European Union. One manager told us: "If we'd been Germany, Spain, USA, the help they get from the government into these markets is a lot more than we do in the UK. The demand for local content in other countries is a lot more than in ours. I've been to other countries where they're demanding up to 80% local content in things like this. We don't." Whether that is truth or perception, it is an argument that those working in manufacturing make time and time again about procurement rules.

7.86 What certainly seems to be true is that other countries push procurement law to the limit, whereas the UK tends to assume that certain procurement practices would fall foul of the law, so they never check. Not only does this mean that other countries are able to promote their own industries as far as possible, giving them an advantage, it also sends a message that other governments are prepared to fight harder for their industries than the UK government is.

7.87 The economic context in which we find ourselves makes this issue more important than ever. government spending cuts mean that, in those areas where public money is being spent, it is essential to achieve value for that money. But for as long as value for money is interpreted as being synonymous with low cost, we will never be able to make procurement work for us in the way that other countries seem to.

## Conclusions

7.88 The TUC sets this simple test for the future of procurement policy. In our view, every pound of taxpayer's money spent on procuring goods and services must do something that can be demonstrated to support the development of a modern, high-skill, high-value economy in the UK. We are no more specific than that. The company delivering the contract need not necessarily be a British company – we are not talking about “British jobs for British workers” – and there may even be scenarios in which the production in question does not take place in the UK. But it cannot be beyond the wit of government that procurement policy, in a single European market, is made to work for the UK economy and wider society in an intelligent way. government should meet with industry and unions to define the guidelines within which support for the British economy can be measured. We recognise that this policy must be implemented on a case-by-case basis, but this must be the guiding principle behind procurement policy.

7.89 Separately, the UK should call for an inquiry, at EU level, into the way in which procurement policy is implemented across the single market. At the moment, too many employers have no confidence that all companies and countries are playing by the same rules. If we are serious about an open market in Europe, there must be one set of rules. Politicians will have lost their moral authority to argue against protectionism unless this problem is dealt with, once and for all.

## Immigration

7.90 Employers spoke of immigration rules, which they believe can sometimes stop them from recruiting highly specialist staff from outside of the EU.

7.91 Toby Peyton-Jones of Siemens told us: “The government has hugely missed their targets on immigration, that is purely because they never could control them. Most immigration happens because we happen to be part of the EU and they can't stop people coming in or leaving the country... Because they can't control the big numbers they are trying to control the very small numbers.”

7.92 Immigration is a complex social and political, as well as economic, issue. Economically, as Toby says, it can help to boost economic growth, innovation and productivity. But it also has the potential unless adequately managed to depress wages or reduce wage growth, resulting in exploitation and undercutting. And it can sometimes be an alternative to proper education and training arrangements, as well as operating as a brain drain from developing countries. Immigration should therefore be seen as positive for high skill, high value businesses, but must be accompanied by the restoration of collective bargaining that is implicit in this paper, the re-regulation of the labour market to ensure equal pay and fair treatment for all, and the development of more responsive education and training provision.

### **Employment law in Germany and the UK**

7.93 There was evidence of some UK companies owned by German plants being benchmarked against German plants and also evidence of lower costs of making people redundant in the UK, as a result of poor employment protection here and stronger German employment law. German law makes many demands on companies and management and there were reports that, by comparison, the UK has more of a ‘hire and fire’ mentality. Put simply, it would be cheaper to close a company in the UK than it would in Germany. Moreover, it is recognised that the German government is more active in supporting industry than is their UK equivalent, leaving a feeling that British plants are trying to compete with one hand tied behind their backs.

7.94 The TUC is highly critical of the path of deregulation undertaken by British governments since 1979. That path has stripped away employees’ rights, but there is no corresponding evidence that it has boosted economic performance or job creation. Indeed, the Labour governments from 1997 to 2010 introduced a limited number of measures – the National Minimum Wage, statutory recognition rights for trade unions and improved maternity and paternity leave – which have brought greater workforce protection, with no accompanying fall in economic performance during that time.

7.95 Furthermore, a review of domestic and international evidence, described in the TUC Touchstone Pamphlet ‘The Red Tape Delusion’, found, among other things:

7.96 That trade unions have no significant negative consequences for labour market outcomes, and have positive effects in promoting workplace cohesion and social justice;

7.97 And that co-ordinated and responsible bargaining systems are associated with lower unemployment while under the right conditions social corporatism works.

7.98 The successful companies described in this paper provide further evidence that proper employment protection does not hamper corporate performance. The UK has much lower employment protection than many of our competitors, but there are few signs that this is a force for good.

### **Short-time working in an economic downturn**

7.99 We hope that the economic downturn is behind us, but it is important that lessons are learnt. The single most important lesson that emerges from this report is the value of a short-time working programme. The TUC called for such a programme at the time and our call is vindicated by the evidence set out here.

7.100 Speaking of IG Metall’s influence over the German SPD, which was part of the government at the time, Frederick Spiegel of Volkswagen told us,

## Conclusions

“We were able to bring in our politics, our ideas, our trade union concerns... The law on short time working, which was limited to six months, was extended so that companies could have short time work for 18 months. It was eventually extended to two years.” Regarding the protection of wages, in the words of Norbert Kluge of Thyssenkrupp, “I think this is why you read in the newspapers everyday that German industry came out of the crisis better than others.”

7.101 UK companies had no such support and Joe Peacock at Roballo Engineering put it best: “The company, what profit it was making, which wasn't a lot at the time, it was ploughing back into its people, by paying them an extra day's pay to try and ease their problems and giving them top ups... The Italian labour laws are different. I think they're entitled to 90% of their wages if they're on short time. I understand it's something similar in Germany... I like to think that some assistance should be given for UK manufacture. Everyone knows there's always a start and end to a recession. Do the government really want all these fellas drawing income off the government, when they could easily keep that benefit by keeping them employed by the company...?”

7.102 The TUC urges political parties in the UK to learn from this experience. If we find ourselves back into recession in the months or years ahead, a short time working subsidy could be the single most important area of support the government could give to British business.

### Collective bargaining and minimum standards...

7.103 Collective bargaining, involving strong trade unions, and legal protection are sometimes seen as either/or options. In fact, both have their place and should even reinforce each other. Trade unions must always bear in mind that, whilst they are elected to defend and enhance the position of their members, they cannot be oblivious to the situation facing other workers. As part of its response to the downturn, one company reported above used temporary and agency workers to supplement the core workforce, a response that was supported by the Works Council. More positively, IG Metall reached a pilot agreement last year, providing temporary workers with the same standards as permanent workers. The union recognised that this agreement did not cover many workers, but it was an indication of its thinking moving forward. Nevertheless, there is always a case for minimum standards to underpin whatever is achieved by trade union negotiators.

### ... and strong employer organisations

7.104 For collective bargaining to work in a Social Market Economy, it is also necessary to have strong employer organisations. Unions are not representative if they do not have strength in numbers and the same is true for employers' organisations.

7.105 Martin Behrens of the Hans Bockler Stiftung said: “The union can only be strong if they have, in the German system, a strong employers’ association sitting at the bargaining table, which would be able to satisfy their demands. If nobody is showing up to negotiate or if somebody is showing up who is not capable to bring these agreed terms and conditions to his constituency, what [can we] do as a union?” The alternative would be to negotiate with each company individually.”

7.106 For this reason, the TUC calls for a response from employers’ organisations, such as the CBI and the EEF, to our belief in a role for co-determination as part of a new economic model. How do employers believe we could make a co-determination system work in the UK? What would they wish to see from trade unions if that were to happen?

### **A minimum wage in Germany**

7.107 *Finally, this paper supports the calls from our trade union colleagues in Germany for a minimum wage in that country.* About 20 per cent of German workers are trade union members, but about sixty per cent are covered by collectively agreed terms and conditions. As in so many other countries, those that are not include some of the most vulnerable in society. Those workers particularly need the protection of a minimum wage.

7.108 But a minimum wage must be introduced in such a way that it underpins and supports collective bargaining, rather than undermining it. For many years, UK unions were concerned that minimum wages might become a substitute for bargaining and German unions have also had that concern. Martin Behrens of the Hans Bockler Stiftung says: “If we put the strategy in terms of what we expect from it ... it’s not to say that voluntary collective interest representation by unions and employers is to be replaced by state initiatives ... it is not that we put a minimum wage to set a standard which in the old days was negotiated by the unions, but ... you are just raising the floor and building an incentive for employers to come back to the bargaining table. They [employers] would say: ‘We would have to pay eight euros anyway, so why don’t we talk to the unions and see if there is any more rational wage system we can agree on’. It is the prize they would get from defecting from that system.”

7.109 Introduced in this way, a minimum wage could reinforce collective bargaining in Germany, as well as preventing downward pressure on wages and providing greater protection to temporary staff, and the TUC supports the view of the DGB and IG Metall, both of whom believe it is time such a minimum wage was forthcoming.









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**Appendix Six: Paper Three – Page, T (2013), ‘The Way of the Dragon: What can the UK learn from the rise of China and East Asia?’**

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## The Way of the Dragon: What can the UK learn from the rise of China and East Asia?



## **Contents**

### **5 Introduction**

### **9 Industrial Policy – A Post War History**

The Theory of Comparative Advantage

Japan

Singapore

Taiwan

South Korea

Hong Kong

China

*The Deng era begins*

*Relations with the US*

*Guangdong accepts foreign investment*

*Deng the capitalist?*

*Town and Village Enterprises*

*The values, and limits, of planning*

*Hong Kong becomes part of China*

*The Tiananmen Massacre*

*Deng's Southern Journey*

*China after Deng*

Summary of Section One

### **33 Evidence from China and East Asia**

South Korea

*Economic Overview*

*Chaebols*

*Green Growth*

*Challenge of China*

*The role of trade unions*

*Demography*

*What does Korea do well?*

*What challenges does Korea face?*

Singapore

*Economic Overview*

*Singapore's competitive strategy*

*China*

*The 'greening' of Singapore*

*The Culture of Singapore*

*What does Singapore do well?*

China

*Economic Overview*

*Planning*

*Industry*

*Green China?*

*Employment*

*Trade Unions in China*

*The Role of the State*

*The Scale of China*

*Politics*

*Is the rise of China an opportunity or a threat to the UK?*

*Culture*

*What is the appropriate role of the state in modern industry and modern economics?*

*What does the rise of China mean for the UK's relationship with Europe?*

*Can the state have a strategic approach to the private sector?*

*Can UK business take advantage of Chinese procurement policy?*

Summary of Section Two



## 59 **Conclusions and Recommendations**

China is a major opportunity – and a minor threat

The UK needs a holistic economic, industrial and employment strategy

*Broadening our understanding of strategic industries*

*Industrial Eco-Systems*

*Strategic sectors rather than strategic companies*

The UK needs to rethink the appropriate role of the state in the nation's economy

*The role of the state in research and development*

*A strategic role for government*

*The role of government in the green revolution*

*Culture*

*Europe*

*The role of trade unions*

Recommendations



# Introduction

Industrial policy is back on the agenda.

When the Coalition Government took office, the phrase “industrial policy” was unmentionable, dismissed by economic neo-liberals as akin to “picking winners” and the “failed” interventionism of the 1970s. To be fair, this attitude had also existed throughout most, but not all, of the period of Labour Government between 1997 and 2010. Yet today, the Business Secretary, Vince Cable, and his Labour Shadow, Chuka Umunna, both make the case for a strategic, targeted government role in industry.

The dialogue has changed because, following the financial crisis, there is a consensus across the political spectrum that the UK economy, pre-2008, was unbalanced. The focus on financial services was excessive and not enough attention was given to the importance of manufacturing. To bring about a rebalanced economy, the role of government in promoting strategic sectors is now widely considered to be necessary.

Moreover, the spectacular growth of the BRIC economies, and China’s state investment model in particular, has led some to question whether the market economy, left to its own devices, can really deliver the economic success that has been assumed of it in recent years.

This feels like a very recent debate but industrial policy has been debated for decades, centuries even. What is more, those countries urging neo-liberal solutions on the developing world now are the very same countries that took full advantage of industrial policies throughout their own economic histories.

The growth of East Asia, in particular, is truly spectacular. The economy of Asia (excluding Japan) increased twelvefold between 1950 and 1998; the economies of the US and Western Europe both grew by five times during the same period. If those figures included the fifteen years since 1998, the differential would be even higher.<sup>1</sup>

So what happened, first in East Asia, and then in China? What is happening now? And what does this mean for the West in general, and the UK in particular?

This report looks at industrial policy in China and East Asia. It is divided into two sections. The first section, covering the post war history of East Asia, discusses how industrial policy supported economic development, first in

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<sup>1</sup> <http://www.theworldeconomy.org/MaddisonTables/MaddisontableB-18.pdf>

## Introduction

Japan, then in the “four little dragons” of Taiwan, Hong Kong, Singapore and South Korea. It explores David Ricardo’s theory of comparative advantage, which has dominated discussions of industrial policy in recent years, and considers the limitations of this approach.

The report then looks at China’s entry into the world economy and its spectacular industrial development, under the leadership of Deng Xiaoping.

The second section focuses on China, South Korea and Singapore as they are today. Based on interviews with academics, think tanks, trade unionists and company representatives in China and South Korea, a London-based interview with the Singaporean NTUC Secretary General and Cabinet Office Minister Lim Swee Say, and underpinned by briefings given by officials from the British Embassies in Beijing and Seoul, the report will seek to get behind the stereotypes to ask: what is happening in the economies of East Asia today? Can the UK compete with them and, if so, how? What specific factors relating to East Asian culture are at play and what effects do they have? And given China and wider East Asia’s meteoric rise, rather than asking what they can learn from the West, are there lessons that we could learn from them?

This report seeks to achieve what Justin Yifu Lin calls a “changwu” attitude towards the development of China and East Asia<sup>2</sup>: “changwu” means to see the world as though seeing it for the first time, through a newly born baby’s eyes, without preconceived notions. It seeks to understand East Asia from an Asian perspective, as far as that is possible. For obvious reasons, commentators in the West ask the questions that are of most interest to the West. But if we are to understand China and wider Asian economies we need to try to address this question from their perspective.

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<sup>2</sup> ‘Against the Consensus: Reflections on the Great Recession’, Justin Yifu Lin, 2013.

# Industrial Policy – A Post War History

The term industrial policy is used by economists to describe interventions, usually at a government level, to encourage, support or develop certain industrial outcomes which the free-market, left to its own devices, would not necessarily deliver.

Ha Joon Chang of the University of Cambridge says that, “literally interpreted, industrial policy should mean policy that affects industry...” before adding that, in fact, “when we talk about ‘industrial policy’, the majority of us do not mean any policy that affect industry but a very particular type of policy that affects industries. It is what is commonly known as ‘selective industrial policy’ or ‘targeting’ – namely, a policy that deliberately favours particular industries over others, against market signals, usually (but not necessarily) to enhance efficiency and promote productivity growth.”<sup>3</sup> Chang notes that industrial policy in this sense is usually associated with the development experiences of Japan and other East Asian economies (South Korea, Taiwan and Singapore) in the post World War Two period.

Of course, many believe industrial policy simply represents actions often taken in countries, including developed countries, to support particular industries that are believed to be important for those nations’ economies. Karl Aiginger, for example, describes how industrial policy has been used in Europe across countries since the start of the Community for Iron and Steel (which became the European Union).<sup>4</sup>

## The Theory of Comparative Advantage

Opponents of industrial policy find their theoretical basis in the idea of comparative advantage, which was first put forward by the English economist David Ricardo in his book of 1817, ‘Principles of Political Economy and Taxation’. Ha Joon Chang says that before Ricardo, it was believed that foreign trade only made sense when a country can make something more cheaply than its trading partner. Ricardo’s innovation in economics was to

<sup>3</sup> ‘Industrial Policy: Can We Go Beyond an Unproductive Confrontation?’, plenary paper for Annual World Bank Conference on Development Economics’, Seoul, South Korea, 22-24 June 2009.

<sup>4</sup> ‘A Systemic Industrial Policy to Pave a New Growth Path for Europe’, Karl Aiginger, Österreichisches Institut für Wirtschaftsforschung’ (WIFO) Working Papers 421/2012.

## Industrial Policy – A Post War History

argue that both countries can gain from trade, even if one of the two countries produced everything more efficiently than the other. In such circumstances, the efficient country maximised its gains by concentrating on things in which it has the greatest cost advantage over its trading partner, while the less efficient country should focus on products in which it has the least cost disadvantage.

This theory works because the efficient country only optimizes its resources by putting its labour to work in those areas where it has the greatest advantage. This leaves no resources for those necessary, but less advantageous goods and services, which it can buy more efficiently from the less efficient country. In this way, both countries benefit from trade – but only if they maintain this equilibrium.

Chang<sup>5</sup> notes that the theory works well on the basis of that assumption. However, if a country wants to develop its economy by moving into more technologically advanced products, the theory breaks down. Ricardo assumes the status quo as fixed. Erik Reinert uses a 1923 example from American economist Frank Graham, comparing the comparative advantage between an industrial and an agricultural country, to describe the theory of comparative advantage. In Reinert's words, "this would make one nation (the industrial country) specialise in being rich and the other country (the agricultural country) specialise in being poor"<sup>6</sup>.

The theory of comparative advantage is based on the value of labour. Ricardian trade theory, in the words of Erik Reinert, "sees a Stone Age labour hour on a par with a Silicon Valley labour hour, and therefore predicts that economic integration between these two types of economies will produce economic harmony and equalisation of wages". Both socialism and capitalism took as their basis Ricardian labour theory. Other ideas about industrial competitiveness almost disappeared.

Almost, but not quite. In fact, the post-war growth of Japan and the so-called Four Little Dragons (Singapore, South Korea, Taiwan and Hong Kong) did not follow Ricardian theory. All five countries moved up the value chain, developing industrial sectors against market signals. Their growth was based not on their comparative advantage and came about as a result of determined government action to develop their economies. When China opened its economy after 1978, it based its development on the lessons of the five East Asian countries that had preceded it. The paragraphs that follow tell the development stories of these countries.

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<sup>5</sup> 'Bad Samaritans: the Guilty Secrets of Rich Nations and the Threat to Global Prosperity', Ha-Joon Chang, 2007.

<sup>6</sup> 'How Rich Countries Got Rich ... and Why Poor Countries Stay Poor', Erik S Reinert, 2007.

## Japan

In 1958, the Japanese car company, Toyota, tried to export to the United States for the first time. Toyota had started out as a textile company and had only moved into car production in 1933. Toyota had been bailed out by the Bank of Japan in 1949, just nine years before its attempted entry into the US market. This attempt failed, leading to much soul searching in Japan. Opinions were divided: some argued that, in the words of Ha-Joon Chang, “The government had given the car maker every opportunity to succeed. It had ensured high profits for it at home through high tariffs and draconian controls on foreign investment in the car industry.” It was time to open Japan to foreign car companies once more. Others believed that if Japan was to progress, it needed to enter into ‘serious’ industries like automobiles.

In the event, Japan continued to protect its motor industry from open competition, in an ongoing, ultimately successful effort to promote its growth. Today, of course, Toyota is one of the most important car companies in the world. However, as Chang reminds us, “had the Japanese government followed the free trade economists back in the early 1960s... Toyota today would, at best, be a junior partner to some western car manufacturer, or worse, have been wiped out. The same would have been true for the entire Japanese economy.”<sup>7</sup>

Japan’s rebuilding, like that of Germany, began with geopolitics: as China intervened in the Korean War, the US sought to rebuild Japan. In ‘From Third World to First’, the founding father of Singapore, Lee Kuan Yew takes up the story of his Asian neighbour: “Japanese leaders realised this was their chance and kept a low, humble posture while they caught up with Americans, first in textiles, steel, ships, motorcars and petrochemicals, then electrical and electronic goods, cameras and finally computers.”<sup>8</sup>

Japan’s not-so-secret weapon was MITI, the Ministry of International Trade and Industry, which was established in 1949. One of MITI’s major objectives was to strengthen the country’s industrial base. Its close relationship with industry allowed trade policy to support its efforts to strengthen Japanese manufacturing. It facilitated the development of various Japanese industries by using tools that were anathema to free market ideology, including protection from import competition, technological intelligence, help in licensing foreign technology, access to foreign exchange and assistance with mergers.

MITI’s areas of influence were wide ranging, including aspects of investment in plant and equipment, pollution control, energy and power. This allowed policy

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<sup>7</sup> Bad Samaritans: the Guilty Secrets of Rich Nations and the Threat to Global Prosperity’, Ha-Joon Chang, 2007.

<sup>8</sup> ‘From Third World to First: Singapore and the Asian Economic Boom’, Lee Kuan Yew, 2000.

## Industrial Policy – A Post War History

synergies, such as around pollution control and export effectiveness, thereby minimising damage to export industries.

Ha-Joon Chang describes Japan's industrial development programme as "a legend". In addition to the work of MITI, Chang notes direct and indirect export subsidies, as well as information and marketing help from JETRO (Japan External Trade Organisation), the state trading agency. The Japanese Government channelled subsidised credits into key sectors through 'directed credit programmes'. It also heavily regulated foreign investment by transnational corporations. Foreign investment was simply banned in most key industries. When it was allowed, there were ceilings on foreign ownership, usually a maximum of 49 per cent. Foreign companies were required to transfer technology and buy at least specified proportions of their inputs locally. The Japanese Government also regulated the inflow of technologies.

Lee Kuan Yew, Singapore's first Prime Minister, who learnt much from Japan to guide his own country's development, says: "... uniquely Japanese was their way of paying workers fringe benefits in allowances, overtime, bonuses and company welfare. This amounted to more than the basic wage, unlike the practice in Singapore. Because supplementary benefits were high, a company faced with a recession could immediately trim bonuses and allowances to save as much as 40 to 50 percent of their wage bill, and restore them later when company profits recovered. This made life-long employment possible. Management and workers shared the profits, and also shared the hardships in lean years when the company did not make profits. Workers were conscious that the company's long-term well-being was crucial for their life-long employment."<sup>9</sup>

### Singapore

A former British colony, Singapore has experienced a dramatic rise in its economic fortunes since its separation from Malaysia in 1965. Its strategic location has given it an importance disproportionate to its size (it has a population of 5.2 million and a workforce of 3.2 million). Like other developing countries that are discussed in this paper, Singapore began by exporting labour intensive manufactured goods to world markets, followed by a move up the technology and value added ladder. This development was largely state directed, but was carried out with free trade and capital flows.

The story of Singapore's spectacular rise has been told by its first Prime Minister, Lee Kuan Yew, in his book, 'From Third World to First: Singapore and the Asian Economic Boom'.

To encourage multinational companies to invest in Singapore, Lee and his allies permitted a level of foreign control that Taiwan and South Korea would

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<sup>9</sup> 'From Third World to First: Singapore and the Asian Economic Boom', Lee Kuan Yew, 2000.



have found unacceptable. In 1961, Singapore began constructing its first large industrial park in Jurong. It attracted companies such as General Electric, Hewlett Packard, NEC and Fujitsu, not primarily because of tax and investment incentives, but because the government was stable and efficient and because it provided well trained workers.

Ezra Vogel notes: “...in Singapore, as in Hong Kong, even government bureaucrats were infused with commercial acumen and a powerful commitment to efficiency and performance. In a very real sense, the leading business entrepreneurs in Singapore are government bureaucrats.”<sup>10</sup>

The first multinationals attracted to Singapore were largely in electronics and machinery, areas that could employ workers who already enjoyed wages that were on average higher than in other dragon economies. In some key sectors, the government developed its own state companies. Petroleum refining, petrochemical products and oil exploration was an example of this phenomenon, this being a field in which Singapore could take advantage of the development of the nearby Indonesian oil fields. Talented civil servants served for as long as necessary in companies’ executive positions.

Ezra Vogel writes: “Because multinationals and government firms dominated the early decades of industrialisation, the spirit of Singapore’s enterprises has been more like that of the mature large modern corporation than has been true in the other little dragons, where the early decades of industrialisation were dominated by the free swinging, first-generation founders of family firms... Singapore’s success came less from the raw energy of individual enterprise and more from the deliberate planning of bureaucratic managers and multinational executives.”<sup>11</sup>

In the late 1970s Singapore came under economic threat from China’s plentiful supply of cheap labour. Fearing the export of Chinese industrial products, Singapore tried to hasten its development of higher technology. With companies that paid low wages feeling no pressure to introduce more efficient machinery, the government of Singapore pushed through substantial wage rises. This caused predictable short-term economic problems, as transitory economic changes often do, but had the desired effect of accelerating the transition to higher technology in the latter part of the decade.

Singapore differs from other Asian tigers in three main respects:

- It relies heavily on state promoted immigration.
- It continues to be dominated by multinationals and government linked corporations in sectors of the economy that, in other countries, have strong private sector participation.

<sup>10</sup> ‘The Four Little Dragons: the Spread of Industrialisation in East Asia’, Ezra Vogel, 1991.

<sup>11</sup> ‘The Four Little Dragons: the Spread of Industrialisation in East Asia’, Ezra Vogel, 1991.

## Industrial Policy – A Post War History

- Its economy is less integrated into the economies of other Southeast Asian countries.<sup>12</sup>

The second point here is particularly important. Temasek Holdings has a sole shareholder: Singapore's Ministry of Finance. Temasek Holdings owns controlling stakes – usually the majority share – in a variety of highly efficient and profitable Singapore enterprises, called Government Linked Companies (GLCs). GLCs operate in public utility companies, such as telecommunications, power and transport, but they also operate in the kind of company that would be found in the private sector in many other countries, such as semi-conductors, shipbuilding, engineering, shipping and banking. Singapore Airlines, which has never made a financial loss in its history, is 57 per cent controlled by Temasek.

The Singapore Government also runs the so-called Statutory Boards that provide certain goods and services. Most land is publicly owned and around 85 per cent of housing is provided by the Housing and Development Board. The Economic Development Board develops industrial estates, incubates new firms and provides business consulting services.

As Ha-Joon Chang reports, Singapore's state-owned enterprise (SOE) sector is twice as big as that of Korea, when measured in terms of its contribution to national output. When measured in terms of its contribution to national investment, it is nearly three times bigger. Korea's SOE sector is twice as large as Argentina's and five times bigger than that of the Philippines, in terms of its share of national income. In Chang's words: "Yet both Argentina and the Philippines are both popularly believed to have failed because of an over-extended state, while Korea and Singapore are often hailed as success stories of private sector driven economic development."

The contribution of Lee Kuan Yew, as Singapore's first Prime Minister, cannot be underestimated. Lee was a genuinely charismatic leader.<sup>13</sup> Having begun his life as a trade union legal adviser and negotiator, Lee nevertheless introduced some harsh reforms to trade union practices, including the banning of strikes in essential services and outlawing strikes without a secret ballot. In return, he urged employers to do their part so that workers would put in their maximum effort to get maximum rewards: direct rewards in their wages and benefits, and indirect returns through government revenue by way of homes, health, education, and social benefits.

In 1983, Ong Teng Cheong, the minister for both communications and labour, was elected General Secretary of the National Trades Union Congress (NTUC). He remained in the cabinet in this post. As Lee writes, "it worked well since the unions had their interests represented and the government was able to take their views into consideration when discussing policies."

<sup>12</sup> 'Singapore's Economic Growth Model – Too Much or Too Little?', Linda Lim, University of Michigan, paper prepared for Singapore Economic Policy Conference, 24<sup>th</sup> October 2008.

<sup>13</sup> 'The Four Little Dragons: the Spread of Industrialisation in East Asia', Ezra Vogel, 1991.

As Lee also writes: “To maintain the symbiotic relationship between the [People’s Action Party] government and the NTUC, I encouraged the NTUC to get some MPs to work full time with the unions, and to appoint others as advisers to various unions. These MPs raised union issues in Parliament. Such additions to the unions’ manpower capabilities made a qualitative difference. Without their disciplined intellectual input and their easy access to ministers, the case for the unions would not be put across in a way that would command attention and from time to time bring about a revision of policies.”<sup>14</sup>

## Taiwan

Taiwan had been a Japanese colony for half a century before 1945 and, as a result of this history, had traded almost exclusively with Japan and its other colonies, Korea and Manchuria. It imported textiles and other industrial goods from Japan, exporting sugar, rice and pineapples in return. After the end of the Second World War, Taiwan re-orientated its trade towards China, but this phase of its history was short-lived: after the Communist victory on the Chinese mainland in 1949, this trade was cut off.

The Kuomintang (Nationalist Party) leaders, who arrived in Taiwan from China in 1949, began trying to increase production to meet local demand. A classic import substitution strategy sought to make Taiwan more self-sufficient. However, as Taiwan began trying to boost its manufacturing capability, it was flooded with cheap manufacturing goods from a Japan that was beginning to flex its industrial muscle. Import restrictions, to protect Taiwan’s fledgling industries, were put in place by the Kuomintang leaders.

US aid from 1951 to 1965 helped to provide industrial goods, plant, and equipment and other material aid amounting to as much as 10 per cent of Taiwan’s gross national product in 1951, a figure that gradually fell back to two per cent in 1965. The US also helped to train government leaders and technocrats and in 1962, impressed by Taiwan’s credit-worthiness, the World Bank began development assistance on a commercial basis.

In late 1959, US officials indicated a willingness to support a Taiwanese drive for industrial growth and a focus on exports. In return, Taiwan was required to mobilise all available domestic resources. It was also required to focus on government at home, rather than Chiang Kai-shek’s obsession with retaking mainland China. In addition, the US sought a reduction of Taiwanese government controls on the free operation of markets. Taiwan agreed to these terms and, early in 1960, announced a Nineteen Point Programme for Economic and Financial Reform that included an expanded four year economic plan and a programme of incentives for private businesses that produced and marketed for export.

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<sup>14</sup> ‘From Third World to First: Singapore and the Asian Economic Boom’, Lee Kuan Yew, 2000.

## Industrial Policy – A Post War History

In a key development for Taiwanese strategy, the Kuomintang appointed technically trained officials to guide industrial development. K Y Yin, a trained engineer who had served as director of the Chinese Foreign Trade Office in New York, and a physicist, K T Li, were among the most important. Yin and Li surrounded themselves with engineers and scientists turned bureaucrats to drive economic strategy.

In his book, 'The Four Little Dragons: the Spread of Industrialisation in East Asia', Ezra Vogel writes: "Government bureaucrats were familiar with Japan's basic export strategy. Yin had taken a special interest in the Meiji Restoration and spent three months in Japan on a study tour in 1950. Like their Japanese counterparts, Taiwan's bureaucrats realised that they had few natural resources and that their population had grown rapidly. They believed that like Japan, Taiwan must expand its manufactured exports to survive. They realised that they needed to improve both their productivity and the quality of their output. Japan's successes in breaking into foreign markets helped stimulate Taiwanese bureaucrats to emulate the basic Japanese approach to export promotion. They protected infant industries from foreign competition and worked to limit the extent of foreign control of businesses in Taiwan. They tried to restrict borrowing from abroad to critical technology and infrastructure projects. And, as they observed that in Japan higher wages eventually reduced competitiveness in certain sectors, they hastened to help Taiwanese firms in those sectors replace Japanese firms in world markets."<sup>15</sup>

Initially, these former engineers and scientists tried to promote industrialisation through building up state enterprises. Even during the 1950s, as some firms were being privatised, in other key sectors, new state firms were being established. During those years, the government played a very direct role in managing the private sector. It provided basic commodities for private enterprises. It adopted a strategy of producing basic goods, such as cotton, iron, steel, and refined petroleum in state firms and then selling these products cheaply to private firms as a way of driving industries such as textiles, machinery, fertiliser, and plastics that by the 1960s could produce for export. To develop key sectors and promote exports, Taiwan also used tax incentives and proprietary loans and assisted in technology transfer.

In an attempt to compete with Hong Kong for Chinese capital in producing goods for export, Taiwan opened the world's first export-processing zone in Kaohsiung in 1966. A second zone was opened later near Kaohsiung and a third in Taichung. To promote high tech development, Taiwan developed the Hsinchu Science and Industry Park in the late 1970s.

The industrial transformation that had taken Western nations and Japan a century, perhaps longer, was completed in Taiwan in essentially four decades. During this time, the average per capita income rose from less than US\$100 to

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<sup>15</sup> 'The Four Little Dragons: the Spread of Industrialisation in East Asia', Ezra Vogel, 1991.

more than \$7,500. At the end of this four decade process, Taiwan's infrastructure was in the range of that of modern Western societies.

## South Korea

Like Taiwan, South Korea's development took place in the shadow of its existence as a Japanese colony. South Korea also had the devastation of the Korean War, the first modern war, to overcome.

Japanese colonialism, which ended with the end of the Second World War, had left South Korea with some infrastructure, some literacy and a degree of experience with modern commerce. But South Korea began its process of modernisation with a steeper hill to climb than Taiwan. Moreover, the Korean War decimated the country. As well as claiming four million lives, that war destroyed half of South Korea's manufacturing base and three quarters of its railways. After the Korean War, South Korea, which had been the country's breadbasket, had little electric power and little industry, apart from textiles. In the 1950s, an internal report from USAID called Korea a "bottomless pit". The country's main exports were tungsten, fish and other primary commodities.

In 1961, eight years after the end of the war, South Korea's yearly income stood at \$82 per person. The country did not reach a GNP of \$100 per year until 1963, a decade later than Taiwan. From the 1960s, through President Nixon to President Carter, the United States determined to wind down economic assistance and reduce its military presence in Asia, providing a stimulus for South Korea to seek an independent industrial base to support its own national defence.

Korea's understanding of Japan, a relationship sometimes described not as "love-hate" but "respect-hate", has nevertheless been a major factor in its development. South Korea has detailed knowledge of Japan's government, business, technology, and even language. After the beginning of South Korea's push for industrialisation, this knowledge was central.

Park Chung Hee, who seized power in May 1961, via a military coup, set about creating an Economic Planning Board to co-ordinate rapid development. A first five-year plan would begin in January 1962.

In the process, South Korea followed many a Japanese example. The Korean Finance Ministry and Ministry of Trade and Industry resembled Japan's Ministry of Finance and MITI. KOTRA (the Korean Overseas Trade Association) was based on the model of JETRO (the Japan External Trade Organisation). To manage technology introduced from abroad, MITI had set up AIST (the Agency for Industrial Science and Technology); South Korea corresponded with KIST (the Korean Institute for Science and Technology). Both Japan and Korea had reconstruction banks that were converted into development banks. South Korea founded a Federation of Korean Industries

## Industrial Policy – A Post War History

similar to Japan's Federation of Economic Organisations (Keidanren) to deal with general management issues. Following Japan's setting up of the Japan Economic Institute in Washington DC, to provide information to American officials, South Korea set up a Korean Economic Institute with similar goals.

In the early 1960s, South Korea began to produce fertilizer. This required the building up of electric power and oil refining. It also began to produce agricultural machinery. The government strengthened the country's infrastructure by improving roads, ports and communications. As industrial productivity moved beyond agricultural productivity, it carried out rural community organisation work to encourage rural development without burdening the national budget.

Even before 1961, South Korea had made strides in reducing the proportion of imports that were consumer goods and increasing those that were used to expand industrial capacity. It promoted the manufacture of textiles, apparel, sports shoes and later electronics for export. Its economy being smaller than that of Japan, South Korea could not rely as much on its domestic market and became far more dependent on exports. It tried to upgrade technology, remaining internationally competitive whilst raising wages.

South Korea's electronic and machinery industries often began as assembly plants for parts produced in Japan, so when shipbuilding began, the entire engines came from Japan. However, as quickly as possible, Koreans learned to make more of the parts for the products they assembled, and then began assembling more complex products, again importing from Japan the parts they could not yet produce. Korea concentrated on a smaller number of promising areas, as it had fewer technicians and fewer companies than Japan. Narrowing or eliminating the quality gap between products from the two countries was of paramount importance.

South Korea kept strict control over Japanese direct investment, Japanese capital, and Japanese products. South Korea also protected its infant industries until they were of very substantial size, and even then resisted opening its markets to foreign products. South Korea remained one of the few countries that imported virtually no Japanese cars, a policy that Japan went on to reciprocate.

Like the Japanese, Koreans engaged in "reverse engineering", carefully taking apart successful foreign products in order to study them and create products similar to the original. South Korea was unrivalled, even in Japan, in the speed with which it went from having almost no industrial technology to becoming one of the world's most industrialised nations.

During this time, South Korea's per capita income grew at an incredible pace. Between 1972 and 1979, it grew fivefold and Park's ambition, to deliver \$1000 per capita income by 1981, viewed by many as delusional, was achieved

four years ahead of schedule. Exports increased nine-fold, in US dollar terms, between 1972 and 1979.

This development has, of course, come at a cost. Park Chung Hee, whose daughter is now South Korea's first female president, played a controversial role and his legacy divides Koreans to this day. To some, he is admired for promoting rapid development and laying the foundations for one of the world's most successful economies. To others, he is hated for ordering violent crackdowns against opponents and delaying the arrival of democracy."<sup>16</sup>

What Park was not, however, was a free market liberal. The South Korean born Cambridge economist, Ha-Joon Chang, says: "T[he] neo-liberal establishment would have us believe that, during its miracle years between the 1960s and the 1980s, Korea pursued a neo-liberal economic development strategy. The reality, however, was very different indeed. What Korea actually did during these decades was to nurture certain new industries, selected by the government in consultation with the private sector, though tariff protection, subsidies and other forms of government support... until they 'grew up' enough to withstand international competition. ... if private enterprise worked well, that was fine; if they did not invest in important areas, the government had no qualms about setting up state-owned enterprises..."

Chang adds: "The Korean economic miracle was the result of a clever and pragmatic mixture of market incentives and state direction. The Korean government did not vanquish the market as the communist states did. However, it did not have blind faith in the free market either. While it took markets seriously, the Korean strategy recognised that they often needed to be corrected through policy intervention."

In the 1960s, foreign pressures had led to Japan opening its markets. In response, Japan had moved to increase the size of its companies, thus enabling them to produce competitive goods on a large scale and thereby keeping out imports through market forces. Observing this, South Korea sought to do the same thing. Park Chung Hee picked highly successful firms and provided them with low interest government loans, tax incentives and other necessary resources to strengthen them to become strongly diversified chaebols, tightly controlled by a holding company.

It was often government encouragement that led companies to expand into new sectors. Government tightly controlled financial institutions and when state planners saw an opportunity to open up an important new sector, companies with appropriate managerial and technical ability were encouraged to develop in this sector. The government would try to develop at least two major companies, so that competition between them would reduce the danger of monopoly and provide the same kind of focused competition between

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<sup>16</sup> 'ParkGuen-hye close to becoming South Korea's first female president', Justin McCurry, 'The Guardian', 14<sup>th</sup> December 2012.

## Industrial Policy – A Post War History

companies that existed in Japan. In the event of a company failure, the government would try to encourage other companies to take over the failed venture, in order to prevent unemployment. This meant that the large, diversified chaebols expanded much more rapidly than would have been the case under market forces alone.

Only in the late 1980s, with rapid expansion and the passing of the founder generation, did most chaebols undergo a managerial revolution. Even then, the second generation of the chaebol family often continued to occupy key positions within the organisation.

According to Ezra Vogel, South Korea “has had the greatest concentration of large firms and the most ambitious goals, the result of its fear of being overwhelmed militarily by the unpredictable regime across the 38th parallel and economically by the highly predictable Japanese economic powerhouse across the straits. No nation has tried harder and come so far so quickly, from handicrafts to heavy industry, from poverty to prosperity, from inexperienced leaders to modern planners, managers and engineers.”<sup>17</sup>

### Hong Kong

For 135 years, Hong Kong was a British colony under the terms of the 1842 Treaty of Nanking. During that time it was, as Ha-Joon Chang says, “used as a platform for Britain’s trading and financial interests in Asia.” Hong Kong’s economy was closely linked to commercial activity, dominated by shipping, banking and merchant companies. Shipbuilding and maintenance, linked to the British naval presence on the colony, developed and some industrial expansion occurred during the 19th century.

After the Communists took control of China in 1949, Hong Kong underwent a major change. As Lee Kuan Yew puts it: “[W]hen the communists “liberated” the mainland in 1949, with the influx of some 1 to 2 million refugees from China had come some of the best entrepreneurs, professionals and intellectuals from Shanghai and the provinces of Zhejiang, Jiangsu and Guangdong. They formed a thick layer of talent that was to transform Hong Kong into one of the most dynamic cities in the world, helped by the more enterprising and resourceful of the Chinese workers who left China rather than live under communist rule.”<sup>18</sup>

Ezra Vogel argues: “Today, Hong Kong plays a larger role than ever before in shipping and in financial markets. Yet it was the development of manufacturing and light industry in Hong Kong that had made the crucial

<sup>17</sup> ‘The Four Little Dragons: the Spread of Industrialisation in East Asia’, Ezra Vogel, 1991.

<sup>18</sup> ‘From Third World to First: Singapore and the Asian Economic Boom’, Lee Kuan Yew, 2000.



difference in saving the local economy when the bamboo curtain to China was closed.”<sup>19</sup>

The industrialisation of Hong Kong was distinct from that of the other Asian tigers. First, it was and remains dominated by small and medium sized enterprises (SMEs). By the end of 2002, SMEs still amounted to 98 per cent of enterprises, providing 60 per cent of local employment.<sup>20</sup>

Second, at least in comparison to other tiger economies, Hong Kong was the one that followed a more laissez faire approach to industrialisation. Until the late 1960s, the Government did not engage in industrial planning, for example. Ha-Joon Chang describes it as the “exception that proves the rule”. Yet let us not overstate the case: as Chang reminds us, Hong Kong was never an independent state – not even a city state like Singapore. It has served as a British colony and, since 1997 as the financial centre of the Chinese economy. Chang writes: “These facts made it less necessary for Hong Kong to have an independent industrial base, although, even so, it was producing twice as much manufacturing output per capita as that of Korea until the mid-1980s, when it started its full absorption into China. But even Hong Kong was not a total free market economy. Most importantly, all land was owned by the government in order to control the housing situation.”<sup>21</sup>

Hong Kong government officials used public funds to develop many areas as industrial estates and then made the land available to manufacturing firms. For certain types of job-rich firms in key sectors, land was made available at prices below market value.

Hong Kong’s manufacturing breakthrough came in textile production in the early 1950s, with the arrival of the Shanghai industrialists. Textiles, in turn, helped to expand the apparel industry. Other small entrepreneurs then moved into other labour-intensive sectors, such as toys, plastic products, watches and low-grade electronics. In the 1970s and 1980s, Hong Kong firms diversified into higher grade electronic products and improved the quality of their trade and international financial activities.

As a smaller country than either Taiwan or South Korea, Hong Kong could not be so ambitious with regard to the establishment of research institutes and engineering schools, but by the late 1980s, even with its small base, it began to plan a university specialising in science and technology.

Hong Kong is of interest both of itself and because of its role in the genesis of China’s economic opening. Ezra Vogel writes: “When Deng [Xiaoping] visited Japan in October 1978 he joked that he had come looking for the magic potion to modernize China. If there were a single magic potion for a Chinese

<sup>19</sup> ‘The Four Little Dragons: the Spread of Industrialisation in East Asia’, Ezra Vogel, 1991.

<sup>20</sup> <http://eh.net/encyclopedia/article/schenk.hongkong>

<sup>21</sup> ‘Bad Samaritans: the Guilty Secrets of Rich Nations and the Threat to Global Prosperity’, Ha-Joon Chang, 2007.

## Industrial Policy – A Post War History

economic takeoff, it was Hong Kong. Roughly two-thirds of the direct investment in China between 1979 and 1995 came from Hong Kong, or at least through the “southern gate” between Hong Kong and mainland China. Beijing sought investments from “overseas Chinese” who lived in Southeast Asia, the United States, and elsewhere, but even more from “brethren” (tongbao, literally those from the same womb), those living in territories claimed by China – Taiwan, Macau, and Hong Kong.”<sup>22</sup>

### China

The Chinese economy is the fastest growing in the world. According to the OECD in November 2012, China will replace the US to become the largest global economy by 2016. China’s growth averaged 8.98 per cent per year in the 32 years from 1978 to 2009, and even that figure masks two periods in which the brakes were put on an overheating economy. Had deflationary policies not been introduced at those times, China’s growth would have been even higher. As it is, in 16 of those 32 years, Chinese GDP was at or above 10 per cent.<sup>23</sup>

1978 was a crucial year for China. During the years from 1949 to 1976, Communist China had been led by Mao Zedong. But in 1978, a new leader took power in China, who had fought with Mao in the civil war and who would remain a communist until the day he died, but who understood the interaction that was needed between the market and the state if China was to enjoy prosperity. That leader was Deng Xiaoping.

Nine years earlier, in 1969, the 65-year old Deng had been, like so many other communist leaders of the time, exiled under the process that became known as the Cultural Revolution. Deng, his wife Zhuo Lin, and his stepmother, Xia Bogen, were taken to Nanchang in Jiangxi province, where Deng would be required to perform physical labour and be “re-educated” in what was called Mao Zedong Thought.

Whatever the privations that Deng suffered during five years of exile, this time was also an opportunity, as Ezra Vogel describes: “Like Churchill, de Gaulle, Lincoln and other national leaders who fell from high positions and then spent time in the wilderness before returning to high office, Deng found that the time spent away from daily politics enabled him to achieve clarity about major, long-term national goals. It is hard to imagine that after 1977 Deng could have moved so deftly and forcefully had he not had a considerable length of time to ponder the nature of the reforms that China needed and how to achieve them.”

Another personal story from Deng’s time in exile is instructive: “Deng’s time in Jiangxi strengthened his convictions about how far behind China was and how

<sup>22</sup> ‘Deng Xiaoping and the Transformation of China’, Ezra Vogel, 2011.

<sup>23</sup> <http://www.chinausfocus.com/library/other-resources/statistics/economy-statistics/china-and-us-gdp-annual-average-growth-rate-1978-2009/>

much it needed to change... Deng[‘s daughter] Rong reports, for example, that when [her disabled brother and Deng’s son] Pufang arrived in Jiangxi in June 1971, her father, looking for something helpful that Pufang could do, asked his fellow workers if they had any radios to repair. A worker replied that there was no way any of the workers made enough money to buy radios. Deng Rong commented that her father was sick at heart to learn that after twenty years of socialism a worker’s family still could not afford a radio.”<sup>24</sup>

### **The Deng era begins**

Deng returned to the Standing Committee of the Chinese Politburo in July 1977. What can be described as the Deng era began in the following year.

In the spring of 1978, China organised four high level study tours, to Eastern Europe, Hong Kong, Japan and Western Europe. From April to May 1978, officials visited Hong Kong to evaluate its potential for assisting Chinese developments in finance, industry and management. Specifically, there was interest in setting up in Bao’an county, Guangdong province, across the border from Hong Kong, an export processing zone, where materials could be brought from abroad to be manufactured by Chinese labourers and then exported without any tariffs or other restrictions. Within a few months, what would later become the Shenzhen Special Economic Zone (SEZ) was established.

This had a practical as well as an economic motive: at the time, tens of thousands of young people were escaping to Hong Kong each year. In contrast to East Germany’s attitude which had led to the building of the Berlin Wall, Deng argued that the solution was not more fencing and border controls. The solution was to improve the economy of Guangdong so that young people did not wish to flee to Hong Kong in the first place. Before the State Council visit to Hong Kong, contacts between Hong Kong and the mainland were restricted. Following the visit, Hong Kong became a major conduit to China for capital and knowledge about global economic developments.

### **Relations with the US**

As China began opening, relations with the United States changed. Deng’s priority from this relationship was neither trade nor investment, it was science. Deng knew how far ahead the US was in this regard. When, in July 1978, President Carter’s science advisor, Frank Press, led a delegation to China, with the expectation that China would seek to control the movements of its people in the style of the Soviet Union, he was stunned by his host’s proposal that the US accepted seven hundred Chinese science students, with tens of thousands to follow in the next few years. The following January, while visiting the United States, Deng signed agreements to speed up scientific exchanges. He also

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<sup>24</sup> ‘Deng Xiaoping and the Transformation of China’, Ezra Vogel, 2011.

## **Industrial Policy – A Post War History**

visited NASA facilities in Houston, and in Seattle, he visited Boeing, which was producing the new jet planes that China was beginning to purchase.

In December 1978, Deng Xiaoping became the pre-eminent Chinese leader. Deng believed that China could double its income twice between 1980 and 2000 and he therefore popularised the slogan, “quadrupling income by 2000”. He later aimed for a slightly less ambitious goal, while also stating that, in the decade to come, China lacked the resources to become a welfare state.

### **Guangdong accepts foreign investment**

In early January 1979, Xi Zhongxun, a party official from the Guangdong province, was encouraged to ask formal permission for Guangdong to accept foreign investment. Not even one month later, the first case of foreign investment was approved. To meet strong demand in Hong Kong for scrap metal for its booming construction projects, the Hong Kong Merchant Steamship Group proposed destroying old Chinese ships that were no longer serviceable. The company had sought a site for such a project for years, with Hong Kong itself being too crowded, so the company suggested a site in Shekou, in Shenzhen. China responded by offering a much larger tract of land than first requested, where the company could do more than simply tear down old ships. Shekou became the first place in China to allow foreign direct investment and the first area where decisions about a company inside China could be made by people living outside. With this small decision, a precedent was set for the future.

By April 1979, Xi Zhongxun was in Beijing putting the case for the whole of Guangdong province to be allowed a special policy allowing it the flexibility to adopt measures to attract foreign capital, technology and management practices necessary to produce goods for export. China would supply the land, the transport facilities, electricity and labour needed by the factories, as well as the hotels, restaurants, housing and other facilities needed by foreigners. Three SEZs were established in Guangdong (Shenzhen across the border from Hong Kong, Zhuhai across the border from Macao, and Shantou on the northeast coast of the province) and one in Fujian (Xiamen).

But Deng Xiaoping wanted more for Guangdong and Fujian than mere export processing. He sought metropolitan centres bringing together industry, commerce, agriculture, livestock, residential housing and tourism. The SEZs would be allowed to experiment with different ways of doing things and would be regulated primarily by the market.

### **Deng the capitalist?**

Does this mean that Deng was, in fact, a capitalist at heart, dressed as a communist? Ezra Vogel argues that it doesn't: “Westerners and even some Chinese critics claimed that Deng was experimenting with capitalism without using the name, but that is not how Deng saw it. He was determined to expand

markets and he personally had no ideological objections to private enterprise; he accepted competition as a driving force in commerce. But he aimed as well to keep the Chinese Communist Party firmly in control, to constrain the markets to ensure that they served public purposes, to prevent capitalists from dominating Chinese politics, to retain public ownership of land, to keep a large role for state-owned enterprises, and to maintain state economic planning. Deng said that China would not become capitalist; money, he said, would not flow into his own pockets...<sup>25</sup>

The opening of Guangdong, Fujian and other coastal provinces led to a fundamental shift in the location of Chinese industry, from inner China to the coast. For both industrial development and international trade, the coastal areas were ripe for convenient transportation, a more developed infrastructure, a critical mass of specialists and lower costs. In 1979, 12 per cent of China's exports originated in Guangdong; ten years later, as exports grew, around one third or more of China's exports came from this one province alone.

In fact, the entire Pearl River delta area stretching from Guangzhou to Hong Kong was transformed. By the late 1980s, the entire 104 mile route was lined on both sides with factories. In 1979, Shenzhen had a population of 20,000 residents; 20 years later, the population of Shenzhen city was approaching 10 million and growing rapidly.

With hindsight, the policy of developing SEZs was a stunning success, but this was not so assured at the time. Shanghai, which had been the most cosmopolitan city in Asia in the 1930s, was a possible site for a SEZ, but this idea was considered to be too risky in 1978. At the beginning of the opening process, Guangdong and Fujian, unlike Shanghai, had very little industry – and so less to lose if the opening process didn't work. Moreover, Deng, as the architect of the modernisation, faced conservative opposition from some high ranking members of the Communist Party. A consummate politician, Deng knew when to press ahead and when to wait. It was not until May 1984 that Deng announced the extension of the opening policy to fourteen coastal cities, each of which would be allowed to adapt the policy to local circumstances.

Some other complaints related to the fact that Guangdong had concentrated on low-tech, labour intensive factories when high tech plants had been promised. In fact, Guangdong lacked the technical and managerial personnel to introduce high technology immediately and foreign companies had invested in China for its comparative advantage: its low labour costs. Nevertheless, the fourteen new coastal cities would be called Economic and Technological Development Zones, putting pressure on the new areas to upgrade their technology.

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<sup>25</sup> 'Deng Xiaoping and the Transformation of China', Ezra Vogel, 2011.

## **Industrial Policy – A Post War History**

### **Town and Village Enterprises**

In 1982, communes were abolished in China. At this time, the small commune workshops and commercial stores automatically became enterprises under the jurisdiction of towns and villages. Commune industrial workshops had produced basic materials, such as baskets, simple agricultural equipment, brick kilns and sewing machines.

After 1982, commune workshops became Town and Village Enterprises (TVEs). In this transition, they gained some independence from commune management and were no longer bound by geographical boundaries. They were free to produce goods that they could sell anywhere. Unlike state factories, they could adapt to demand.

Throughout the 1980s, more than half of the production of the TVEs was taking place in the five coastal provinces of Guangdong, Fujian, Zhejiang, Jiangsu, and Shandong. Investment in these provinces came from Hong Kong, Taiwan, and overseas Chinese businesses. Some brought in foreign technology and partnered with local officials in creating increasingly modern factories producing for global markets. By the mid 1980s, seeking greater efficiency, some state enterprises even subcontracted out to the TVEs to help them meet production plans.

This was followed by household enterprises. Quite simply, by the early 1980s there were more people living in cities than the state could afford and crime among urban unemployed youth started to become a problem. Deng Xiaoping cited this development in support of the idea to allow young people to form getihu (individual household enterprises). To get over ideological objections, Deng said that so long as they relied on their own labour and did not exploit the labour of others, they would still be considered workers, not capitalists. By early 1980, small markets and food stalls began to appear in cities and towns.

### **The values, and limits, of planning**

Chinese officials were especially impressed with how MITI, Japan's Ministry of International Trade and Industry, analysed what was needed in each sector for Japanese firms to have the resources and technology to compete in world markets – and then let the companies themselves find the way to create the products which would bring rapid growth for the country as a whole. China could see the value, but also the limits, of planning. There was a high degree of planning within Japanese enterprises, but that planning was much more flexible and responsive to market changes than was the case in China.

In October 1984, Deng Xiaoping was more popular than ever. Taking advantage of this situation, he pressed ahead. The Third Plenum of the 12th Party Congress passed the 'Decision on the Reform of the Economic Structure', the most comprehensive statement of economic reform to date. This decision incorporated Deng's term, "socialism with Chinese characteristics" and stated

that the fundamental difference between socialism and capitalism was not whether the economy was planned or unplanned, but whether there was public ownership. The goal of socialism was not egalitarianism, but common prosperity. Deng was seeking a clear explanation of why socialism could embrace market reforms.

This “decision” announced that pricing by the state would gradually be reduced and the role of the market in pricing would be increased. Deng argued that Chinese history showed it could only make great progress when the country was open.

### **Hong Kong becomes part of China**

In December 1984, the British Prime Minister, Margaret Thatcher, and China’s Premier Zhao signed the Joint Declaration on the future of Hong Kong. This document had been years in development and was the subject of hard bargaining, on both sides. China was, of course, well aware of the role Hong Kong could play in its own development in the years ahead. Whilst its absorption into a communist country was naturally a source of fear for many, continuing prosperity in Hong Kong was firmly in China’s interests.

In the event, China continued to allow Hong Kong’s capitalist and legal systems to continue without interruption and allowed Hong Kong’s citizens to rule Hong Kong. Mainland cities became more like Hong Kong, rather than the other way around. Residents of Hong Kong could continue to criticise the Chinese Communist Party and publish newspapers, magazines and books banned elsewhere in China. Hong Kong remained a cosmopolitan, prosperous city that valued free speech and respect for law.

### **The Tiananmen Massacre**

1989 saw the greatest Chinese upheaval since the Great Leap Forward. From mid April to early June, hundreds of thousands of young Chinese took to the streets in Beijing and other Chinese cities.

Early concerns centred not on political freedoms but personal freedoms, such as the right of people to choose their own jobs, rather than have these mandated by government policy. Meanwhile, the general public was worried about inflation. Official indices showed consumer prices in Beijing rising by 30 per cent between 1987 and 1988, terrifying those on fixed incomes, who had become used to stable prices. Anger soon turned to panic. Employees in state enterprises feared losing their “iron rice bowls”, their secure jobs and benefits. With China lacking a social security and health system, this fear was very real.

On 13th May, two days before an official visit to Beijing by President Gorbachev, over a thousand Chinese students marched to Tiananmen Square, where they stated they would not eat until their demands were met. Party leaders were keen to clear the square before Gorbachev’s arrival and a number

## **Industrial Policy – A Post War History**

of well known intellectuals, fearing a violent confrontation, tried to mediate, but to no avail. When Gorbachev arrived, the Chinese Government had no choice but to cancel their welcoming ceremony in the square. The students had won an important propaganda victory, but Deng prepared to bring in troops.

On 18th May, martial law was announced. On the evening of 19th May, 50,000 troops would begin moving into Tiananmen Square, arriving in the square the following morning. So confident were the military leaders that the troops would move in without incident that soldiers were not briefed on what they should do if they encountered resistance. In fact, entry to the square was blocked on all sides by the people of Beijing. Foreign correspondents reported that soldiers were bewildered. Few carried weapons and they did not respond to taunts. On 22nd May, troops began to withdraw, leading to another victory for the students. In the days that followed, Deng prepared for armed force. On 3rd June, Deng gave orders for the square to be cleared, by whatever means necessary.

The most reliable estimates by foreign observers, according to Ezra Vogel, are that somewhere between 300 and 2,600 demonstrators were killed and several thousand were wounded in the bloodshed that followed. Vogel adds: “After June 4th, students and their families mourned those who had been killed or injured. They also mourned the loss of hope that a more open, moral China would emerge in the near future.”

In the aftermath of the Tiananmen massacre, Deng faced huge unpopularity and some doubted the future of communism in China. The morale of the military was low. Western governments, including the United States, began imposing sanctions against China. For several days after 4th June, Deng did not appear in public, prompting rumours of government splits, and later in June, Jiang Zemin was named general secretary of the party (a post that, in spite of being China’s paramount leader, Deng never held).

Since 1988, China had been battling to control inflation. Western sanctions after Tiananmen had also dampened growth, but Jiang felt compelled to act in accordance with the dominant, conservative atmosphere. As a result, GNP fell from 11.2 per cent in 1988 to 3.9 per cent in 1989. To prevent political unrest, workers in state enterprises kept their jobs and their wages remained intact. In smaller towns and villages, however, nearly 20 million industrial workers lost their jobs in 1989 and 1990.

### **Deng’s Southern Journey**

In 1991, Deng Xiaoping no longer had control over political and economic events in China. He strongly opposed the conservative economic stance undertaken by the Chinese government, however, so the following year, borrowing a tactic used in 1965 by Mao Zedong, the 87-year old Deng took a train trip – first to Shanghai and later to Wuhan, Shenzhen, Zhuhai – where he agitated for further market opening and faster growth.



Ezra Vogel writes: “Deng, who was thinking strategically about what might enhance Chinese economic growth, knew that Shanghai was large enough and contained enough talent that any growth there would have an immediate and positive influence on national growth, not only in the nearby provinces of Zhejiang and Jiangsu, but also for the hundreds of millions of people living in areas all along the Yangtze River.”<sup>26</sup>

On 28th January 1991, Deng took his special train to Shanghai, where he visited aeronautical and automotive factories and the construction site for the Nanpu Bridge, which would become the third longest suspension bridge in the world. Deng repeated his view from the previous year: that he had made a mistake in not opening up Shanghai in 1979, when he had opened the four SEZs.

Just under a year later, on 17th January 1992, Deng’s special train pulled out of Beijing Station on another journey. No party leaders, not even Jiang Zemin, were notified.

Deng’s first stop was Wuhan. On arrival at Wuhan train station, Deng spent just 20 minutes on the platform, during which he said: “When I turn on the television, all I see is meetings... you should do more and talk less... whoever is against reform must leave office.” Two days later, Jiang Zemin told officials that China should quicken the pace of reform, revive the open door policy and reduce the number of meetings.

Later on the same afternoon, Deng’s train stopped at Changsha, Hunan, whose first party secretary was told that he “should be bolder on carrying out reform and opening... Speed up economic development.”

The next day, Deng stopped in Guangzhou, from where he began an eleven day tour of the most vibrant SEZs, Shenzhen and Zhuhai. Throughout Guangdong, Deng was surrounded by admiring, grateful fans. Confronting his critics, who argued that SEZs were capitalistic and controlled by foreigners, Deng countered that China had political control over all foreign-owned firms, so it could be certain they served Chinese interests. Moreover, foreign firms paid Chinese taxes and provided local workers with jobs and wages.

Beijing, in the grip of the cautious planners, didn’t know whether to try to ignore or, if not, how to undermine Deng’s initiative. Jiang, for his part, realised that Deng would try to remove him if he did not support reform and opening. From March 1992, the approved summary of Deng’s statements on the southern journey became the new guideline for official policy.

In the several years after Deng’s 1992 southern journey, China enjoyed some of the fastest growth rates the world has known. From 1992 to 1999 China, with the world’s largest population, grew by more than ten per cent per year. After Tiananmen, from 1989 to 1991 foreign direct investment in China

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<sup>26</sup> ‘Deng Xiaoping and the Transformation of China’, Ezra Vogel, 2011.

## **Industrial Policy – A Post War History**

stagnated at \$4 billion per year, but from 1992 to 1999, with China's policy of opening to the West and the gradual easing of sanctions, it averaged more than \$35bn per year.

Deng's last public appearance was on New Year's Eve 1994. A couple of years of deteriorating health followed and Deng died on 19th February 1997, aged 92, from complications of Parkinson's disease and a lung infection.

### **China after Deng**

There have been three Chinese Presidents since the death of Deng Xiaoping: Jiang Zemin, who served until 2003; Hu Jintao, who was President until 2013; and Xi Jinping, who is in office today. Other Chinese politicians, notably Zhu Rongji, who served as premier between 1998 and 2003, and Wen Jiabao, his successor from 2003 to 2013, also played important roles in the development of China. None, however, have had the dramatic influence of Deng.

During Jiang's tenure, Hong Kong formally became Hong Kong Special Administrative Region (SAR) and Macau once again became part of China. However, economic policy was handed to Zhu Rongji during this time. More charismatic than Jiang – with whom he had a tricky relationship – Zhu was popular with the Chinese people. Deng had encouraged Zhu's career years before, once having described him as a man “who has his own views, dares to make decisions and knows economics”. As Mayor of Shanghai, Zhu had overseen the development of Pudong, a Singapore-sized Special Economic Zone wedged between Shanghai and the East China Sea.

China came through the Asian Financial Crisis of 1997-8 relatively unscathed. The crisis, which took hold after the financial collapse of Thailand's baht, spread to Indonesia and South Korea. Hong Kong, Malaysia, Laos and the Philippines also suffered, but China, Taiwan, Singapore and Brunei were less affected. All experienced a loss of confidence and demand, however.

Chinese reserves, a non-convertible currency and capital inflows that consisted mostly of long-term investment, insulated China from the worst of the Asian Financial Crisis. Moreover, China's commitment not to devalue helped to stabilise the region in the years that followed. By 1999, the worst of the crisis was over. Then, in 2001, China integrated further into the world economy when it became a member of the World Trade Organisation.

In the early years of the new millennium, concerns began to surface that Deng's policy of allowing some to “get rich first” was not allowing the second part of his dictum, that others would catch up afterwards. Divergence between the growing wealth of the east and south east of China, compared to that of other parts of the country, was becoming more serious. President Hu Jintao and his Premier, Wen Jiabao, developed the concept of a Socialist Harmonious Society, aimed at changing the style of the ‘GDP first and Welfare second’ policies. Hu and Wen made high profile trips to poorer parts of China. They

also tried to factor social inequality and sustainability into policy decisions, including the use of a “green GDP”.

Internationally, Hu and Wen continued to improve China’s standing in the world, overseeing two successful international events, the Beijing Olympics of 2008 and the Shanghai Expo of 2010. Wen also masterminded China’s fiscal stimulus policy in the wake of the global economic downturn of 2007.

Critics argued that Hu and Wen slowed Chinese reform, after the dynamism of Deng and, albeit to a lesser extent, Jiang and Zhu. The BBC’s world affairs editor, John Simpson, has described Hu’s tenure as having had “a sterner, more conservative tone”. China-watchers are optimistic that the new President, Xi Jinping, and his Premier, Li Keqiang, will put new impetus into reform and opening. One expert interviewed for this report told us:

“It is very clear that the Chinese government itself fully understands the current situation and what needs to be done in order to lead the economy to [a] more sustainable growth scenario. There has been a huge amount of public discussion about the coming period of economic reform [and] all the indications are that the new leadership led by President Xi Jinping and Premier Li Keqiang really understand all this.”

We will learn more about current challenges facing China in the next section.

## Summary of Section One

Post-war East Asia was characterised by emergence from war and by an end to colonialism. In some respects, this created uncertainty. But it was also a time when Japan and the ‘Four Little Dragons’ moved from being developing to almost-developed economies. Contrary to the arguments of neo-liberals, these journeys were supported by active government intervention. Import substitution, the restricting (in some cases, the banning) of imports, export subsidies and the creation of ‘national champions’ all formed part of the policy mix.

Such measures, understandable among developing countries seeking to move up the value chain, would be inappropriate in an advanced economy such as the UK. Other themes, however, are more pertinent.

Japan, China and the dragons were all seeking what, in current parlance, would be described as economic rebalancing. All embraced the enabling role of the state to do so. In post-Maoist China the role of the state was established, but the other countries, with greater free market instincts, nevertheless sought an appropriate and necessary role for the state in their economic transformations.

Some countries did, and still can, compete on the basis of a low value, low skill economy, but all are seeking to move up the value chain, recognising that alongside higher skills and higher value sits higher wages. As with any

## Industrial Policy – A Post War History

economic transformation, this can result in short-term upheavals, but in East Asia, it had overwhelmingly long-term benefits. It is often remarked that the UK cannot compete with developing countries by cutting wages, yet too many not-so-subtle suggestions that longer hours, less regulation and even lower pay can improve the competitiveness of some companies still exist. This is not the approach taken by South Korea, when it set up its Ministry of Trade and Industry, based on Japan's MITI and designed specifically to help in developing high-tech industries, offering higher pay. Deng Xiaoping's sending of some of China's brightest and best to study sciences in the US was hardly undertaken in pursuit of low pay sectors.

More positively, a government stake in strategic companies is a feature of economic development in East Asia. Strong institutions, like Japan's MITI, were copied in Korea and Japan. The desire to learn lessons from successes abroad was a feature. The quest for science and the educational and cultural value of student exchanges were both recognised. China and Singapore both had charismatic leaders who delivered a sense of purpose and belief in their economic ambitions.

Perhaps the most important observation of this first section, however, is that the Ricardian theory of comparative advantage, at least in its pure form, should be rejected. It is clearly the case that some countries' economies are more or less like others, but the idea that one cannot move out of one's current industrial trajectory, and that state action cannot help achieve such an outcome, cannot be right. Japan, the dragons and China all attest to the fact that decisive government action and policy decisions can move a country out of its current economic and technological model if it wishes to do so. Rejecting Ricardian comparative advantage also dispenses with the TINA (There Is No Alternative) attitude that has gloomily accompanied industrial decline in the UK in the last 30 years.

Indeed, if the UK wishes to see a step-change in its industry, embracing green technology or creating its own Silicon Valley, it can only do so by a combination of government determination, policy clarity and a willingness to act against market signals. That would be a decidedly anti-Ricardian policy decision. This report will urge it to take such a decision.

# Evidence from China and East Asia

## South Korea

### **Economic Overview**

As we have seen, South Korea today is a high-tech, high-growth and high-income economy. Its development, over the past 30 years, has been based on manufacturing; the sector accounts for 25% of Korea's GDP, dominated by electronics, shipping and automotives. According to International Monetary Fund forecasts, over the next five years, Korea will make the tenth largest contribution to world GDP growth – a higher proportion than the UK, France and Turkey. Its trajectory has been truly incredible: in 1960, Korea had a per capita income of US\$100 – similar to that of Sub-Saharan Africa. In 2010, this stood at about \$20,000.

However, as Korea moves from being a developing to a developed country, it needs to grow its services sector. In order to remain competitive, Korean firms now have to outsource, to China and elsewhere, meaning that manufacturing provides many fewer jobs today. In the words of one interviewee for this report, Korea needs to “completely rewire” its economy.

As part of its attempts to diversify, the Government of President Park is seeking to develop Korean expertise in new industrial sectors, including nanotechnology and biotechnology. President Park has also stressed the creative sector.

An EU-Korea Free Trade Agreement (FTA), the largest the EU has ever struck, came into force in July 2011. Korea has actively pursued FTAs with large advanced economies and emerging markets. Negotiations for a Free Trade Agreement with China, which are underway, will have geopolitical as well as economic implications, given Beijing's close relationship with North Korea. South Korea spends five times as much on research and development as most European nations and has the world's fastest internet bandwidth. These are incredible statistics for such a newly industrialized country.

Korea's most famous company is, of course, Samsung, the largest electronics company in the world, with a turnover larger than Apple, Google and Microsoft combined. Samsung is a huge investor in research and development; indeed, having invested heavily to produce new technology as a public good, government spending on R&D has fallen as a percentage of GDP (although not in absolute terms); Samsung, by contrast, remains a leader in Korea's R&D spend.

## Evidence from China and East Asia

Government drives productivity in other ways too. The Korea Labour Institute (KLI), established in the Prime Minister's office, is a think tank that researches developments in human resources, industrial relations and workplace innovation, to support Korea's growth. The Korea Institute for Industrial Economics and Trade (KIET), also based in the Prime Minister's office, advises the government on regional development and the nurturing of small and venture businesses, and provides private companies with effective strategies to enhance competitiveness. Both the KLI and the KIET met with the TUC for the production of this report.

### Chaebols

Samsung is an example of a chaebol, a type of conglomerate that, as we saw in the first section, was guaranteed bank loans and enjoyed wider government protection. Other chaebols include LG and Hyundai. Chaebols account for about 80 per cent of Korea's GDP and were central to its industrial development.

Dr Kiu-Sik Bae, Senior Research Fellow at the Korea Labour Institute, told this report the history of chaebols:

"The chaebol is the product of Korea's industrialisation strategy, because the Korean government had to catch up ... in terms of technology and management ... We have relatively few resources to mobilise, so the government mobilised many people, highly talented people...

Until 1980, the government was able to control the chaebols, but [later] the chaebols had outgrown the government control... They began to monopolise the market and ... they were able to squeeze their suppliers to make company's profits bigger and bigger. This is one view: on the other hand, they ...made a significant effort to make new technology and new products in some important sectors where we have some competitors. So there is a bright side and dark side."

Experts therefore suggest that chaebols can be both a blessing and a curse: they have disproportionate market power and remain very wealthy, but wealth is no longer trickling down and social inequality is rising fast. Chaebols can act ruthlessly, placing their SME providers under great pressure; failure to deliver can mean the loss of a contract. Yet according to Dr Bae, Samsung's position in the Korean economy is like Nokia's in the Finnish economy: "If Samsung is shaken, economically and financially, the Korean economy may be shaken."

Kiu-Sik Bae told this report that Korea's wages are higher than those in Japan, by about 2000 to 3000 US dollars in purchasing parity terms, but there are big differences in earnings patterns. Dr Bae said: "Many of [the higher paid workers] are working for companies belonging to chaebol business conglomerates, and also in the public sector. On the other hand, we have large areas of low paid workers. In the middle ground we are weak. In Japan, there

[is a] large share of medium sized companies. Also, we have a large number of temporary workers, including part timers and agency workers... We have enterprise-based systems ... so workers in big companies are looking after their own interests. They are not looking to low wage workers... The institution where workers rely on solidarity is very weak and fragile.”

While discussing chaebols, it should be remembered that one of the biggest of their number, Daewoo, went bankrupt after the Asian Financial Crisis. The company left debts of 80 trillion South Korean won (£46.9 million). At the time, it was the costliest bankruptcy in history. Like Lehman Brothers which came later, it probably thought it was too big to fail.

### **Green Growth**

Korea is Asia’s leader on the issue of “green growth” Korea is a world leader in smart grid technology and is also strong in offshore wind generating technology. As part of the government’s push to identify growth sectors of the economy, it has offered subsidies to companies to “go green”. The new government has slightly distanced itself from the green agenda, as this is identified with its predecessor, but Korea is still planning to go ahead with emissions trading, making it the first country in Asia to do so.

### **Challenge of China**

The rise of China, of course, overshadows everything in Asia. China is both an opportunity and a threat to Korea. Chinese companies can beat most chaebols on input costs, such as labour costs and capital costs. This means that chaebols spend enormously on R&D, in order to try to stay ahead. In geopolitical terms, as we have seen, China has also been a source of some instability, through its relationships with North Korea and Japan, although competition with Japan for both China and Korea has brought the latter two countries closer more recently.

The opportunity for Korea, as for the UK, is in the size of China’s market. Chaebols have many strengths that allow them a foothold into the Chinese economy. Korean managers and workers, like others from East Asia, also have a cultural understanding of China that Europeans could not match. China’s rise is the number one factor affecting Korea’s exports. Bae Kiu-Sik of the Korea Labour Institute said: “When you look at the electronic and electric equipment and automobile sector, the level of intermediate gross trade [between China, Korea and Japan] is actually higher than that in NAFTA... I think around 30 per cent of Korean exports go to China, either directly through China or via Hong Kong; we export more to China than the United States in total volume.”

A downside, however, is that some chaebols are expanding their workforce in China at the expense of their workforce in Korea. Samsung has ten factories in China and according to Kim Tae-Hyun of the Korean Federation of Trade

## Evidence from China and East Asia

Unions, the company now has more workers in China than in Korea. Bae Kiu-Sik sweetens this pill slightly, however: “last year Hyundai were able to sell one million cars in China, mostly produced in China, but Hyundai in Korea were able to export many core components to China ... as the sales volume of Hyundai goes up, the auto parts in the sales volume goes up as well, so they also benefited from big sales of cars in China’s market.”

### The role of trade unions

Trade unions are an important part of Korean society, but there have been repeated breaches of ILO conventions in the country, and most recently there has been a wave of industrial action and political protest, for example over harassment of trade unions and policies like privatisation of the railways.

The Federation of Korean Trade Unions (FKTU), the older of two trade union federations, was founded in 1961, with the Korean Federation of Trade Unions (KFTU) emerging in 1995. After the 1987 democratic uprising in Korea, company based trade unions flourished. This means that trade union recognition is widespread in large manufacturers but, as in other countries, it is much harder to organise in SMEs. This contributes to the wage gap between chaebol and non-chaebol workers. Interviewed for this report, Korean trade unions spoke enviously of Scandinavian style industry-level trade unionism. More positively, unions are represented on a trilateral council to set the increase in the minimum wage, a situation not unlike the UK’s Low Pay Commission.

Trade unionists speak highly of Hyundai, seeing it as the model chaebol, rather than Samsung, not least because the latter refuses trade union recognition. Yoo Jung-Yup of the FKTU told us: “People think that Samsung got a lot of advantages from the government. It looks like a very competitive company, but in fact we don’t think it fulfils [its] social responsibilities; it has very bad image which looks kind of egotistical. Hyundai also got a lot of advantages and benefits from the government during its growth period, and sometimes [we] have hostile relations, but Hyundai is reflecting the history of the Korean trade union movement. People have better sentiments for Hyundai, compared to Samsung.”

There is a model of works councils in Korea, which means all companies employing over 30 people (and so, of course, includes Samsung) must establish a works council. This model was actually established in pre-democratic days, as a way of undermining unions, but unions have embraced it and used it to their advantage. In fact, according to Kim Tae-Hyun of the KFTU, it only works well for the unions if the latter are strong and organised; otherwise, it focuses on management preoccupations. According to Dr Bae, however, it works well in Samsung: “Instead of allowing trade unions at their companies, [Samsung] allowed a labour council, so the employee representatives of the labour councils at Samsung are directly elected by the ordinary workers.



Sometimes they go on strike.” Whilst he could not offer firm evidence, Dr Bae spoke anecdotally of industrial action at a Samsung heavy shipbuilding project and at Samsung Electronics.

### **Demography**

Korea’s biggest medium to long-term problem is its demographic timebomb. While older people are living longer, the birth rate has fallen. This is partly due to a highly competitive environment in which parents top up their children’s school education with expensive evening classes.

Linked to this is the fact that ambitious people want a college education, but the industrial needs of the country are for more blue-collar workers. Heeseon Choi, a research fellow at the Korea Institute for Industrial Economics and Trade, told this report that Korea has a lot of over-education issues: “For lower skill workers, we have a foreign worker programme ... many of the [Korean] young people do not have jobs because they are over-educated and they do not want to go into skilled jobs”.

Dr Heeson added that Korea’s education system was similar to that of the UK and the US, not that of Germany, so it did not produce apprentices. She added: “I read in the newspaper that Wayne Rooney from Manchester United was born in the labour class, but in Korea we don’t have that expression, the labour class... Every young man wants to go to college and get a job in an office, in the management sector....” This creates a problem for industry: “Samsung Electronics cannot find good people in the IT industry ... they built a research institute in India and they run that organisation in India, because they cannot find them [here]”.

### **What does Korea do well?**

Korea is clearly impressive for its levels of R&D and countries in the West, including the UK, should take note. This is what the competition is doing and if the UK is serious about rebalancing its economy, it needs the same sense of urgency.

Moving from having a good idea to developing it for the market is another Korean strength. Whatever misgivings one might have about some chaebol behaviour, links between these conglomerates and schools and universities, are important. The Korean government has targeted industrial sectors, from the chaebols at the start of its development to its identification of the importance of biotech and nanotech, and its emphasis on green tech companies now. This demonstrates, once again, its belief in the active role of government.

Other strengths that were mentioned in interviews for this report include:

- export awareness, with even SMEs seeking to export;
- Koreans’ ability with foreign languages, especially Mandarin and Japanese;

## Evidence from China and East Asia

- a taste for benchmarking against the performance of other countries;
- and strong dialogue between companies and government.

### What challenges does Korea face?

Clearly its ageing society is a threat to Korea's growth. Another threat is that Korea has put a lot of its eggs in few baskets. As we shall see, China resisted a "national champions" policy, partly because the fall of a chaebol-type enterprise would have devastating consequences, such is its market power. Growing new companies, in diverse industrial sectors, and developing something akin to a mittelstand, is another challenge facing Korea. That said, Korea's level of ambition, the fact that it only wanted one or two electronics companies (i.e. Samsung and LG) but it expected those companies to be the best in the world, is to be admired.

A further challenge is that chaebols must do more to protect and nurture their suppliers. About 60% of Korean employees work for SMEs, but those SMEs supply the chaebols, in a similar way to the German mittelstand supplying its tier one companies. The difference is that the chaebols do not see their suppliers as part of their wider team as do German multinationals; the sense that the health of the suppliers is also in the interests of the larger companies is absent in Korea. This puts Korea in a dilemma: they need the chaebols (as Dr Kiu-sik Bae said, a problem with Samsung would mean a problem for Korea) but those same chaebols' refusal to support smaller businesses is keeping the economy unbalanced.

## Singapore

### Economic Overview

As we saw in the last section, Singapore is a small country. With a population of 5.2 million and a workforce of 3.2 million, Singapore nevertheless has a wealth disproportionate to its size, due to its geographical location.

Manufacturing accounts for about 25 per cent of Singapore's GDP and about 20 per cent of its employment. Major industries include electronics, biotechnology, life sciences, engineering and the chemical sector. Singapore is the world's number one constructor of oil rigs. With few natural resources, exports are critical to Singapore's economic success and the education and skills of its workforce are central to its strategy. In recent years, Singapore has had one of the highest rates of GDP per capita in the world. From 2007 to 2013, its GDP growth averaged 5.4 per cent. In the second quarter of 2013, the Singapore economy grew by a lower rate of 3.8 per cent on a year-on-year basis.

In fact, this fall was expected and fits with Singapore's longer term economic strategy. Speaking to the TUC in June 2013, the country's Cabinet Office Minister, Lim Swee Say, who is also Secretary General of Singapore's NTUC, told us:

"In recent years ... the main contributor to our economic growth has literally been the expansion of the workforce. A workforce that grew by 3% a year, but at the same time productivity went up by only 1% a year. So even though we are growing at about 4% a year, most of it came from the expansion of workforce ... While this may have served us well in the last five or seven years ... we do not believe it is a sustainable situation. If our productivity were to remain at about 1% a year, eventually we could lose our competitiveness... It is for these reasons that we decided to switch gear from the 3+1 equals 4 economy to a 1+2 equals 3 economy. [This] is a policy intention. Quality growth henceforth will be valued even more than the quantity of growth... We are not worried about our growth falling from an average of 4% to 3%, we are more worried about whether will be able to achieve our 2% growth in productivity."

Relationships with other countries are critical to Singapore's success. Naturally, it has built up relationships with Asian economies, but it also links to North America, Europe and the Middle East. Lim says, "The best way for us to enhance our survivability for the long term is to make ourselves relevant to as many countries, as many economies, as many regions, as we can in the world."

### **Singapore's competitive strategy**

Singapore's strategy is to position itself as either cheaper or better than its competitor, depending on where its comparative advantage lies. Lim says:

"The basic concept in Singapore is that if our competitors are able to perform the operation cheaper than us, then we must strive to be better than them. So if you are more cost competitive than me, I must try to compete with your capability. On the other hand, regarding the developed economies, if they are more capable and better than us, then we must try to be more cost efficient, so cheaper and better and better and cheaper, and at the same time try to be faster."

Because of its size, Singapore was not able to impose the conditions on foreign companies operating within its borders that other East Asian economies introduced during their development phase. Singapore welcomes any company that brings growth and good jobs. This is the concept of the Singapore Based Company, which is not necessarily a Singapore owned company.

Singapore puts great emphasis on industrial clusters. Lim Swee Say spoke of an eco-system, bringing suppliers, customers and co-partners together, in Singapore or in the wider region. Lim told us:

## Evidence from China and East Asia

“We don't develop a company ... but rather we try to work with a group of companies, to develop across Singapore so they can reinforce each other... And the composition of each cluster will change over time so that electronics, for example, they go from consumer electronics to disc drive to wafer fabrication ... So within each cluster we try to evolve with the growth and development.”

Similarly with education: “In our universities, we value every student. Some students are better in the academic performance, PhD, Masters and so on. Some will go through polytechnic systems, they are more industrial, more skill-based. And then the next group will be what we call the vocational. The technical education, a more vocational skill type.”

When Singapore decided to introduce a focus on life sciences, it introduced courses in its polytechnics, but it also sent students to the best universities in the world, to study for Masters degrees and doctorates. It hopes that these students will return to work for Singapore based companies and that, over time, first a cluster can be developed and then Singapore can become a regional hub. Singapore's attitude in this regard is similar to that of Deng Xiaoping, who rejected Russia's tactic of trying to keep its brightest and best in Russia and, on the contrary, recognised that in the long run, it would benefit China for its students to go abroad. This risked that some might not come back but, even in this eventuality, such students would build cultural links for China that would be valuable for its economic development.

### China

China is both a threat and an opportunity, depending on the economic position that a country finds itself in. Lim told us: “I would say that for any economy not able to compete with China, China will be a big threat. Probably the biggest threat. But for any economy that's able to compete with China, then China will be probably one of the biggest opportunities.”

As we saw in the previous section, China had asked Singapore during its economic opening to share its development experience, attracted by Singapore's mix of economic competitiveness and social cohesion. As we have also seen, China has developed in the south, but is seeking to develop in its central and western areas. Lim displays Singapore's confidence when he says:

“In the central and western area, the main province is Szechuan. We are now working in Szechuan, to build a high tech innovation park. We are pursuing the concept of modern manufacturing, modern services, and modern living. Why was Singapore so responsive, so receptive to this idea? A national park equals a knowledge city, a high tech innovation park, it's because at the end of the day we believe that the growth of China presents more of an opportunity than a threat - provided you are good enough to compete. Our philosophy in Singapore is that we play to win, we don't play not to lose.”

### **The 'greening' of Singapore**

Singapore, like South Korea and China, is trying both to develop a sustainable economy and to become a sustainable society. Lim Swee Say told us:

“This is hugely important for us. We are an island state, so if global warming is going to lead to a global disaster, Singapore will be most affected. So we have our national green plan. We try to recycle. We aspire to be one of the most recycled societies, recycled economies, recycled nations in the world.”

Singapore is the global leader in water recycling. It currently imports water from Malaysia, with a water agreement that will expire in 2061. Singapore has put in place infrastructure for long term self sufficiency in water supply. Eventually every drop of water will be used twice: once by people and a second time for non-potable consumption. Every drop of used water in Singapore is collected and processed.

### **The Culture of Singapore**

We saw in the previous section that the founding father of Singapore, Lee Kuan Yew, described himself as a socialist, trying to find a balance between the needs of businesses and those of working people. Singapore tries to maintain that balance today. Singapore sees itself as doing more for business than a capitalist country and more for the people than a socialist country. This is a utopian position that, perhaps, only a small country can achieve, but it is admirable nonetheless.

Tripartism is central to Singapore's philosophy. The concept of 'win-wins', those wins being economic growth (for the government), business expansion (for companies) and jobs, with better salaries and a better work-life balance (for the labour movement) is important. Furthermore, as we saw in the previous section, trade unions argue that they have a privileged position in Singapore. Lim Swee Say, as noted above, is both a Government Minister and a trade union leader. Although some do, he sees no conflict in this arrangement:

“If I do not speak out independently for the workers, for the unions, I will be voted out... Once every five years I have to be elected by the voters, by the public, to be a member of parliament. If I'm not voted in by the mass of public, if I can no longer be a Member of Parliament, then I cannot be a Minister in the Cabinet Office. In other words, my job as Secretary General of NTUC is to serve the interests of the workers; at the same time, for me to be in the Parliament, for me to be in the Cabinet, I must also contribute to policy formulation. And in the context of Singapore, my role in the NTUC and my role as a Minister can be in harmony because of tripartism.”

The SNTUC argues that employment law in Singapore offers protection for workers, but that trade unionists enjoy additional protection. It is argued that

## Evidence from China and East Asia

everyone has minimum rights at work, whilst an incentive remains for workers to join trade unions.

### What does Singapore do well?

Singapore has done well even to survive the break-up of Malaysia in the 1965; the fact that it came close to collapse helps to explain a culture in which different interests in society continue to work together. Singapore clearly has a self-confidence and is positioned such that, as we have seen, it can compete for both low and high skill work, depending on external circumstances.

Singapore's belief in clusters and its stress on the educational value of every student also works to the country's advantage and it is perhaps this aspect of Singapore's economic strategy, more than any other, that has resonance for the West.

The role of trade unions is very specific to Singapore. As with the ACFTU in China, as we shall see, trade unions are formally welcomed as a voice in discussions about developing the country. They argue that they are able to exert influence through a seat at the table, although they do not have the independence of trade unions in Europe, and indeed are considered to a greater or lesser extent to be an arm of the state or the party that controls it.

## China

### Economic Overview

China is the world's largest country and the world's second largest economy. Its remarkable rise since 1978 has been described in the previous section. According to Dr Hu Angang, Director of Tsinghua University's Centre for Chinese Studies, if calculated using official constant prices, China's economy averaged an annual growth rate of 9.9 per cent over that thirty-one year time span<sup>27</sup>.

As we have seen, however, this growth rate did not proceed at an average over those three decades. Jonathan Anderson of the Emerging Advisors Group writes that the Chinese economy is "tremendously profligate on a cyclical basis, with sharp repeated boom cycles followed by regular periods of retrenchment and clean-up".<sup>28</sup>

As we also know, China's development has been distinctly uneven. We have seen how Deng Xiaoping's economic liberalisation in Shenzhen and Guangzhou has brought great wealth to Chinese cities along the Pearl River

<sup>27</sup> 'China 2020: A New Type of Superpower', Hu Angang, 2011.

<sup>28</sup> 'How To Think About China', Emerging Advisors Group, Jonathan Anderson, October 2012.

Delta. But if the most successful part of China's development has taken place in the east and south of the country, a great gap exists between those areas and many western and rural parts of China. Hu Angang is correct to remind us that China's GDP per capita rose by 8.7 per cent per year on average from 1978 to 2009<sup>29</sup>, but having started from a low base, and recognising that many parts of China have seen distinctly slower development, China's GDP per capita is between that of Iraq and that of the Dominican Republic – hardly world economic giants.

### Planning

Like much else in China, the country's GDP growth has been planned, as far as is practically possible. In 2000, China set out to quadruple its GDP over a 20-year period. The first decade of this millennium has delivered 10 per cent GDP growth per year, but this is expected to fall to about seven per cent per annum for the second decade. China remains on course to meet its 2020 target and by western standards, seven per cent growth is more than healthy, but for a country used to much higher growth, such a fall is disconcerting. The academic and journalist Linda Yueh argues that the middle income trap, the phenomenon whereby a country grows enough to move out of abject poverty but does not develop sufficiently to become rich, usually hits when average earnings reach about US\$40,000<sup>30</sup>. China is forecast to reach that point in about 2020, but that is an average earnings figure: given the growth in the number of Chinese millionaires, clearly many people will not be joining the party by 2020. If Linda Yueh is correct, this is something that China will need to grapple with.

Then there is the balance between consumption and investment. Many consider that as a country China invests too much and consumes too little. Furthermore, artificially low input costs skew incentives towards resource intensive sectors like heavy industry, at the expense of less resource intensive sectors. Chinese banks also enjoy artificially low funding costs, via a fixed deposit rate, which reduces competitive pressure to lend to riskier organisations, which tend to be smaller companies.

### Industry

As we have seen, the success of Shenzhen, Guangzhou and other parts of China has rested on the development of industry. But China's industrial profile is changing. As is normal in countries that become richer, China is seeking to move up the value chain. Kevin Zeng from the Investment Promotion Division of Invest Shenzhen, told us that his organisation targets Fortune 500 companies. Shenzhen is focusing on key future industries, including the internet, biotech, new energy, new materials and the creative sector.

<sup>29</sup> 'China 2020: A New Type of Superpower', Hu Angang, 2011.

<sup>30</sup> Talking Business with Linda Yueh, BBC World News, 5<sup>th</sup> October 2013.

## **Evidence from China and East Asia**

Shenzhen and Guangzhou are home to some of the world's most important companies. For example, Huawei, based in Shenzhen, is the largest telecommunications equipment company in the world, having overtaken Ericsson in 2012. With profits of 23.8bn Renminbi (£2.5bn) in 2010, it serves 45 of the world's largest 50 telecoms operators. Huawei employs 140,000 people and an incredible 46 per cent of them work in research and development; the company invested \$3.75bn in research and development in 2011 and has R&D facilities in China, Germany, Turkey, Russia, US, India, Ireland and Sweden. In October 2013, Huawei announced plans to open a £125m R&D centre in the UK.

Tencent Inc. is China's largest internet service portal. Founded in 1998, Tencent floated on the Hong Kong Stock Exchange in 2004. It is now the third-largest internet company in the world, behind Google and Amazon. Tencent established QZone, which we could regard as China's Facebook, in 2005. The company is headquartered in the Southern Hi-Tech Park District in Nanshan, Shenzhen. More than 50 per cent of Tencent employees work in R&D. Note, though, that Tencent employs only 24,000 people. That is not a large number by Shenzhen standards and can be seen as an example of the province's move away from high employment, heavy industry to high spec companies that employ less people.

In its Twelfth Five Year Plan, China is trying to do two things simultaneously: it is seeking to diversify its industry away from heavy manufacturing into more specialist industry further up the value chain and develop a larger services sector; it is also trying to reduce income inequality.

China's Twelfth Five Year Plan is significant in that it is turning away from China's previous emphasis on headline growth; its focus now is on ensuring long-term prosperity for the entire nation. The Twelfth Five Year Plan emphasises "high quality growth", which includes issues of sustainability, pollution, intensive energy use, and resource depletion, and "inclusive growth", which includes dealing with wealth disparity.

The Twelfth Five Year Plan seeks to develop seven priority industries, with the aim of increasing their GDP contributions from two per cent to eight per cent of GDP by 2015. Three of those themes align with the theme of sustainable growth: energy savings and environmental protection; new energy; and clean energy vehicles. The other areas are consistent with China's ambition to move up the value chain: biotechnology; new materials; new IT; and high-end manufacturing.

### **Green China?**

Is this realistic? Many things are written about China's resource intensive industrial sectors that contradict the idea of the country "going green". For example, as of July 2012, China planned the building of 363 coal fired power stations, representing an increase of 75 per cent of coal-fired electricity



generating capacity. China is already the world's largest coal user, responsible for 50 per cent of global coal use.<sup>31</sup> Yet this news contrasts with important green developments in parts of China: in October 2013, for example, it was announced by the Xinhua news agency that the city of Beijing would phase out all coal-fired power stations in just over a year.

To understand how China hopes to move forward, it is necessary to step back a little. China is currently contributing about 10-11 per cent to global GDP. However, it is using about 21 per cent of global energy and emits 27-28 per cent of the world's emissions. When oil is added to coal, about ninety per cent of China's energy is produced using fossil fuels. As China's industry continues to develop, spreading wealth to those parts of China that are much less advanced than Shenzhen and Guangzhou, its emissions will continue to rise in absolute terms but, it hopes, they will fall relative to GDP growth.

In the long term, China needs to move towards a greener industrial model (see text box). However, a crucial part of this debate also centres on China's urbanisation. At present, 660 million people, amounting to 52 per cent of the Chinese population, live in urban areas. This means that the past 25 years has seen the largest migration to urban areas in human history, a process that has required a massive amount of urban construction. By 2030 the target is to have about 70% urbanisation, which would amount to about 1 billion people. To put it another way, by 2030 about 1 in 8 people on the planet will be living in a Chinese city.

At present, China's urbanisation pattern is very inefficient, consisting of sprawling cities dominated by cars and heavy industry. China is seeking a pattern of smart city growth where the layout is less sprawling and where energy is matched to needs much more effectively, so less energy is wasted. Smart city growth in China would be less reliant on cars and high emissions infrastructure.

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<sup>31</sup> <http://insights.wri.org/news/2013/08/majority-china%E2%80%99s-proposed-coal-fired-power-plants-located-water-stressed-regions>

## Evidence from China and East Asia

### China: From ‘Black Cat’ to ‘Green Cat’

The famous quote from Deng Xiaoping, “It doesn’t matter if a cat is black or white, so long as it catches mice”, referred to Deng’s indifference as to whether economic development was public- or private-sector driven. Playing on this theme, Dr Hu Angang argues that China must go from being a “black cat” to a “green cat”. By black cat, Hu refers to an economy that is underpinned by energy based on fossil fuels, i.e. the “black” fuels of coal and oil. Hu argues that China must go forward on the basis of green energy.

Dr Hu argues for a model of economic development that takes in China’s history, including elements of traditional Chinese philosophy, Marxism and the reforming spirit of Deng. He quotes philosophers such as Zhuangzi (369-286 BC), Dong Honshu (179-104 BC), as well as Marx’s collaborator, Frederic Engels who wrote ‘Dialectics of Nature’ and who, according to Dr Hu, systematically understood the relationship between humanity and nature for the first time in the history of Western philosophy.

Dr Hu acknowledges the western concept of sustainable development, but argues that this is a passive modification of unfettered development. In his view, it remains rooted in a system based on high consumption, over consumption and high emissions. Green development, by contrast, should seek rational consumption, low consumption, low emissions and the preservation of ecological capital.

Dr Hu argues that there are eight elements to a green industrial revolution:

- First, a green industrial revolution will require the participation of all countries and regions, as the accumulation of greenhouse gases is a global problem;
- Second, industrial production will have to undergo constant change, marked by rapid technological innovation in key industries and technologies;
- Third, various types of economic institutions must participate, including multinational corporations and SMEs, as well as non-profit making social organisations;
- Fourth, the energy industry must move towards non-fossil based fuels;
- Fifth, the use of pricing information is increasingly important for resource allocation;
- Sixth, the trend towards greater consumption marked by previous industrial revolutions must be reversed, attaining a self-regulating consumption pattern based on introspection;
- Seventh, countries in the global south must become more clearly aware of the importance of ecological assets;
- Eighth, economic growth must be decoupled from carbon emissions.

This last point is important. Dr Hu wonders what wealth actually means. GDP measures economic wealth and the Human Development Index developed by the United Nations Development Programme measures social wealth. In reality, human wealth also includes natural wealth, yet we have not yet developed a method of measuring the latter. Such a measure is necessary.

Dr Hu argues for a measure of green GDP, which is made up of nominal GDP, minus natural asset losses (such as energy depletion and deforestation), minus natural disasters losses, plus investment in human capital plus green investment, plus an external natural capital input.

Dr Hu believes we are on the cusp of a Fourth Industrial Revolution. The first industrial revolution, in the second half of the 18<sup>th</sup> century, was based on the steam engine. The second, from the mid 19<sup>th</sup> to the mid 20<sup>th</sup> century, took in electricity and railways. The third, from 1950 to 2000, was the information age. But if we are to meet our ecological needs going forward, we are now ready for a Fourth Industrial Revolution – and Dr Hu believes China is in the position to lead the way.

## **Employment**

China under communism has been famous for the “iron rice bowl”. The system was designed to guarantee jobs or social protection for Chinese citizens. With the introduction of the market mechanism in China, the prospect of unemployment is higher than the past. Unemployment is a key Chinese concern: fears of lower Chinese economic growth in years to come is not a fear per se, it masks the real fear, which is inflation and unemployment.

How will China meet this challenge? It will do so by seeking an industrial policy that is employment-intensive. It will specialise in those future industrial sectors that both move the country up the value chain and provide quality jobs. In ‘China 2020’, Hu Angang, Director of Tsinghua University’s Centre for Chinese Studies and advisor to the Chinese Government, is typically forthright: “China should focus on strictly limiting or eliminating the following industries: iron and steel, building materials, non-metallic ores, chemicals, and petrochemicals, in order to reduce industrial energy consumption, carbon emission and the use of capital. China will instead focus on employment-intensive, high-technology, and new technology industries and will develop modern service industries, especially those that are information, knowledge and employment intensive.”<sup>32</sup> In addition, international financial institutions and others have encouraged China to develop its social protection provision to discourage high personal savings which are accrued to cope with potential expenditures on unemployment, ill-health and the costs of education.

## **Trade Unions in China**

There is no independent trade union representation in mainland China, although there are several independent trade unions in Hong Kong. The All China Federation of Trade Unions (ACFTU) is part of the Chinese state and the Chinese Communist Party. The ACFTU consists of 10 national industrial unions, 31 provincial trade union federations and almost 170 million members. Founded in 1925, the ACFTU predates the communist revolution. 36 per cent of its members are women. Trade unions exist to defend the interest of workers, as in other countries, but they see their role as to work with management for harmonious outcomes to problems. As it states on the AFCTU website:

“While speeding up the country’s reform efforts, promoting economic and social development, actively participating in national decision-making and helping poverty-stricken workers tide over their difficulties, trade unions are required to do everything they can to protect workers’ legitimate rights and interests, ensure a good performance of their work and unite with and mobilise the broad masses of workers to contribute their share to the fulfilment of the country’s economic and social development...”

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<sup>32</sup> ‘China 2020: A New Type of Superpower’, Hu Angang, 2011.

## Evidence from China and East Asia

Researching this report, the TUC met with Fang Dan, Vice Chair of the National Committee, Defence, Postal and Telecommunications Workers Union of China. This union, one of the 10 affiliated to the ACFTU, covers state owned sectors. This means that workers tend to be in one place and so are easier to organise. Ms Fang said that industrial relations were “generally speaking very harmonious”, while acknowledging that “there would be some labour disputes during the reform and development of different enterprises”. Ms Fang said the ACFTU’s work ethic was to “promote the development of the enterprises and at the same time safeguard the rights and interests of workers”.

At the enterprise level, workers congresses theoretically allow the workforce to participate in the management of the company. Workers congresses are supposed to take place annually. Fang Dan said that “last year the ACFTU worked with the Ministry of Human Resource and Social Security and the organisation department of the CPC to adopt regulations on enterprise management which have specialised the regulation of workers congresses.” Workers congresses elect workers representatives to join the Board of Directors and Board of Supervisors. Fang Dan said: “Normally, the member of the Board of Directors is the Chair of the trade union in the company” In fact, all too often the chair of the trade union in the company is selected by the management, and will commonly be associated in some way with the management, including being a family member. As well as making recommendations on the future of the company, workers congresses must approve the collective contract for wage agreements before it can be adopted. Of course, workers in China face similar challenges to workers everywhere: one of the biggest challenges facing the ACFTU, in its opinion, is the growth of agency workers and the difficulties in protecting their interests.

Five Year Plans can entail changes to economic priorities that affect unions, for good or ill. The 12th Five Year Plan sought to enhance the added value of the shipbuilding industry, which raised the issue of migrant workers, i.e. those migrating from rural areas to urban areas, who are more likely to be low skilled and may struggle to use information technology. Upskilling such workers was a challenge for the union involved and the union would work with management to help them to meet their skill needs.

British companies operating in China include Fortune 500 companies, such as Unilever and Tesco, in which trade unions are recognised. Trade unions find foreign companies more difficult to organise, according to Fang Dan, although Chinese law gives every worker the right to join a union.

Trade unions have the right to high-level political representation in China – although this is in the context that the unions are controlled by the Communist Party and the state - but, in doing so, they are required to speak for all workers. Fang Dan said: “There are representatives of trade unions in the National Peoples’ Congress, the top legislature of China, and also in the

National Peoples' Political Conservative Conference... These representatives of trade unions represent the right of all workers, not only members of trade unions. Also, according to the labour law of China, the provisions of collective contracts cover all workers in the company, not just members of trade unions."

### **The Role of the State**

When one thinks of China, three main differences with countries such as the UK come to mind. Those are: China's size; the fact that China is a Socialist economy, which in practice refers to the predominance of the state with regard to planning and industry as well as a wide range of public life; and China's polity, i.e. the fact that it is a one-party state. Let us consider these issues in turn.

State-Owned Enterprises (SOEs) account for about 25 per cent of China's GDP. Their share of economic activity has steadily declined over the last two decades, but they still dominate a number of important sectors, such as energy, rail, basic materials, machinery, telecoms airlines and finance. Researching this report, the TUC visited Sinopec, in the Pearl River Delta, which began life, 40 years ago, as a producer of fertilizer, but has grown as Guangzhou has grown: Sinopec now processes 15m tonnes of crude oil and produces 220,000 tonnes of petrochemicals every year, employing 5,500 people.

Writing in 'How To Think About China', Jonathan Anderson dispels some myths about SOEs:

"...one of the biggest secrets behind China's success is just how market-driven most nominally state-led firms are, i.e., how "hard" their budget constraints are.

"For example, there are only a handful of industries that enjoy anything close to protected monopoly conditions, and only a handful where the government controls prices. Only the largest centrally-controlled firms can expect to be protected against losses over time, and the remainder are expected to be profitable or be shut down. State companies are not generally used as a tool to mop up unemployed labour. And perhaps the most fashionable current claim – that SOEs are heavily subsidised on a structural basis through cheap credit – turns out to be massive overstatement as well.

"In all of these areas, China broadly runs as a capitalist economy under commercial conditions."<sup>33</sup>

We should not underestimate the sheer number of SOEs. At first glance, if SOEs make up 25 per cent of GDP, this means that private companies account for the other 75 per cent. All of which makes China look more capitalist than

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<sup>33</sup> 'How To Think About China', Emerging Advisors Group, Jonathan Anderson, October 2012.

## Evidence from China and East Asia

socialist. But 25 per cent of China's GDP is huge, in absolute terms. There are 100,000 registered SEOs on the Chinese mainland. But they are not monopolies. There are, for example, about 1,500 state mining companies, a dozen large state motor manufacturers, half a dozen state airlines, four major telecoms companies, a number of big shipbuilders and more than ten government-led iron and steel groups (of which at least six are among the world's top ten producers).<sup>34</sup>

### The Scale of China

Which brings us to China's sheer size. China is a single country and it is tempting to think little more about that fact. However, Martin Jacques, author of 'When China Rules The World', describes that country as a "civilisation state". Jacques notes that China, as a political and geographical boundary, is perhaps 100 or 150 years old; as a civilisation, however, we can refer to China as being 2,000, 3,000 or even 5,000 years old.

Jacques adds:

"China is of continental size, consisting of what are, in many respects, semi-autonomous provinces of nation-state proportions. The four provinces of Shandong, Henan, Jiangsu and Anhui, for example, have a combined population larger than that of the United States; while nine provinces have a population as large as, or larger than, that of France or the UK... Not surprisingly, the numerous provinces are extremely diverse in character. The disparity between their per capita incomes is vast, the structure of their economies varies greatly .... their cultures are distinct, and the nature of their governance is more varied than one might expect... China's provinces are far more diverse than Europe's nation-states, even when Eastern Europe and the Balkans are included."<sup>35</sup>

This helps us to understand the multitude of SOEs. Prior to 1998, the Chinese leadership was keen to consolidate the large-scale state economy into a number of chaebol-like "national champions", in the style of Korea. The Asian financial crisis of 1997-98, in which many large organisations collapsed in other East Asian economies, put paid to that ambition and instead China pursued a more decentralised, competitive enterprise strategy in the years that followed. It is for this reason that so many SOEs exist in the same industrial sector.

### Politics

This brings us to politics. China is not a democracy. That allows China to move at a pace that does not need to take account of popular concerns, if it is

<sup>34</sup> 'How To Think About China', Emerging Advisors Group, Jonathan Anderson, October 2012.

<sup>35</sup> 'When China Rules the World', Martin Jacques, 2009.

considered good for the country's economic development. That's the theory, at least. In practice, the Chinese Government is extremely sensitive to public concerns. It is no coincidence that the Tiananmen massacre of 1989 followed demonstrations that were prompted, in large part, by economic tensions. Much power in China is also devolved to local oligarchs, which means that Beijing does not always have the free hand that some believe. This is especially true given that, as we have seen, the various provinces are at different stages of development, have different ambitions and a variety of short- and long-term goals.

Premier Li Keqiang, became Governor of Henan Province, China's youngest provincial governor at aged 43, in 1999. An economist by training, Li is credited with transforming the poor inland region of Henan into an attractive area for investment. Li is an example of the phenomenon whereby, by the time a member of the Chinese national leadership gets to that position, he or she will have had years of training, running a province that, as we have seen, may well be larger than a European country.

### **Is the rise of China an opportunity or a threat to the UK?**

There is a point of view which says that a strong China is a threat to countries in the rest of the world. Up to a point it is true. In discussions with the Hong Kong Federation of Trade Unions (HKFTU), it was remarked that, 30 years ago, the label made in Hong Kong appeared on many simple manufactured goods, but not anymore.

As Poon Man Hon said of the Hong Kong workforce: "Only a few percent are in manufacturing because 30 years before, Hong Kong produced some very simple products – toys , clothes – but they all moved back to China, as the wages of the Chinese worker at that time was less than one-tenth of the Hong Kong wages. When you go to China, it is only one or two hours travel distance, so that is why at that time all the factories moved back to Shenzhen or nearby. Some of the Hong Kong workers at that time may have been employed to work in mainland China as supervisors, in quality control or something like that, but up to 10 or 20 years later this kind of managerial job has been shifted to the people in mainland China."

Of course, that was 30 years ago. As we have seen – certainly in its richer provinces - China is moving out of low cost production. This report was told that there has already been a significant migration of very labour intensive manufacturing out of China. A pair of shoes now, for example, would rarely be made in China. Shoes tend to be made in Vietnam or Bangladesh. The same is true with lots of toys. Chinese wages, which have been growing by 15 to 20% a year over the last ten years, have already made it uncompetitive to make such products in China. This is a natural bi-product of development.

Interviewees recognised that the UK population employed in manufacturing is small relative to the global workforce. In areas where the UK has invested in

## Evidence from China and East Asia

capturing innovation, there was some confidence, with the automotive industry quoted as an example. People we spoke to felt the demand for high quality products would rise exponentially as the middle classes in China, but also in places like Indonesia and Vietnam, become more able to buy them. Optimism about the UK's potential in manufacturing was evident, so long as we continue to invest in skills and innovation and keep ahead of the game. For as long as the UK is producing goods that China cannot or is not producing itself, the rise of the Chinese market is clearly an opportunity.

Hu Angang praised the virtues of trade. In an interview for this report, he said: "To at least 70 per cent of countries in the world, China has become the number one, number two or number three trading partner. So I think China rising is not only an opportunity for us, but also for these other countries. With more than half [of these countries], we are the number one trader... Japan, Korea ... and Australia..." Dr Hu believed that this principle applies "not only for Australia, the US, [but also] the European Union and the UK. So the problem ... is how to utilise both sides comparative to the development of their own country."

### Culture

Economic competitiveness is not the only factor to consider. Culture is also important. The UK is recognised as a trading nation that is culturally comfortable with globalisation. Some countries, including European countries, are seen as lukewarm about open markets, whereas the Chinese recognise that the UK is much more bullish about this concept. So the UK has culture on its side and this is probably underestimated as a plus factor for this country.

There are, however, things it can do to strengthen this advantage still further. Hu Angang was critical of the difficulties placed by the UK on overseas students studying here, telling us: "China is now number one for foreign students in the UK, but based on fees, they are very, very high. Foreign students are like exports, so how can you reduce these fees? Every Chinese student who goes to the UK complains about this."

Are there other cultural tricks to learn? While visiting China in October 2013, the Mayor of London, Boris Johnson, suggested that Mandarin should be a standard part of the English school curriculum. Mr Johnson is learning Mandarin himself, something he has in common with both his own children and those of the Conservative MEP Daniel Hannan. Interviewees in South Korea highlighted Koreans' ability to learn foreign languages, especially Mandarin and Japanese, as a major advantage for their country, in terms of its export potential.

As Martin Jacques reminds us in 'When China Rules The World': "As China becomes the economic centre of East Asia, a process already well under way, there is a compelling reason why Japanese, Koreans, Vietnamese, Thais, Indonesians and Malaysians – to name but a few – should want to speak



Mandarin... It seems entirely possible, even likely, that in fifty years' time Chinese will have replaced, or at least joined, English as an interlocutor language in the region."

Many linguists report that understanding a country's language is crucial to understanding its culture. If this is the case, it is hard to argue against a greater understanding of Mandarin. At the very least, in today's world, it is difficult to imagine a Mandarin speaker being unemployed for very long.

### **What is the appropriate role of the state in modern industry and modern economics?**

China allows for an interesting discussion about the role and limits of the state in a market economy. This debate can be approached from either a practical or an ideological perspective. Opinions on this issue are also affected by the degree to which commentators believe the market can deliver optimum economic outcomes.

In the UK, the post-war economic consensus accepted that there was a role for the state, often in the ownership of public utilities, but also in deciding economic priorities, and a role for the market as wealth creator. The neo-liberal economic revolution of the late 1970s broke that consensus and in the years since, the western European hegemony has been suspicious of the state and its levels of competence.

At just about the same time, in China, Deng Xiaoping was introducing the market into the Chinese economy. Yet, as we have discussed above, Deng was not a capitalist and a large swathe of Chinese companies remain in public hands. China believes strongly in the role of the state in planning economic activity. In some cases, hybrid companies, that are 50 per cent state owned and 50 per cent private companies, such as Guangxi Honda, about which we will learn more below, also exist.

Views differ as to both the practical and ideological value of China's Five Year Plans. One interviewee told us: "The Five Year Plans aren't actually terribly specific. They set a direction of travel. Sometimes they have budget numbers attached to them, but on the whole they are more like a philosophical than a technical manual".

Yet another said: "The Five Year planning process in China is an extremely rational policy making process... [Five Year Plans] gather up the risks to very in-depth research, they bring it together in an extremely impressive, co-ordinated way and so when [we] talk about achieving ... industrial transformation, [we] have thought through very well..."

Politically, Hu Angang believes in planning and sets out a very specific blueprint in his book, 'China 2020', including goals for: economic growth; structural reform; common prosperity; education, science and technology; sustainable development; social harmony; and democracy and the rule of law.

## **Evidence from China and East Asia**

Free marketers, of course, ridicule attempts to control economic events in such minute detail. Weiyang Zhang of Peking University is a Hayekian economist and is therefore a critic of Chinese economic policy. Weiyang told this report that government planning and targets are unhelpful: “Government should have no real targets. Government just needs to give more freedom, let everyone play... When people have resources, then they can make decisions, to consume or invest, to save money or invest, and they can exchange... In China, these targets are like something compulsive. When government sets their targets, all local government has their own targets. If they cannot achieve them, they will cook the data, which is interesting...”

Hu and Weiyang are at opposite ends of the spectrum. Hu believes in detailed economic planning. Weiyang seems even to reject the role of governments in delivering economic stability in the face of a financial crisis, having been opposed to China’s fiscal stimulus following the economic downturn of 2008.

Weiyang is able to hold that view because he believes that, ultimately, the market will deliver optimum economic outcomes. The TUC rejects such a view. Perhaps planning to the extent stipulated by Hu Angang goes too far, but in our view, unfettered markets deliver many negative outcomes, such as large scale inequality. We believe that economics should serve society and the desires of society are, in part, political decisions. We also believe that planning, and an active government industrial policy, can help to provide jobs and industries of the future.

### **What does the rise of China mean for the UK’s relationship with Europe?**

In his book, ‘China 2020: A New Type of Superpower’, Hu Angang cites the US President who brought China in from the cold, Richard Nixon:

“In 1988, President Richard Nixon, in his book ‘1999: Victory without War’, predicted that world would be defined by a multi-polar political, economic, and military structure after the collapse of the cold war system of bi-polarity. He declared that after the onset of the twenty-first century the dominant positions of the United States and the Soviet Union would decline, allowing the three geopolitical giants Europe, Japan and China to rise.”

Nixon was onto something, but history shows he was inaccurate in his assessment of country trajectory. Japan is undoubtedly one of the strongest economies in the world, but endured a lost decade in the 1990s, after the collapse of the country’s asset price bubble. It is hard to imagine Japan’s place in the world economy in quite the way that Nixon saw it. Meanwhile, Nixon was also pessimistic about the US. As we have seen, China is predicted to overtake the US as the world’s largest economy, but the United States will remain one of the world’s largest and great economies.

Hu himself makes a different prediction: “Between now and 2020 China will continue to increase its economic strength until it attains superpower status, thereby ending the era of American hegemony. The international balance of power, then, will shift from uni-polarity to a multi-polar world dominated by the United States, China and the European Union. In other words, the world seems, yet again, poised to enter an era of great powers.”

Hu’s prediction seems more likely (then again, it is more recent). It does, of course, have implications for the UK, given the lively debate about our future relationship with the European Union. A Conservative Government in 2017 would hold a referendum on the UK’s EU membership. A British exit from Europe would weaken our influence in this growing part of the world economy. In the TUC’s view, the UK needs to export to Europe and to China. These needs are not mutually exclusive. Moreover, UK membership of the EU will increase our influence in some important issues such as international trade rules, where our interests are similar to those of other European nations.

### **Can the state have a strategic approach to the private sector?**

The TUC visited Guangqi Honda in preparation for this report. Guangqi Honda Automobile Company brings together the Guangzhou Auto Group Corporation, Honda Motor Company and Honda Motor China Investment Company for a period of 30 years. Its head office at its Guangzhou factory was incorporated in 1998. The company’s two factories (a third is under construction) produce 470,000 cars per year and the company employs more than 80,000 workers.

Guangqi Honda Research and Development Company was established in 2007, the first research institute developed independently in the Chinese automotive sector, allowing the company to develop its own cars. Indeed, along with Honda brands including the Civic and the Accord, Guangqi Honda has developed a Chinese car not produced elsewhere, the Everus S1.

The company makes good profits, although it was hit by the financial downturn of 2008. Its rivals include the First Automobile Corporation and the Shanghai Automobile Competition; the company faces what its manager called “fierce competition”.

What is particularly interesting to a British observer – although this is quite normal in China – is the hybrid public-private ownership of the company. The Guangzhou Auto Group is state-owned and has a 50 per cent stake in Guangqi Honda. Both sides of this arrangement have strong reasons to participate in it. The Guangzhou Auto Group want the know-how that Honda brings. Until now, the company is sufficiently in the catch-up phase to learn from Honda. In fact, the public sector part of the company is now coming under pressure, after fifteen years, to do more things independently. Honda, for its part, wants access to the Chinese market. It will be under no illusions that its partner company seeks its knowledge and that this marriage will not last forever. It

## **Evidence from China and East Asia**

will hope to make itself indispensable but, if it cannot, it will hope to sell as many cars, and make as much profit, from China as it can.

Apart from showing the creativity of the Chinese Government in seeking various ways to upgrade its technology, this is also an example of a government taking a strategic stake in an industrial company. This is a concept that the TUC has discussed before.

In our report, 'Developing Industrial Policy: Lessons from France', published in 2010, we highlighted France's Fonds Stratégique D'Investissement (Strategic Investment Fund, or FSI). The FSI had a budget of 20bn euros with which to take minority stakes in companies of strategic interest to the country. Those stakes would give it seats on the relevant company board, they would be held for a number of years and the FSI would exit the company at a time and in a manner agreed with other stakeholders. The FSI as a whole sought to break even or make a profit over the long-term, in the same way that any other investor would, but it recognised that if it was to invest in relatively risky projects, rather than safe bets which had no problem with access to finance in the first place, it would incur some occasional losses. However, the FSI would provide patient capital and its rationale would be to help France build or maintain the industries of the future. Interestingly, this was not a policy of the left; it developed under the presidency of Nicolas Sarkozy. In our report of 2010, the TUC called for a £5bn fund for similar purposes in the UK.

Guangxi Honda demonstrates that China, like France, recognises the strategic role of the state as a partner to the private sector.

### **Can UK business take advantage of Chinese procurement policy?**

Procurement policy has gained in prominence in UK political discussion in recent years. Central to the debate has been business' desire for long term certainty and an ability to plan.

In 2011, the Cabinet Office Minister, Francis Maude, gave a speech in which he promised that, in future, "the public sector should give businesses and suppliers signals about what contract opportunities are coming up so that they can gear up and make investment decisions well in advance".

The TUC strongly welcomed this development. But can this principle be extended further? As we have seen, China publishes in-depth Five Year Plans. The 12th Five Year Plan, published in March 2011, identified seven strategic future industrial sectors. What is more, the Chinese Government has encouraged foreign business participation in the development of strategic sectors. We must not be naïve: China is trying to develop its own industries and, where it can meet its targets internally, it will. But as we have seen, China needs outside help to develop some sectors and it is not shy about making full use of foreign companies and their knowledge where necessary. Five Year Plans go into great detail and are in the public domain. British businesses that

seek to export to China need, as a first step, only to look at the plans to discover if China wishes to develop in a sector that is, or could be, covered by their business. Further research will be needed regarding whether China can develop these sectors indigenously and which competitors may also seek this business. Perhaps a UK government agency, such as UKTI, could carry out this research. At the end of the day, there are major business opportunities in China that are advertised years in advance and for which UK businesses could plan.

## Summary of Section Two

The economic and industrial trajectories of Dragon economies, having developed during the second half of the twentieth century, are increasingly defined today by their relationships with China. It is clear in both Singapore and South Korea that, in any competition for low cost business with China, the latter country would be the winner. Singapore and South Korea's efforts, therefore, focus on how to find niche markets and/or how to compete on the basis of higher quality. In some cases, Singapore seeks to be "cheaper", but it increasingly seeks to be "better". However, both South Korea and Singapore see China as an opportunity if they can get their competitive strategy right.

From China's perspective, how to reduce inequality between richer and poorer provinces and, increasingly, how to "green" its industries are the biggest challenges that it faces. Clearly, China's size and its system of government distinguish it both from other East Asian economies and from countries such as the UK. This does not mean, however, that there are no lessons to be learned.

Linked to the relationship between China and the Dragons are issues of productivity and trade. Singapore seeks higher productivity to drive future GDP growth. Korea's trade agreement with the EU is important to its future growth. Professor Hu Angang from Tsinghua University stresses the importance of trade in developing a harmonious future world economy.

Education and industrial clusters are key to Singapore's future prosperity. Korea has two think-tanks, based in the Prime Minister's office, seeking to develop labour and industrial policy. Both countries recognise the value of "green growth" to their future industrial strategies. What unites Singapore, South Korea and China is their collective belief in the power of active government. There is an understanding of the role of the government and that of the state in delivering economic and industrial change. There is also recognition of the limits of government and the need for market dynamism. Countries in the West became sceptical – the TUC would argue they became too sceptical – of the role of the state 30 years ago. China, by contrast, has tiptoed into the world of the free market: the speed of China's reform can seem overwhelming, yet it has adopted a gradualist approach to change which contrasts, for example, with that of Russia. China uses very different language

**Evidence from China and East Asia**

regarding the role of the state and that of the market, yet it provides an interesting opportunity to explore what should be an appropriate relationship between both in a modern national economy.

Sometimes this relationship can almost seem self-contradictory: State Owned Enterprises, for example, are expected to meet demanding, market-led targets. China sees nothing unusual about a company that is fifty per cent owned by a provincial government and the other 50 per cent owned by an international private company.

Employment is considered to be an important aim of economic policy in China; it is not assumed that the market will deliver quality jobs for Chinese citizens, as is the case in the UK. As China seeks to replace old industries with new, and as more and more Chinese citizens move from rural to urban areas, employment policy provides massive challenges to the Chinese Government, yet high quality employment is an explicit policy aim. South Korea struggles with a mismatch between the employment needs of its major companies and the educational aspirations of its citizens. For a city-state like Singapore, with its very small population, employment policies are often linked to migration issues.

The size of the global economy is leading to the development of a few world centres of power. The US remains one of them. China is fast becoming a second. No individual European country can compete with these vast nations for influence on the world stage, making it essential that the UK utilises its membership of the European Union to shape the future of the global economy.

# Conclusions and Recommendations

## 1. China is a major opportunity – and a minor threat

The first conclusion of this report is that China's entry into the world economy provides us with a massive opportunity, so long as we respond in the right way.

There is, of course, no future for the UK in trying to compete on low skill, low cost production. Hong Kong's manufacturing sector almost disappeared after Shenzhen became a Special Economic Zone, because China could undercut Hong Kong wages by a factor of ten, while only being a short distance away. Hong Kong has survived – thrived even – from its focus on financial services and shipping, but the divide between rich and poor in Hong Kong is clear for all to see.

Singapore has adopted its “cheaper or better” strategy. As Lim Swee Say told us, if competing on cost, Singapore must be cheaper. If competing on quality, Singapore must be better. Singapore is able to pursue such a strategy, given its historical development thus far. Lim was confident, however, that if a country was able to find industries in which it could compete with China, the latter became, in his words, “one of the biggest opportunities”.

For the UK, getting the strategy right is vital. UK exports to China will depend on specialising in those products and services that the Chinese middle class wish to buy. It will also depend on identifying areas of industrial growth in which the Chinese are not yet ready to develop themselves and where we might steal a march on them. One of our interviewees told us that the automotive industry had captured innovation and a focus on both innovation and skills offered a vital opportunity. Much of UK industry is in areas where the Chinese do not offer obvious competition, making this even more important.

In an interview for this report Hu Angang, Director of Tsinghua University's Centre for Chinese Studies and advisor to the Chinese Government, highlighted the importance of trade. This is a particularly important observation to the UK, as we are recognised in China as a trading nation. All countries will have cultural advantages that can be exploited and this is one of ours – it is essential that its importance is not lost. Other countries, even the US – which speaks a good game on free trade but can be very protectionist

## Conclusions and Recommendations

when it feels its short-term interests to be threatened – are not necessarily viewed in the same light; the UK must capitalise on this understanding.

### 2. The UK needs a holistic economic, industrial and employment strategy

To take full advantage of the opportunity of China, the UK must connect its economic, industrial and employment policy into an overarching strategy.

In post-war Japan, the Ministry of International Trade and Industry (MITI) had influence over investment strategy, pollution control, energy and power, allowing for policy symmetries that minimised damage to export industries. Joined-up government is clearly a good idea and it was a factor in the decision of the last Labour Government to bring business, investment, skills and science policy under the Department for Business and Skills. Yet the broad range of industry/business policies remain divorced from both economic and employment policy in a way the Chinese would not recognise.

At present, the UK Treasury is responsible for achieving steady growth and low inflation. As such, it has an inflation target – a central target of two per cent, with fluctuations of more than one per cent either way requiring the Governor of the Bank of England to write to the Chancellor, explaining what action will be taken to bring inflation back to target. The Governor's main tools for such action reside in monetary policy, most obviously interest rates.

There is no employment target. There is no discussion of what constitutes a good or desirable job. There is a general commitment to industrial rebalancing, but no established way of identifying whether rebalancing has been achieved to the desired degree or not. The Business Secretary, Vince Cable, is on record as saying that he does not believe in “arbitrary targets”. Yet the government has an inflation target. We can only assume, therefore, that inflation is considered important enough to warrant a target and that industry or employment are not.

Furthermore, in ‘No Stone Unturned in Pursuit of Growth’, the report of the Heseltine Review, published in 2012, the former Deputy Prime Minister called for “an overarching and long term National Growth Strategy and its vision for wealth creation, with concrete commitments against which it can be held to account”. This was one of the few of Heseltine's recommendations that disappeared without trace.

This report calls for Heseltine's recommendation, of an overarching strategy for wealth creation, with concrete commitments, to be implemented.

China, of course, has its celebrated five year plans. The 12th Five Year Plan, which runs until 2015, identifies seven strategic industries that the Chinese



Government will prioritise. However, Five Year Plans go into great detail about a wide range of economic, industrial, employment and social outcomes. We have received differing accounts of how successfully the government achieves the plans, but even if they are only partly achieved, they have tracked, and led, the development of the Chinese economy as it has moved, in recent years, away from low cost, low value, heavy industry into high tech, high value sectors. Recent Five Year Plans have focused more and more on environmentally friendly industry. To be sure, China's CO<sub>2</sub> emissions will rise in the near future, as poorer parts of China try to catch up in the time-honoured way of building heavy industry first. But China's long-term trajectory for CO<sub>2</sub> emissions will be downward.

Five Year Plans are, of course, synonymous with the rapid industrialisation plans of Mao. They originate from a planned economic system that is an anachronism in twenty-first century Britain. But stripped of their ideological baggage, they set out a direction of travel for government economic and industrial policy, for which detailed policies are designed. They signal a desire by government to develop its economy in a particular direction, rejecting the argument that so long as the economic fundamentals are in place, the "market" will deliver optimum outcomes, an argument that has proved to be a fallacy in the UK. Moreover, there is a general assumption that when the Chinese set out to do something, they do it. There are a number of reasons why this might be the case, but a recognised, even though limited, role for planning is part of why this is achievable.

Linked to this is employment. For a person of working age, a good job is a cornerstone to a good life. It is the best defence against poverty. It is also the most productive possible contribution to the nation's economic well-being. In contrast, the lack of a good job breeds poverty, fear and insecurity.

Yet in the UK, we assume that the market will provide the jobs necessary. This assumption has clearly been shown to be false. China, as we have seen, seeks an employment-intensive economic strategy. As it moves from the age of the 'iron rice bowl', in which the state provided jobs for all, to an open market economy, it responds to genuine fears about employment by targeting, in Hu Angang's words, "employment-intensive, high-technology, and new technology industries and ... modern service industries, especially those that are information, knowledge and employment intensive."

China is not without large-scale economic challenges, most obviously the wealth gaps that exist between different parts of the country. It also experiences unemployment, particularly in those parts of the country that are in the midst of major change. Yet recognising the need for proper jobs, as an objective of policy alongside developing strategic industrial sectors, is necessary in both China and the UK. There will not be an exact match between desirable industries and desirable jobs, but this report argues that, where possible, a modern industrial strategy should be employment specific, targeting both

## Conclusions and Recommendations

industries which could be export-rich for the UK, but also industries that deliver high quality, well-paying jobs for working people.

### Broadening our understanding of strategic industries

The logic of this argument is that we must widen what we understand to be strategic sectors. Specifically, industrial policy has usually been associated with manufacturing; this sector is critically important, but the twin effects of globalisation and automation mean that, whilst many more manufacturing jobs could be created in Britain, manufacturing will not, by itself, solve the problem of a lack of good jobs in the economy. Manufacturing is not the solution; it is an important part of the solution.

The first modern attempt to identify strategic sectors of the future came with ‘The Race to the Top: A Review of Government’s Science and Innovation Policies’, produced by the former Science Minister, Lord Sainsbury of Turville in October 2007. This report was published before the economic downturn, when the political zeitgeist was still against the concept of an industrial policy, so whilst Sainsbury’s words may look defensive now, they were an important breakthrough at the time. Lord Sainsbury wrote:

“It is not possible to predict where the new jobs will emerge in the future but it is possible to see many opportunities for UK companies to create new products and services, and new industries in areas as diverse as aerospace, pharmaceuticals, biotechnology, regenerative medicine, telemedicine, nanotechnology, the space industry, intelligent transport systems, new sources of energy, creative industries, computer games, the instrumentation sector, business and financial services, computer services and education.”<sup>36</sup>

In this paragraph, Lord Sainsbury identifies strategic, job rich sectors of the future. One of those sectors, the creative industries sector, contributed £36.3 billion to the UK’s Gross Value Added in 2009. 1.5 million people were employed in the UK’s creative industries or in creative roles in other industries in December 2011, while exports of services by the creative industries accounted for 10.6 per cent of the UK’s export of services, equivalent to £8.9bn in 2009. Creative industries include film, TV, radio, music, video games, publishing, software and computer services, architecture and fashion<sup>37</sup>.

Lord Sainsbury also discusses pharmaceuticals. Pharmaceuticals employs around 73,000 people directly in the UK – 27,000 of whom work in highly-skilled research and development roles – while also generating thousands of jobs in related industries. Two of the world’s biggest pharmaceuticals companies, GlaxoSmithKlein and AstraZeneca are headquartered here.

<sup>36</sup> ‘The Race to the Top: a Review of Government’s Science and Innovation Policies’, Lord Sainsbury of Turville, October 2007.

<sup>37</sup> <http://www.publications.parliament.uk/pa/cm201314/cmselect/cmcumeds/674/674.pdf>

So this report argues against a view of industrial policy that is based purely on manufacturing.

We further believe that the public sector should recognise its major role in supporting many modern sectors. In the case of the creative and pharmaceuticals sectors, it does so most obviously through the BBC and through the National Health Service.

BBC Worldwide is the largest television programme distributor in the world outside the major US studios, selling programmes and formats produced by the BBC and by over 200 UK independent producers. In the US, 'Dancing with the Stars' is a huge phenomenon, following the success of its UK parent, 'Strictly Come Dancing', produced by the BBC. The BBC's move to Salford as part of the new Salford Media City has attracted other employers, leading to the creation of Europe's biggest digital hub outside London, with a workforce of 10,000. 13 per cent of BBC i-player users say it was a reason for their acquiring home broadband.

Statistics on the contribution of the NHS to the economy are difficult to find. A snapshot, however, is available in 'Providing Value: The economic and social value of foundation trusts', produced by the Foundation Trust Network and Barclays. This found that the economic value of foundation trusts to the healthcare sector is valued at £30bn per year. Foundation trusts are often the largest employer in their community, creating significant employment opportunities for local workers. In 2011-12, they committed £21bn of their expenditure to staff. A further £1.2bn was spent on capital investment and £104m on research and development.

Direct government capital investment also has an important role to play, both at generating direct economic benefit and leveraging in further private sector funds. The High Speed Two rail project has, for example, potential to generate significant economic gains, but only if a strategic approach is taken to maximising the opportunities for UK firms, as well as jobs and skill gains for employees.

### **Industrial Eco-Systems**

There are other, specific factors that should be targeted by UK policy makers. These include the need for eco-systems in particular industries, as described in the Singapore experience of Lim Swee Say. Such eco-systems bring suppliers, customers and co-partners together. As Lim told us: "we try to work with a group of companies, to develop across Singapore so they can reinforce each other."

If the economic-industrial-employment strategy described above is an example of a macro initiative, industrial clustering might be considered to be a micro one. In fact, the UK has made some progress on clustering. For example, as described in 'The Plan for Growth', a joint Treasury-BIS paper from March

## Conclusions and Recommendations

2011, ‘Tech City’ in East London is attracting businesses such as Vodafone, Google, Facebook and Intel, and so could eventually become a rival to Silicon Valley in the US. Such a development is important; we need to bring more such clusters to the UK.

### Strategic sectors rather than strategic companies

In developing the chaebols, Korea backed at least two companies in each sector, as a back-up in case one got into problems. In some cases, one has grown markedly more than the other. Samsung and LG are two chaebols in the electronics sector, but whilst LG is huge, it is about half the size of Samsung in terms of revenues. In other cases, Korean caution was well-founded: Daewoo, a major chaebol, went bankrupt at the time of the Asian financial crisis in 1997, yet a Korean motor manufacturer, Hyundai, continues to exist.

This underlines the case that governments should develop strategic industrial sectors, but should resist identifying strategic companies, or “national champions”. The experience of Daewoo should warn against believing that some companies are “too big to fail”. Having said this, Korea should be congratulated for sticking to its strategy and its belief in the power of active government. The UK had a bad experience with British Leyland in the 1970s and this was given as the reason for the lack of an active industrial policy for three decades afterwards. That is clearly an over-reaction and has left the UK comparatively ill-equipped to meet the needs of a rebalanced economy after the 2008 economic downturn. There is a lesson here: whatever strategy we choose, some things will go wrong. At such times, it is important to hold our nerve and develop rather than abandon our strategy.

Korea should also be congratulated for its level of ambition. Put simply, Korea expected its chaebols to be world leaders. Samsung is the largest chaebol in Korea; as we have seen, it is also the largest electronics company in the world. This is reminiscent of German attitudes: in the TUC report ‘German Lessons’, we described how the steel company, ThyssenKrupp, was not prepared to be the third largest steel producer in the world, it had higher ambitions than that. It is time for British companies to be similarly ambitious and for government to support them to achieve these goals.

### 3. The UK needs to rethink the appropriate role of the state in the nation’s economy

Since the neo-liberal revolution of the late 1970s, the role of the state has been thought of in largely negative terms. There is a role for the state in correcting market failures, but this role is passive, rather than active.

There is, however, a more positive role for the state. This report will focus on two areas in particular.

### **The role of the state in research and development**

The UK and, indeed, the rest of Europe faces a serious deficit in its research and development performance. As we have seen, South Korea spends five times as much on research and development as most European countries, whilst also having the world's fastest internet bandwidth. The majority of Korea's R&D spending is now undertaken by the chaebols, although that is a fairly recent development. Meanwhile, many of China's leading companies are major investors in R&D: Huawei invested \$3.75bn in R&D in 2011 and more than half of the employees of Tencent Inc, China's largest internet service portal, work in research and development.

South Korea is somewhere between a developing country and a developed one. It may be that, during its catch-up phase, Korea can invest in R&D at such levels while not threatening the relative competitiveness of European countries. In the long term, however, such a disparity is, from a western perspective, unsustainable.

Of course, a fivefold increase in UK research and development spending, which is the logical response to Korea's investment, would not be possible in the short-term, without reconfiguring the entire UK economy. But R&D spending must increase steadily over time and, again, government should have a target for this. A long-term commitment also allows gradual changes in order that the UK can move to a knowledge economy.

The good news is that, as Marianna Mazzucato, Professor of Science and Technology at the University of Sussex and author of 'The Entrepreneurial State' has shown, a development of this kind does not simply add to government spending. By approaching this problem creatively, it could entail significant government savings and new sources of revenue.<sup>38</sup>

Mazzucato describes the history of DARPA, the US Defence Advanced Research Projects Agency, which funds basic science but which also targets resources into specific directions and which brokers interactions between public and private agents involved in technological development. DARPA has a budget of more than \$3bn per year. It bridges the gap between blue-sky, long-term academic research and incremental technology development occurring within the military. DARPA funded the formation of computer science departments, provided start-up firms with early research support, contributed to semiconductor research and oversaw the early stages of the internet. One role of DARPA is to fund a mix of university-based researchers, start-up firms, established firms and industry consortia. There is no distinction between basic

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<sup>38</sup> 'The Entrepreneurial State', Mariana Mazzucato, 2013.

## Conclusions and Recommendations

research and applied research. Firms are helped to get products to the stage of commercial viability.

Marianna Mazzucato calls for a massive expansion in the UK's Technology Strategy Board (TSB), restructured along the lines of the DARPA model. To fund this expansion, she re-examines some current government spending, questioning its efficiency. For example, she calls for government spending on direct transfers to small firms, such as small business rate relief and inheritance tax relief, to be reduced. Abandoning the idea of a UK patent box, ensuring that R&D Tax Credits only go to firms that genuinely spend the money on innovation, and rejecting the idea of Enterprise Zones could all save money, to pay for this investment in the TSB. This does not mean that government money will not be available for SMEs; but it will only be available to those SMEs engaging in innovation. In other words, government spending would be directed towards those firms who are helping to build the UK economy of the future, at the expense of those who are not. Marianna Mazzucato also makes a powerful case for those companies who make large profits on the back of research initially funded by the state to make more of a contribution to government income, so the taxpayer can enjoy the rewards, not simply carry the risks.

There will be those who argue that Marianna Mazzucato's ideas are too radical for a neo-liberal, free-market economy like that of the UK. Such critics must provide answers to how they will deal with a five-to-one deficit in R&D spending, as the UK currently experiences in relation to Korea. If they agree with the premise of this report, that such a situation is not sustainable in the long-term, what answers can they provide?

### A strategic role for government

There are other, obvious strategic steps that the government can take to support the growth of industry. For example, the TUC supports the creation of a State Investment Bank. The UK is the only one of the G7 economies not to have a publically owned credit provider that supports the real economy.

Such a bank would issue bonds, guaranteed by the government, and offer long-term finance to infrastructure projects and SMEs. The mandate of such a bank could explicitly encourage both sectoral and regional rebalancing. Many successful examples of such banks can be found in other developed economies. And such a bank would have an explicit remit to support the real economy.

Could government do even more? We have seen how the government in Guangzhou formed a joint company with Honda, in which both partners hold a 50 per cent share. Guanqi Honda serves the interests of both partners: Guangzhou gains knowledge from Honda's technological prowess, knowledge that it will seek to pass on to Chinese companies in the future; Honda gets access to the lucrative Chinese market.

It is unlikely that such a model would be necessary in the UK, but there may be a case in which a strategic company, perhaps a green technology leader, for example, may be prepared to establish a presence in the UK if a partner were to join it. In such circumstances, should it be impossible for the government to be that partner? The TUC would not advocate this as a general approach, and we would not advocate “picking winning” companies, but if such an investment could be shown to make the difference between the UK being able to diversify into a new, strategic sector and losing out, such a possibility should be considered.

### **The role of government in the green revolution**

The greening of the economy has often been described as the “next big thing” after the development of the internet. But how much of this can be carried by the private sector and how much will have to be driven by government?

We have seen Hu Angang’s detailed proposal for what he calls the Fourth Industrial Revolution. Differentiating his ideas from those of sustainable development, Hu argues that a green revolution must address ever-increasing consumption patterns. This raises issues of wealth and poverty, as relatively richer people will, naturally, find it easier to reduce consumption than those that are relatively poorer: asking the 100m Chinese who live on less than \$1.25 per day to reduce consumption is clearly meaningless.<sup>39</sup> Hu argues that the global ecological challenge cannot be met without China’s involvement and with China emitting 27-28 per cent of greenhouse emissions, that is self-evidently true.

Mariana Mazzucato argues that Europe, the US and China have dominated global new investment in renewable energy between 2004 and 2011, with Germany, inevitably, leading this investment in Europe. Mazzucato highlights investments of \$47bn after 2010 to approximately 15 leading solar photovoltaic manufacturers, by the China Development Bank. This contrasts with the UK’s stop-start approach to green initiatives: the current Government’s 2010 pledge to be the “greenest government ever” has, in fact, seen a cut in spending, leading to the scaling back of green technologies.

It is clear that government must drive the green revolution, in China and in the West. The private sector will not rise to this task. However, the UK Government appears to have adopted the attitude that, in tough economic times, it cannot afford green policies. For example, in 2011, the Government scrapped its Carbon Capture and Storage (CCS) levy and launched a review of electricity market reforms. Just £200m, rather than £1bn, was set aside in this Parliament<sup>40</sup> for the supposed £1bn CCS competition.

<sup>39</sup> <http://www.bbc.co.uk/news/blogs-china-blog-24867063>

<sup>40</sup> Financial Times 13 January 2013: <http://touchstoneblog.org.uk/2013/01/hidden-cuts-jeopardise-ccs-industry/>

## Conclusions and Recommendations

### **The Climate Change Act 2008 - A long-term strategic plan**

The UK does have some experience of long-term planning to shape the economy. The Climate Change Act 2008 set a legal requirement for specific greenhouse gas emissions to be at least 80 per cent lower in 2050 than a 1990 baseline. According to the Act, this target can only be amended in light of significant developments in scientific knowledge or changes to European or international law. Carbon budgets, which amount to staging posts towards the 2050 target and which cover successive five year periods, were introduced. The Secretary of State is required to make an annual statement to Parliament, setting out the amount of greenhouse gas emissions for the year and stating whether or not this is an increase or a decrease compared to the equivalent amount for the previous year.

The Climate Change Act set up a Committee on Climate Change, whose duty it is to advise on any changes to targets. The Committee is required to report on progress made towards carbon budgets and the Secretary of State, in turn, must respond to these reports. The Chair of the Committee in Climate Change is Lord Deben, the former John Selwyn Gummer, who previously served as Secretary of State for the Environment.

It is, of course, significant that the Climate Change Act addresses a policy area, environmental sustainability, that the free market, left to itself, would not have addressed. In spite of some important work done in many companies to produce greener products or use greener production systems, it is inconceivable that a target as challenging as that contained in the Climate Change Act would have been achieved by voluntary action. The Climate Change Act, then, represents a conscious political choice to take action on a priority government policy, contrary to market activity.

If such action can be taken in relation to environmental sustainability, similar action can be pursued in other priority areas, such as rebalancing the economy or pursuing an employment-intensive industrial strategy. China shows that this can be done. It is clearly an issue of political will.

Yet long term investment in sustainable industry would surely set the UK up for the future. As one interviewee for this report told us:

“The scale of investments that China is making in the seven strategic industries [of the 12th Five Year Plan] is on a par with the investments that the US made in the 1950’s in the computer age – the very foundations of computer science and the internet that were planted in the 1950’s in the US. Those comparable sums of human efforts in finance and research are now taking place here in China on the technologies of the future and they are not being strategically matched by any western economy ... long term vision, massive ambition, very smart use of government procurements, very smart use of subsidies ... these are definitely worth studying.”



## Culture

The ideas above constitute hard economic messages. However, it is important to think about soft influence as well.

We saw earlier that Deng Xiaoping was keen for Chinese students to go to universities abroad, confident that educational and diplomatic exchanges would be beneficial overall to China's development. It remains recognised that student exchanges are good for both countries involved; Hu Angang likened foreign students to exports. In June 2013, the British Council launched a campaign, 'Generation UK', which aims for at least 15,000 students to study or gain work experience in China by 2015<sup>41</sup>.

The comments of the Chancellor, George Osborne, during his visit to China in October 2013, that there is no limit to the number of Chinese students who can study in the UK were very welcome<sup>42</sup>. It is clearly nonsense for the UK to put barriers in place to Chinese students wishing to study here. Small-minded concerns about immigration cannot be allowed to stand in the way of the cultural links that can be developed through student exchanges.

Student fees are, of course, a huge disincentive to studying in the UK. Figures published by the National Union of Students in August 2013 showed that some undergraduates would pay fees of up to £35,000 per year – against a maximum of £9,000 paid by UK and EU students.<sup>43</sup> Hu Angang told this report that Chinese students coming to the UK complain about the high fees and it is likely, in those circumstances, that such students will be tempted to go elsewhere, at great loss to UK plc.

More generally, the government should ensure its immigration system benefits Britain by assisting those who will work hard and contribute to the UK's success, while providing them and the existing workforce with protection against exploitation and undercutting. (It's worth remembering that the migrant workers whose tragic deaths ten years ago in Morecambe Bay led to the creation of the Gangmasters Licencing Authority were Chinese cockle pickers.)

Another, obvious soft influence is language. A YouGov poll for the British Council in September 2012 found that only three per cent of primary and nine per cent of secondary schools offered Mandarin. Numbers are actually falling; in 2012, 2541 students took a GCSE in Mandarin, compared to 3,650 in 2010. 72,606 students took a GCSE in Spanish in 2011.<sup>44</sup>

<sup>41</sup> <http://www.britishcouncil.org/china-education-generationuk.htm>

<sup>42</sup> [http://www.huffingtonpost.co.uk/2013/10/14/no-limit-on-chinese-students-britain-osborne\\_n\\_4095539.html](http://www.huffingtonpost.co.uk/2013/10/14/no-limit-on-chinese-students-britain-osborne_n_4095539.html)

<sup>43</sup> <http://www.independent.co.uk/student/news/overseas-students-used-as-cash-cows-by-uk-universities-8752635.html>

<sup>44</sup> [http://www.britishcouncil.org/lack\\_of\\_mandarin\\_teaching\\_damaging\\_uk\\_ni.pdf](http://www.britishcouncil.org/lack_of_mandarin_teaching_damaging_uk_ni.pdf)

## Conclusions and Recommendations

A lack of Mandarin teaching will clearly put the UK at a cultural disadvantage in dealing with China in future years and this should be addressed now.

### Europe

The UK's future in Europe clearly divides opinion, yet it is clear that global economic power is increasingly concentrated in regional blocs. Hu Angang argued that we are moving from a uni-polar to a multi-polar world, in which the US, China and Europe will dominate. Opponents of the UK's place in Europe must develop a compelling vision for how the UK can punch its weight in the world outside of one of the regional economic power blocs.

The TUC firmly believes that the UK should remain in the EU. Furthermore, the UK should work with its partners in the European Union to ensure trade and investment agreements with South and East Asian economies include respect for workers' rights, and encourage the spread of Europe's social model to other economies, as we learn from their example of state intervention in industry.

### The role of trade unions

Finally, the TUC's vision of a future economic, industrial and employment strategy would have an important role for wider stakeholders, including trade unions.

The government should strengthen social partnership across UK industry. Employer and workforce organisations should be consulted on the new economic, industrial and employment strategy. Worker representatives must be given legal status in UK boardrooms. Information and Consultation of Employees (ICE) regulations must be re-examined to ensure that they are fit for purpose.

## Recommendations

- A major study of where the UK could export to China should be undertaken. This should focus on identifying growth areas of the Chinese economy whose needs Chinese firms themselves cannot meet and where UK companies have the skills, technology and experience to meet this gap in the market.
- The UK needs an economic strategy that addresses the need to build modern, sustainable export industries and the need to create quality jobs. Sometimes, those two objectives will overlap; at other times, high tech industries will provide fewer jobs whereas medium or even lower tech industries will be more labour intensive. The UK cannot compete on low labour costs, but a balance must be struck between the export and economic growth potential and the employment potential of the industries targeted in our economic strategy. We repeat the recommendation from ‘No Stone Unturned in Pursuit of Growth’, the report of Lord Heseltine, for an overarching strategy for wealth creation, with concrete commitments, to be implemented.
- The budget of the Technology Strategy Board (TSB) must be greatly expanded in an attempt to raise the UK’s investment in research and development. It is not sustainable for Korea to spend five times as much on R&D as European countries; if this continues, western countries such as the UK will not stand a chance of competing with the Asian “Dragons”. Rates of taxation on those companies making large profits as a result of research initially conducted by the state should be reassessed.
- The UK should create a State Investment Bank, which would issue bonds, guaranteed by the government, and offer long-term finance to infrastructure projects and SMEs. The mandate of such a bank could explicitly encourage both sectoral and regional rebalancing.
- In addition, in exceptional cases, the government should be prepared to take a strategic stake in a company where it is in the long-term interests of the national economy for it to do so. Consideration must be given to the circumstances in which this should happen, but the government should consider the model of France’s Fonds Stratégique D’Investissement (FSI), which takes a time limited stake in strategic French companies, expecting to make a profit in the same way that any private investor would expect such a profit. An example of when this would be appropriate includes when a company in a strategic, future industry, such as environmental technology, may need an investment partner before committing to establish itself in the UK.
- Government should recommit to the targets set out in the Climate Change Act 2008. Consideration must be given to how to shift the current industrial model to a green industrial model over that timescale, supporting the UK’s manufacturing base to achieve this transition with particular thought given

## Conclusions and Recommendations

to enabling the UK's energy intensive industries to become low carbon global competitors. Identifying current and future strategic green sectors, following the model of China's 12th Five Year Plan, should be part of the UK's strategy.

- Fees for overseas students should be re-examined, with the view to make the UK one of the best destinations in the world for attracting Chinese students. Today's students are tomorrow's cultural and ambassadorial links.
- A sustained effort must be made to increase the number of people studying foreign languages in UK schools and universities. As well as traditional modern languages, the teaching of Mandarin in the UK education system must be stepped up.
- The government should ensure its immigration system benefits Britain by assisting those who will work hard and contribute to the UK's success, while providing them and the existing workforce with protection against exploitation and undercutting.
- The UK should remain in the EU, working with its partners in the European Union to ensure trade and investment agreements with South and East Asian economies include respect for workers' rights, and encourage the spread of Europe's social model to other economies, as we learn from their example of state intervention in industry.
- Government should strengthen social partnership across UK industry. Employer and workforce organisations should be consulted on the new economic, industrial and employment strategy. Worker representatives must be given legal status in UK boardrooms. Information and Consultation of Employees (ICE) regulations must be re-examined to ensure that they are fit for purpose.





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**Appendix Seven: Paper Four – Page, T. (2016), ‘Powering ahead: How UK industry can match Europe's environmental leaders’**



# **Powering ahead:**

## **How UK industry can match Europe's environmental leaders**



## **Contents**

How UK industry can match Europe's environmental leaders

- 4      Introduction**
  
- 6      Summary of recommendations**
  
- 8      The 'greening' of politics and economics in Germany, Denmark and the UK**
  - Denmark*
  - Germany*
  - United Kingdom*
  
- 14     Evidence from Germany**
  - The beginnings of environmentalism*
  - A new energy concept*
  - Energiewende*
  - Sustainability*
  - Innovation*
  - The role of the utilities*
  - Germany's social market economy*
  
- 19     Evidence from Denmark**
  - The Danish energy transition*
  - Siemens Wind Power, Aalborg*
  - The importance of political consensus*
  - Does manufacturing have a future in Europe?*
  - The role of trade unions*
  - The role of universities*
  - Paying for energy transition*
  - Social partnership*

**25 Does the UK need an 'energiewende'?***Where does the UK get its energy from?**Coal**Renewables**Nuclear***30 What are the industrial policy implications of a green transition?***Building on existing strengths**Offshore wind**Automotive***34 Conclusions***Build a social, political and business consensus**Develop a roadmap for change**Implement a balanced energy policy**Agree a sustainable strategy for nuclear development**Build the capacity of renewable energy sources**Relaunch Carbon Capture and Storage through international cooperation**Reduce reliance on imported gas**Expand the skills base for an energy transition**Guarantee the work of the Green Investment Bank**Create incentives to fund an energy transition*

## Section one

# Introduction

The global climate is changing. Despite the existence of an occasional sceptic, mainstream opinion accepts that the planet is getting warmer. Many believe that addressing climate change will be the world's most pressing challenge in the twenty-first century.

According to the UK's Committee on Climate Change, sea levels have risen by about 20 centimetres since the end of the nineteenth century. Retreating glaciers and arctic ice, and shifting distributions of species, are consistent with a warming world. The main cause of the changing global climate is emissions of greenhouse gases from human activities. And while scientific knowledge of the climate system is incomplete, the Committee on Climate Change argues it is clear that continued emissions will lead to further warming<sup>1</sup>.

So far, so straightforward. However, some take the view that we cannot afford to focus on green issues at a time of economic insecurity. The UK's decision to leave the European Union has led to short-term fears, and at least short to medium-term uncertainty, about the prospects for the UK economy. This, it could be argued, is a time for retreating into a safety-first mentality. The sustainability agenda, according to such a view, is a luxury that we simply cannot afford.

There are two main problems with this argument. First, the suggestion that economic growth and climate change is a zero sum game was firmly challenged by the 2006 report, 'The Stern Review on the Economics of Climate Change'. In this report, Lord Stern said: "Stabilisation – at whatever level – requires that annual emissions be brought down to the level that balances the earth's natural capacity to remove greenhouse gases from the atmosphere. The longer emissions remain above this level, the higher the final stabilisation level. In the long term, annual global emissions will need to be... more than 80 per cent below the absolute level of current annual emissions."<sup>2</sup>

Lord Stern accepted that a central estimate of stabilisation will cost, on average, around one per cent of global GDP by 2050. There is, however, an even higher price to delay, which would make it necessary to accept both more climate change and, eventually, higher mitigation costs. Lord Stern added that climate change mitigation will provide new opportunities across a range of industries, with markets for low-carbon energy products likely to be worth at least \$500bn per year by 2050.

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<sup>1</sup> 'Reducing emissions and preparing for climate change: 2015 progress report to Parliament – Summary and Recommendations', Committee on Climate Change, June 2015.

<sup>2</sup> 'Stern Review on the Economics of Climate Change', HM Treasury, October 2006.

Second, the TUC believes that a sustainable industrial strategy is essential for the UK and for Europe, not only to meet our climate change commitments, but to support the balanced economic growth that is even more necessary post-Brexit. The Intergovernmental Panel on Climate Change argues that in order to avoid damaging global warming, European use of fossil fuels must be reduced by approximately three to four per cent annually for the rest of this century. That is simply not possible without a green industrial strategy.

This paper will explore the recent history of sustainable industrial policies. There was not one single moment when the threat of global warming stopped being the concern of a committed minority and became widely accepted. However, milestones – such as the success of the Green Party in the UK in elections to the European Parliament in 1999, the Red-Green Coalition in Germany in 2000, the Stern Review of October 2006, which helped shape the thinking of UK governments under first Tony Blair and then Gordon Brown, and the Climate Change Act introduced by Ed Miliband, will briefly be revisited.

The paper will focus on the UK, Germany and Denmark, the latter being countries where the idea of sustainability has particularly taken root and which have undertaken a systematic programme of moving to green energy. ‘Energiewende’ (energy transition) is allowing Germany to become a world leader in environmental technology. Denmark has pioneered the use and potential of wind power, and seeks to be free of fossil fuels by 2050. This paper gathers new evidence from German and Danish trade unionists who, through those countries’ systems of trade union engagement, have had a major influence on policy development. A chapter setting out conclusions and recommendations, based on the evidence gathered, will round off the report.

Before continuing, one note of caution needs to be added. Different countries have different assessments of how a sustainable industrial policy should be fashioned. Some concepts being pursued in the UK, including Carbon Capture and Storage technology, are rejected in Germany. A central pillar of ‘energiewende’ is its rejection of nuclear power, a source of fuel that has never been used in Denmark. Successive UK governments, however, have embraced nuclear power, so the idea is not to develop a ‘one size fits all’ approach; it is to highlight the power of government in driving green transformation and to consider how trade unions can and do support such a revolution in thinking.

## Section two

# Summary of recommendations

- Advocates for a sustainable industrial strategy should seek to build a consensus across political parties, business organisations and trade unions, in favour of this approach.
- Emerging from this consensus, interested parties must develop a roadmap to develop a sustainable industrial strategy. This industrial strategy should be 'sustainable' in the sense that it balances economic, social and environmental concerns. HM Treasury and the Department for Business, Energy and Industrial Strategy (BEIS) must pull together to make the new industrial strategy a reality. A restructuring of government should be considered to bring this about.
- Support must continue for the development of Hinkley Point C, but the future of nuclear energy, including the commissioning of new nuclear reactors, cannot be pursued as Hinkley has been pursued. In future, the government should produce a comparative study of nuclear technologies, including small modular reactors, and make decisions according to viability and price.
- The government should aim for 50 per cent of the UK's energy coming from renewable sources by 2050.
- Cuts to renewable energy subsidies, undertaken shortly after the 2015 General Election, should be reversed. Specifically, these include:
  - the subsidy for biomass conversions and co-firing projects for the duration of the Renewable Obligation (RO)
  - subsidies for solar photovoltaics of 5MW and below under the RO
  - changes to the preliminary accreditation rules under the Feed-In Tariff (FIT) scheme.
- Central to the sustainable industrial strategy should be a study into the technologies that the UK would need to bring us up to 50 per cent of renewable energy and what industries could be developed in the UK. Those new industrial sectors should be targeted on those communities that lost their livelihoods with the demise of heavy industry.
- Government should put together an international consortium to finance a Carbon Capture and Storage demonstration project.
- The UK should continue to support the UK's gas sector, but should seek to minimise its reliance on imported gas.

- The UK offshore wind sector is highly successful, but needs to deliver more UK content. Any new trade agreement between the UK and EU must include social clauses similar to those enshrined in EU procurement directives to support jobs and skills in this sector.
- The US government has set up the Advanced Research Projects Agency-Energy (ARPA-E), which is supporting pioneering work in renewable energy, including battery technology. The UK must consider developing a similar structure here, if this work cannot be undertaken by an existing agency.
- The Institute for Apprenticeships, to be established shortly, should adopt the principles of social partnership to agree high quality apprenticeship standards. This body could also plan for apprenticeship provision to meet the needs of a sustainable industrial policy.
- Privatisation of the Green Investment Bank should be halted. The GIB should, instead, be given additional borrowing powers while remaining in public hands.
- Energy transition should be paid for out of general taxation, to avoid the increased short-to medium-term costs of transition adding to already unacceptable levels of fuel poverty in the UK.
- Government should set up a competition for companies and universities, working jointly, to bid for funds to research solutions to the specific issue of the storage of renewable energy.
- Government support for start-ups, including small-scale energy companies, should be dependent on those companies meeting agreed standards around pay and apprenticeships.

## Section three

# The 'greening' of politics and economics in Germany, Denmark and the UK

Environmental issues, what might be called 'green' issues in the politics of today, first came to prominence in their modern sense in the 1970s. It was during this decade that the damage of a warming planet began to be understood. Specifically, an economist at Yale University, William Nordhaus, alluded to the danger of global temperatures rising by more than two degrees above pre-industrial levels, which would "[take] the climate outside of the range of observations which have been made over the last several hundred thousand years."<sup>3</sup>

Yet environmental politics remained the preserve of a small fringe until the 1980s. In the 1983 general election in Germany, the Greens won 27 seats in the Bundestag, the lower house of Parliament. In the 1989 elections to the European Parliament, the Green Party of England and Wales polled 15 per cent of the vote, with 2.3 million votes, the best-ever performance by a Green Party in a nationwide election, anywhere in the world. This gave the Greens the third largest share of the vote, behind the Conservatives and Labour, although the UK's first-past-the-post voting system – since replaced by a proportional system in European elections – meant that it failed to gain a seat in the European Parliament. The Greens' success nevertheless led mainstream political parties to wake up to public concern about the environment.

During these years, environmental sustainability was considered to be at odds with economic growth. Climate scepticism was still a strong feature of public debate, with those doubting the existence of global warming arguing that environmentalism would damage a country's economic prospects for no good reason.

## Denmark

An exception, perhaps, was Denmark, whose energy mix in 1973 – the year of the first oil shock – included more than 90 per cent of its supply based on imported oil. This and a second oil crisis in 1979 led Denmark to shift from oil to coal for electricity production and propose the use of nuclear power to ensure security of supply. This was the start of a proactive energy policy promoted through four energy plans over the following two decades.

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<sup>3</sup> [www.carbonbrief.org/two-degrees-the-history-of-climate-changes-speed-limit](http://www.carbonbrief.org/two-degrees-the-history-of-climate-changes-speed-limit)

Denmark's First Energy Plan, set up in 1976, included only a marginal role for renewable energy. The plan provided financial support for public research, while spreading the costs of that research among all electricity customers. In 1979, Denmark created its own Ministry of Energy. By the early 1980s, several manufacturers were producing wind turbines with a capacity larger than 55kW. Too costly for individuals, the concept of local wind co-operatives developed.

Denmark's Second Energy Plan, established in 1981, included proposals for oil and gas recovery in the North Sea, along with nuclear power, as well as subsidies for the construction and operation of wind turbines and biomass plants. Taxes levied on oil and gas helped increase the competitiveness of renewable energy plants. A large renewable energy market in California created an export opportunity for Danish wind turbine manufacturers. In March 1985, a majority of the members of the Danish Parliament decided to exclude nuclear power from future energy planning. Wind power became accepted as one of the key alternatives to nuclear power.

Denmark's Third Energy Plan, launched in 1990, set a target of reducing Danish CO<sub>2</sub> emissions by 20 per cent between 1988 and 2005. Specific targets included providing 10 per cent of electricity from wind turbines by 2005. In 1992, the Minister of Environment and Energy ordered municipalities to find suitable sites for wind turbines throughout the country. A fixed feed-in tariff for electricity production was introduced in 1993 and decoupled the power purchase price from existing electricity rates. Wind projects received a refund from the Danish carbon tax and a partial refund on the energy tax.

In 1996, Denmark's Fourth Energy Plan (Energi 21) envisaged that renewable energy would provide 35 per cent of all energy by 2030. By 2001, wind turbine co-operatives, which included more than 100,000 families, had installed 86 per cent of all turbines in Denmark. By the turn of the century, Denmark had become a net exporter of energy. In the following years, rising oil prices and an increased awareness of climate change influenced new energy policy guidelines, with higher ambitions for renewable energy production.

In 1999, the new centre-right Danish government decided to liberalise the electricity market by 2002. The Danish government emphasised the need to increase competition in the energy sector and to encourage greater competitiveness in the renewable energy plants. 2004 saw considerable restructuring of Denmark's power supply sector. Power companies were privatised and power distribution, transmission and production became independent sectors, each with distinctive frameworks. Between 2001 and 2008, energy policy developments in Denmark were considered very unambitious. In its energy policy statement of 2008, the Danish government committed to addressing climate change at minimal economic costs and without risking security of energy supply. This included making improvements in the nation's energy efficiency, increasing renewable energy and technological development in the sector.

In 2009, Denmark saw a rejuvenation and strengthening of its wind energy sector. A significant rise in installations was funded by an environmental premium added to



the market price. The grid connection costs for offshore wind farms were financed by electricity consumers. A combination of market price and premiums ensured stable revenues for the producer. At around this time, the repowering of old turbines that were reaching the end of their lifespan became an important part of the national energy market.

### Germany

From 1998 to 2005, Germany was governed by a red-green coalition. A 50-page coalition agreement, 'Awakening and renewal: Germany's way into the twenty-first century', set out the government's political programme. This was based on a selective emphasis on political issues including environmental protection, group rights and gender equality, around which the two parties could find common ground, while ignoring issues such as energy and defence, which divided them.

A central decision of the red-green coalition, however, was the decision to phase out nuclear power in the long term. In pursuit of this policy, the power plants of Stade and Obrigheim were turned off in November 2003 and May 2005 respectively. This was part of the "nuclear consensus" reached with the big utilities. A Renewable Energy Sources Act provided for a tax in support of renewable energy. The German government, declaring climate protection as a key policy issue, announced a carbon dioxide reduction target of 25 per cent by the year 2005 compared to 1990 levels. The opposition Christian Democratic Union (CDU), now led by Angela Merkel, objected to the agreement to phase out nuclear power, calling it a "destruction of national property". Merkel promised that the agreement would be revoked if the CDU came to power.

In 2009, Angela Merkel's CDU, and its Bavarian sister party, the Christian Social Union, won the German elections and formed a coalition with the Free Democrats (FDP). True to their word, the new government extended the operating time by eight years for seven nuclear plants and 14 years for the remaining 10. This became known as the "phase out of the (nuclear) phase out".

In 2011, the Fukushima nuclear disaster in Japan forced a rethink. Like the 1986 Chernobyl accident, it concentrated minds in nuclear-sceptic Germany. Having reversed its planned withdrawal from nuclear power, Germany changed its mind again, committing once more to ending the use of nuclear power, shutting down eight nuclear plants and limiting the operation of the remaining nine until 2022.

This led to the policy of *energiewende*, a term in use since the 1970s but which came to represent the new German energy policy. There are four aspects to *energiewende*: the ending of nuclear power by 2022, a reduction of greenhouse gas emissions by between 80 and 95 per cent by 2050, a growth in the use of renewable energy sources, and increased energy efficiency.

## United Kingdom

As noted above, environmental policy was not a serious consideration for UK politics until after the stunning success of the Green Party in the 1989 European elections. In the years that followed, environmental issues began to gain greater prominence.

In 1993, John Selwyn Gummer became Environment Secretary in the UK. Gummer introduced the Environment Act 1995 and the Landfill Tax. The former set up the Environment Agency and required the Secretary of State to prepare a national air quality strategy and a national waste strategy. The latter was seen as the key mechanism for enabling the UK to meet its targets set out in the Landfill Directive for the landfilling of biodegradable waste. Friends of the Earth described Gummer as “the best Environment Secretary we’ve ever had”. After his ennoblement, John Selwyn Gummer took the title of Lord Deben, and he now chairs the UK’s independent Committee on Climate Change.

In 1996, the European Council of environment ministers became the first political body to support the aim that “global average temperatures should not exceed two degrees above pre-industrial level”. Signing the statement alongside the UK’s John Selwyn Gummer was Germany’s Environment Minister, Angela Merkel, and Denmark’s Svend Auken. The following year, 193 countries signed the world’s first binding agreement to cut emissions – the Kyoto Protocol. The treaty set limits on countries’ emissions, taking into account their historical contribution to climate change and their ability to implement policies, with the aim of cutting global emissions by five per cent on 1990 levels by 2012. Negotiators then spent 10 years trying to persuade countries to ratify the treaty and by 2005, almost 160 countries had done so. The Kyoto Treaty was hamstrung, however, by the absence of the United States, the world’s largest carbon emitter.

2006 saw the Stern Review published by Tony Blair’s Labour government in the UK. This report, commissioned by the Chancellor and reporting to both Chancellor and Prime Minister, began with the words: “the scientific evidence is now overwhelming: climate change presents very serious global risks, and it demands an urgent global response”. This emphasised both the importance of the challenge and the fact that, by the time it was published, arguments against man-made climate change had become diminished. Climate change was described as “a unique challenge for economists”. It was “the greatest and widest-ranging market failure ever seen” and therefore required a global response, with long time horizons<sup>4</sup>.

Lord Stern argued that carbon emissions had already pushed up global temperatures by half a degree Celsius. If no action was taken, there was a more than 75 per cent chance of global temperatures rising between two and three degrees Celsius over the next 50 years and there was a 50 per cent chance that average global temperatures could rise by five degrees Celsius. Environmentally, climate change could result in an increased flood risk from melting glaciers, a decline in crop yields, particularly in Africa, and the extinction of up to 40 per cent of species. Economically, a two to three

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<sup>4</sup> ‘Stern Review on the Economics of Climate Change’, HM Treasury, October 2006.

degree Celsius rise in temperatures could reduce global economic output by three per cent. A five per cent rise in temperatures could see up to 10 per cent of global output lost, with the poorest countries losing more than 10 per cent of their output. To ensure the sustainability of the eco-system, emissions would need to stabilise in the next 20 years and fall between one and three per cent after that. This would cost one per cent of GDP.

More positively, however, Lord Stern emphasised the opportunities that tackling climate change could provide:

"There are ... significant new opportunities across a wide range of industries and services. Markets for low-carbon energy products are likely to be worth at least \$500bn per year by 2050, and perhaps much more. Individual companies and countries should position themselves to take advantage of these opportunities.

"Climate-change policy can help to root out existing inefficiencies. At the company level, implementing climate policies may draw attention to money-saving opportunities. At the economy-wide level, climate-change policy may be a lever for reforming inefficient energy systems and removing distorting energy subsidies, on which governments around the world currently spend around \$25bn a year.

"Policies on climate change can also help to achieve other objectives. These co-benefits can significantly reduce the overall cost to the economy of reducing greenhouse-gas emissions. If climate policy is designed well, it can, for example, contribute to reducing ill-health and mortality from air pollution, and to preserving forests that contain a significant proportion of the world's biodiversity."

Stern continued:

"Comparing the social costs of carbon on a BAU [business as usual] trajectory and on a path towards stabilisation at 550ppm [parts per million] CO<sub>2</sub>e [equivalent], we estimate the excess of benefits over costs, in net present value terms, from implementing strong mitigation policies this year, shifting the world onto the better path: the net benefits would be in the order of \$2.5 trillion. This figure will increase over time."

In 2008, the Labour government passed the Climate Change Act. This made it the duty of the Secretary of State for Climate Change, who at that time was Ed Miliband, to ensure that the net UK carbon account for all six Kyoto greenhouse gases for the year 2050 is at least 80 per cent lower than the 1990 baseline. An independent Committee of Climate Change (chaired by Lord Deben, as noted above) was created under the Act to provide advice to the UK government on these targets and related policies.

In 2010, the UK saw no single political party win an overall majority, which resulted in a Conservative-Liberal Democrat coalition government. The Coalition Agreement on which this was based committed the government to a "low carbon and eco-friendly economy", which would include the establishment of feed-in tariff systems in electricity, the creation of a green investment bank, the establishment of an emissions

performance standard that would prevent coal-fired power stations being built unless they were equipped with sufficient carbon capture and storage (CCS), the establishment of a high speed rail network, the provision of a floor price for carbon, as well as efforts to persuade the EU to move towards full auctioning of Emissions Trading Scheme (ETS) permits, the continuation of the outgoing Labour government's proposals for public sector investment in CCS technology for four coal-fired power stations, and an increase in the target for energy from renewable sources, subject to the advice of the climate change committee. The Coalition Agreement acknowledged differences in the two parties regarding new nuclear construction, allowing new construction to go ahead on the understanding that Liberal Democrats would abstain, rather than vote against, such proposals.

The period between 2010 and 2015 saw tension between the coalition partners over energy policy within the UK government. Two Secretaries of State for Energy, Chris Huhne and Ed Davey, both of whom were Liberal Democrats, pushed for a 52 per cent cut in greenhouse gas emissions by 2025, in line with a recommendation from the Committee on Climate Change, but were resisted by the Conservative-controlled Treasury. In the end, the 52 per cent target stood, but investor confidence was damaged in the process.

By December 2015, at the time of the Paris Climate Conference, David Cameron was leading a majority government in the UK. Cameron joined Angela Merkel, who was still German Chancellor, the Danish Prime Minister, Lars Lokke Rasmussen, and more than 140 other world leaders for the conference. The Paris Agreement united all the world's nations in a single agreement on tackling climate change for the first time in history. The key elements of the Paris Agreement were:

- to keep global temperatures “well below” 2 degrees Celsius above pre-industrial times and “endeavour to limit” them even more, to 1.5 degrees Celsius
- to limit the amount of greenhouse gases emitted by human activity to the same levels that trees, soil and oceans can absorb naturally, beginning at some point between 2050 and 2100
- to review each country's contribution to cutting emissions every five years so they can scale up to the challenge
- for rich countries to help poorer countries by providing “climate finance” to adapt to climate change and switch to renewable energy.

## Section four

# Evidence from Germany

## The beginnings of environmentalism

As noted in the previous chapter, the concept of environmentalism developed in 1970s Germany, led by green activists and Non-Governmental Organisations (NGOs). Not only were trade unions absent from this coalition, but they were actively opposed to environmental policy.

Ralf Bartels is Head of Mining and Energy Policy at Industriegewerkschaft, Bergbau, Chemie, Energie (IGBCE), the German union federation comprised of workers in the mining, chemical and energy sectors. Ralf told this report: “I was a little boy at the time, but as I learnt, trade unions were quite far away from this debate. It was a real industrialised trade union movement in Germany.... back in the 80s. On the one side of the sometimes physical barricade there were the workers of the energy, for instance, the power plants, and on the other side there was Greenpeace or the upcoming NGOs and it was not a discussion, it was a period of conflict.”

Frederik Moch, who is responsible for energy policy and energy efficiency at the DGB, the German Trade Union Confederation, says the DGB had been a supporter of nuclear phase out since the first decision to end nuclear power, taken by the red-green coalition in 2000. Some German unions, including Verdi and IG Metall, were in favour of this position while others, including IGBCE, were opposed. Ralf Bartels says that it was not until 2006 that the DGB first had an official position recognising man-made climate change. This was not accepted by the union federation as proven science before this time.

The first nuclear phase out decision ended the conflict between pro- and anti-nuclear views. In 2002, the decision to end nuclear power was based on a consensus among the Social Democrats, the Greens, the utilities and the energy supply companies, to exit nuclear by 2021. A 20-year transition period was considered to be manageable and the big conflict of the 1980s and 1990s came to an end.

## A new energy concept

In 2010, (i.e. after Angela Merkel’s election but before the Fukushima disaster) the government of Angela Merkel announced a new energy concept. Ralf Bartels told us: “Our (union) president said, ‘OK, fine. Germany needs a new energy concept. The last one is from the 1970s and it means nuclear and coal. We should talk about another one’. But there were no talks. Government didn’t invite trade unions to talk to them. They didn’t invite NGOs to talk with them. All they did was [to invite] the CEOs of the four major energy companies, they told them the best solution to bridge

the gap to a renewable future would be nuclear. So the government in 2010 presented an energy concept with lifetime extension of the German nuclear power plants.”

A meeting of IGBCE works councils believed that existing nuclear plants could not bridge the gap to energy security; the only way to do so would be to build new nuclear capacity. In the event, the Fukushima disaster of nine months later ended the argument. This disaster led to a policy u-turn and the decision, once again, to phase out nuclear. The new energy policy, *energiewende*, was born shortly afterwards.

Politically, all major German parties now support the energy transition policy. The Social Democrats, the Christian Democrats and the Free Democrats are all in favour. Only the right wing populist party, ‘Alternative für Deutschland’, is opposed.

Both Frederik Moch and Ralf Bartels are clear that the phase out of nuclear power is a German solution, not necessarily a solution that all countries must follow. Frederik says: “We are not suggesting that everyone should follow the German path, as all countries have their own particular strengths.” Ralf adds: “Combating climate change is a global thing, not a national one, and I do understand the [Intergovernmental Panel on Climate Change] saying there are four ways to combat climate change: it’s renewable, it’s energy efficiency, it’s nuclear and it’s carbon capture and storage. Germany decided to quit one of these four... I’m convinced that each society, each national society, has the right to find its own ethical answers... if it is about ethics what about the French? We can’t say they are unethical people because of nuclear power plants. Every society has its own responsibility and its own way to answer this question.”

## **Energiewende**

The four elements of *energiewende* are:

- ending nuclear power by 2022
- a reduction of greenhouse gas emissions by between 80 and 95 per cent by 2050
- a growth in the use of renewable energy sources
- increased energy efficiency.

The main drivers of *energiewende* are medium-sized companies and community projects. Most regions in Germany have some kind of renewable energy project. There is less involvement from the large energy utilities.

*Energiewende* has widespread public support and is ambitious in scope. Energy prices have risen in the short to medium term and the cost is falling on consumers. The prize is that in 30 years’ time, Germany will have cheaper and greener energy. This is the vision behind *energiewende*. According to Ralf Bartels, 91 per cent of the German population support the transition, notwithstanding the higher cost of energy in the immediate term. The DGB believes that, rather than being paid for by energy consumers, the energy transition should be paid from general taxation, which would

make this a progressive policy, in the sense that richer people would pay for a greater share of the transition.

### **Sustainability**

Ralf Bartels distinguishes between environmentalism and sustainability: “I prefer talking about sustainable instead of green or ecological. There are three dimensions of sustainability, the ecological one, the social one and the economical one and it’s about bringing them together. If it’s only the ecological dimension then we talk about environmental protection but not about sustainability. If you take the social dimension into account you start talking about justice, you start talking about just development, about conflicts on ... sharing the goods of the society...”

German unions see no conflict between support for energy transition on the one hand and the continuation of energy intensive sectors on the other. Frederik Moch told us: “Electricity prices are structured so that energy intensive industries pay a lower tariff. The DGB supports this decision. If energy intensive industries were forced to shift their production activities abroad this would not only result in a loss of jobs in Germany but it would also be bad for the climate and the environment. The energy intensive sectors are important to the development of a low carbon economy. Builders of wind turbines are the second largest users of steel after the automotive industry. The photovoltaic sector needs chemical products as well as cement. Solar power requires aluminium. The energy transition is not possible without the energy intensive sectors. Regarding other industries, companies such as Volkswagen in Wolfsburg, which can produce its own energy, also pays a lower tariff.”

Ralf Bartels agrees: “My main concern in German industry overall is the steel, is automotive, is chemical, it’s all those sectors who depend on energy because I believe that what made the German industry sustainable even in the crisis of 2008 and 2009 and even competitive against countries with wages like China is the inter-linkage between the sectors in a very special way. “ Ralf continues: “If you have energy prices which will make the steel companies in the Ruhr area abolished I wonder how long the automotive industry...will import steel from China to build the VW in Wolfsburg to send it back to Shanghai. So what I’m convinced of is we need a sustainable development of all sectors and I don’t believe in green and brown companies and winners and losers. I believe in sustainable development of companies...”

### **Innovation**

Energiewende both promotes innovation and cannot succeed without it. The responsibility for this falls particularly on industrial companies and on working people. Ralf Bartels says: “It’s our members who are in the game. They make the energiewende because an energiewende will need innovations; without it will fail on every level. You can’t have a wind turbine in the North Sea standing storms and

standing wind speed of some 300km/h bringing soil and sand against the propeller which [doesn't] come away after a few days without a very special plastic developed by our colleagues from BASF. You need storage capacities if you want to make wind and solar become really 100% energy sources, storage capacities for two weeks of industrial production, that means new ways of thinking... All those innovations, nearly all of them are made by our members, it's chemical, it's glass, it's ceramics, it's the energy sector itself so our members make it, our members are the ones who bear the main risk because if it fails they lose their jobs..."

### **The role of the utilities**

However, if energiewende is driven by medium sized companies and community projects, what of the big utilities? Sabrina Schulz, Head of the Berlin office of the energy consultancy, E3G, is critical of the way energiewende was introduced as, she says, it caused major problems for the utilities. Sabrina told this report: "There was no master plan, there was no strategy. There was no roadmap. It was just targets: by that stage you would have this many renewables in the energy mix. We have this much less of nuclear capacity in the electricity mix and all these kind of things. But how do you do this from an infrastructure point of view? From a policy point of view? From a regulatory point of view? From a financial point of view? No one ever thought this through."

The problem was that, untypically in Germany, the nuclear phase out was a decision taken in haste, in response to Fukushima. Sabrina says the four big utilities in Germany – E.ON, Vattenfall, EnBW and RWE – are all in trouble. After the Merkel government recommitted to nuclear power, the utilities invested in nuclear assets that, after Fukushima, were no longer viable. The value of the companies fell and they can no longer raise further capital to invest in new industries. Frederik Moch agrees that the big utilities have a problem raising capital and argues that some thought needs to be given about the shaping of the energy market.

The lack of a major role for the big utilities is also a problem for trade unions, as community companies often have no union recognition and are relatively poor employers. Frederik Moch told us: "We have a problem in that the jobs lost as a result of the energiewende, such as those in the nuclear sector, will be in large companies where unions are present and we have social partnership arrangements, but many of the jobs created will be in smaller renewable companies where that tradition does not exist. Investors, some from the US and the UK, have been invited to finance companies with the promise of low wages. Working conditions are poor in these new companies, some of which have been set up by long-standing green activists. The DGB believes that government financial support should not be made available for companies unless those companies pay decent wages and adhere to the principle of social partnership, but we haven't convinced the government of this yet."

A key reason for German support for energiewende is that it will help reduce imports from Russia. Germany is dependent on energy imports. Frederik Moch argues that



energy security makes it necessary to reduce energy consumption and to increase the share of renewables. For the next decade, Frederik argues, it is also important to use local lignite sources.

Regarding the loss of jobs in the nuclear sector more generally, Ralf Bartels believes this is not a great problem, because of the timescales involved: “the workers in the nuclear power plants won’t lose their jobs because if you shut down a nuclear power plant there remain about five or six years as it was before. You can’t just turn around and go away, you have to maintain every system, you just take the fuel out of the process... you have to go on working with the whole workforce for about five years and then we talk about decommissioning. Who knows about that if not the workers at the power plant?”

### **Germany’s social market economy**

Ralf also describes how any dramatic attempt to rationalise through job losses can be dealt with by Germany’s social market system: “the ... uncomfortable side of codetermination [is that a company might tell us] well, sorry, but we have to cut some hundred million euros and we’ve got some ideas, and we should talk about wages, or not wages but maybe what we used to pay a double wages or retirement conditions or whatever. Then we start negotiations... we tell them, well, this can’t be the only way... So first of all you’ve got to tell us your future strategy, how you want to turn the company around and convince us its going to work and maybe we’ve got some ideas on that too. If we agree on a future strategy bringing the company up again then we can talk about sacrifice...”

If the UK wished to pursue such an energy transition, what should it do? Frederik said: “Develop a plan, a roadmap. Don’t think the market will deliver a transition like this on its own. And seek a consensus across politics, across society.” Ralf agreed: “20 years ago people didn’t believe in renewables except some very innovative, very idealistic proselytisers. They would never have been able to combat the markets with a wind turbine or a solar panel. The big utilities, our union, they all told them: “You are crazy. It won’t work. Nice idea – go and play with it”. We needed the [Renewable Energy Act] to boost it up. That worked, having a law saying 20 years guaranteed feed in tariff, 60% in the beginning for a kilowatt hour of solar and you are number one to go into the grid. This is the Renewable Energy Act. That was necessary to create the renewables. Nowadays they are grown up, they are 28% of energy consumption, electricity consumption in Germany. They will be more than 30% next year, so we do have to bring their costs down. We do have to bring this system nearer to the market, to become part of the market – not now, it’s not possible yet – but we need a road map to bring it in to the market...”

## Section five

# Evidence from Denmark

### The Danish energy transition

Rasmus Prehn describes the Danish transition to green energy as “close to being an adventure”. Slightly misquoting Churchill, Rasmus – a Member of the Danish Parliament representing the industrial city of Aalborg in the North of Jutland – describes the transition as “a very beautiful story about how to take some of the problems in the world and turn them into opportunities.”

Denmark’s story begins in the 1970s. According to Rasmus, “we had a lack of resources, we had the oil prices and ... therefore, we started to ask: how can we find other ways to [source] energy? ... During the 70s we had quite a heavy debate in Denmark, whether or not we should start using nuclear energy ... in Germany and in Sweden they decided to have nuclear, but in Denmark we decided not to. And we were focusing more on renewable energy strategies.”

Denmark found a limited amount of its own oil in the North Sea, but not enough to be self-sufficient. The country also has no indigenous coal industry, importing coal from Colombia, Poland and Australia. Denmark set out, in Rasmus’s words, “from a political point of view, to secure a better environment with less CO<sub>2</sub> emissions, and it was about political idealism, vision and courage and to see the opportunities in the problems, rather than the problems in the opportunities.” One opportunity, quite simply, was the Danish climate: “in Denmark, of course, we have windy weather ... and, therefore, we have quite a big potential via wind turbines.”

In 2012, Denmark set itself the target to have 100 per cent renewable energy by 2050, to have 100 per cent renewable energy in electricity and heating by 2035 and to phase out the use of coal by 2030. At present, 40 per cent of Danish electricity comes from wind. However, one of the most modern coal energy plants in Europe is in Aalborg, because, at present, there needs to be a back-up for when there is no wind.

The United Federation of Danish Workers, known as 3F, is the largest union in Denmark. In 2004, 3F set up its Green Think Tank, comprising researchers and representatives of leading companies and organisations in the fields of renewable energy and new energy technologies. In October 2015, 3F asked the Economic Council of the Labour Movement (ECLM) to catalogue and describe the total potential for green jobs in Denmark, based on a number of specific, relevant green activities, each of which were a step on the road to a green transition.

ECLM found that green activities could potentially create temporary green jobs for up to 58,000 people a year. These jobs are associated with establishing a new energy infrastructure and with energy renovation. ECLM further found that green activities could potentially create 15,000 permanent green jobs. These jobs are those associated

with exporting green technology and those jobs related to operating the new green infrastructure. ECLM included both direct employment and indirect contributions through Danish subcontractors in the value chain.

Among the jobs potential, ECLM identified a possible 1,500 permanent jobs from installing 1GW of offshore wind turbines annually in the North Sea up to 2020. The European Commission expects that the production capacity for EU offshore wind must be increased from 9GW in 2014 to 27GW in 2020, or about 3GW annually for six years. Most of this expansion is expected to take place in the North Sea. Assuming that a third would come from Danish-produced turbines, 1,500 permanent jobs could be created from operations, maintenance and service.

District heating is a system for distributing heat generated in a centralised location for residential and commercial heating. According to Danish District Heating Association's Green Energy think tank, a doubling of district heating exports would amount to DKK 8bn (£832m) and is expected to be able to generate 4,000 permanent jobs in the district heating sector. ECLM assess that this would generate a further 2,400 jobs in other sectors.

A doubling of Danish water technology exports is expected to boost employment in the water sector by 4,000 people and using the same principle as used in the example of district heating, ECLM believe a further 2,400 indirect jobs would be created.

### **Siemens Wind Power, Aalborg**

The German engineering company, Siemens, has a factory in Aalborg, the city represented by Rasmus in the Danish Parliament, building wind turbine blades. Formerly Bonus Energy, the company was acquired by Siemens in 2004. The company now builds turbine blades of 75m in length, with two parts of the blade, each made from a single piece of fibre glass, joined together.

Siemens Wind Power is in the process of building a factory in Hull, England, because 90 per cent of wind turbine blades built at Aalborg are exported to UK and it is cheaper to build the blades in England than to transfer them from Denmark. Aalborg is the development factory; all new products are developed in Aalborg. When the market for the blades is identified, a factory is built in the destination country. Given the role of the Aalborg factory in developing products, the unions at Siemens are confident that jobs will not be lost, in spite of the new factory, although they concede that the factory in Aalborg may not grow. Siemens Wind Power has factories in China, Canada and the USA; it has plans to build factories in Morocco, India and Egypt. However, wherever the products are built, they are first developed at Aalborg.

### **The importance of political consensus**

As with Germany, political consensus is believed to be crucial to the success of Denmark's quest for energy transition. Rasmus told us: "we have had two schools in Denmark, a centre-left school thinking we should have quite high taxes, and then lots of innovation and green energy, and a centre-right school saying we should have very low taxes, no taxes, and that we should not focus that much on green energy and innovation. But now it seems like we are merging in the middle, finding some kind of compromise, and that should be the way forward."

Henning Kruse is Head of Government Affairs at Siemens Wind Power in Aalborg. Henning agrees on the importance of consensus: "With consensus ... you know how to work, how to activate, and that's what secures your decisions in a company, and that's what secures that you can actually make the necessary investments, as we have done in in this factory. Without consensus, where you would expect [to financially plan] five, ten, fifteen years ahead of you, without such a situation, then I doubt that Siemens would have accepted these investments here."

### **Does manufacturing have a future in Europe?**

Some years ago, it was fashionable to believe that with the growth of the so-called BRIC economies, manufacturing would move offshore, leaving western countries with high-level innovation and research and development, but without large numbers of jobs in manufacturing. That view has receded, as Henning makes clear: "Luckily enough we have changed our opinion on that, because we learn from heavy industry, we learn from the factories, like [the Siemens plant in Aalborg]. If we don't have the factory here, we won't have the research people here either, and if we don't have research in Denmark, because that will move with the manufacture, then we're really losing out... So our system – our politicians, our unions, our trade associations, our business, our population – they all need to understand that manufacturing goes hand in hand with all that we are doing in society."

The industrial branch of 3F in the city of Aalborg has about 5,000 members. Its President, Benny Vinther, agrees that to maintain innovation in Denmark, it is critically important to keep manufacturing jobs too. Benny told us: "A few years ago [it was argued that] when the industries all move to China, we can live on our brains. But then we started to discuss this [and we knew that] this is not going to happen; we can't live on our brains, because they will also transport that to China, our brains. We have succeeded with that discussion, so that everyone, even the Liberals, are saying "we have to have some production jobs here in Denmark". The brain and the production have to be near each other. Not that industrial jobs have stopped flying to China, but we are agreed that it is a problem and we have to do something about it."

### **The role of trade unions**

Trade unions are important social partners in Denmark. Benny says: “It is a three-part negotiation [i.e. it involves government, employers and unions] but everything regarding the labour market is in the collective agreement.” Five weeks holiday is stipulated by law, but everything else is negotiated between employers and unions at the national level, covering all industrial branches. The government does not set minimum wages or working hours, these are decided by two of the three players in the negotiation, i.e. the employers and the unions. Even dealing with the current refugee crisis, which has seen many refugees coming to Denmark in search of work, it is the job of employers and unions to consider the response.

Wages are negotiated for industrial sectors at the national level, as used to be the case in many sectors in the UK until the 1980s. The national agreement applies to all workers, not just union members, to avoid any attempt to undercut the negotiated wages and conditions.

Unions are also major players in the skills debate. Mads Andersen, the national president of 3F’s industrial sector, says: “Education is a big issue for us, because if we are going to have manufacturing jobs in Denmark, we need to be better than you are in the UK, or than in Spain, or China, or wherever so we are using a lot of time in the union to infuse the education system”. Benny adds: “one of the newest [areas of] education is actually the windmill production... 1,500 blue collar workers [at Siemens] should have the education, but only 40 [have had it so far]. Education is also one of the legs which is very important in the trade union.”

More generally, Mads says that trade unions form one of three partners, alongside the employers and the government, and those three partners sit down together to discuss where the country will be in the years to come. Unions try to influence the political debate. At present, they are not so close, as Denmark has a Liberal Government, but they continue to try to press their members’ case. The government has set up a group to look at productivity and the unions are present in the group.

At Siemens in Aalborg, the unions have an agreement that allows them to speak to new employees. In Thomas’ words, “we have a very good agreement between the management and the shop stewards”. Nevertheless, recruiting younger workers is a challenge for unions in Denmark, as it is elsewhere. 20 years ago, young people joined the union because it was the culture and it was expected of them. Benny says: “If you ask the youth, the ones who are not members of the trade union, why they are not a member of a union, nearly 50 per cent of them would ask: ‘What is a trade union?’ That is a problem.”

### **The role of universities**

For innovation to achieve its maximum potential, companies must work with universities. The German model of Fraunhofer institutes – replicated in the UK by Catapult Centres – seeks to develop those links. Siemens works with the University of Denmark, especially on aerodynamics, as well as the University of Aarhus, also on aerodynamics, as well as construction issues. It also works with the University of

Aachen in Germany on mechanical design and with the University of Oslo on wind estimations. Closer to home, Siemens in Aalborg works with that city's university on what is known as problem-based learning. Rasmus explains: "It's a very important part of Danish education policy and science policy to work closely with companies... the idea [behind problem-based learning] is that, when the students work with an issue, they should work together with a company to try to solve a problem. So if there were some engineering students who would like to work with Siemens, they could do that.... It is quite common that, while you are a student, you work together with a private company, so when you are finished, as a qualified engineer, then you have ... some kind of understand of... how does it function? That's very important. So you will fit in much more when you have finished."

### **Paying for energy transition**

Like Germany, Denmark has wrestled with the issue of how to pay for green development. Denmark has developed what is called a Public Service Obligation (PSO) tax. This means that the buyer of electricity pays a tax that is added to the bill, a tax that funds research and innovation, science, the local supply of energy, environmentally friendly electricity, biomass and also wind energy. The taxation system is structured to be countercyclical with energy prices, so when the price of electricity is high, the tax is low, but when electricity prices fall, the level of taxation is higher. This seeks to level the electricity price, to reduce uncertainty, and to ensure the continuous flow of investment into science and research.

Of course, the PSO disproportionately affects high users of electricity and the Danes, like the Germans, are keen to support their energy intensive sectors. While seeking to offer such support, industry supports the PSO, while being conscious that the level of the tax needs to be right, especially for energy intensive industries. The PSO also currently falls foul of the EU tax regime and industry is open to its being modified if necessary. Henning Kruse strongly supports the hypothecated nature of the PSO, however: "I don't see similar set ups in other European countries, where you actually allocate part of the money for research and innovation. You can always call it 'taxes', and ... say, 'Should we discuss taking up something for innovation and reserves? How much will we use for healthcare? How much should we use for roads and infrastructure?' But here, up front, you actually decide that part of it should be used for research and innovation, and we need to strengthen our research and innovation expenditure. So I think this is a good way of doing it."

While wishing to protect energy-intensive industries, Benny Vinther nevertheless argues that green taxes incentivise companies to seek lower carbon emissions: "Over the last 20 years so there have been a lot of taxes on energy and on pollution. If you pollute, you have to pay more in taxes. There has been a lot of discussion of this. If you ask the shop steward [at Portland, a local concrete company] he will say '... if there hadn't been any taxes they would not have changed and [become] more reliable'". Of course, you have to take care of the industry, not tax them to hell, but it helps actually."

As in Germany, Danish consumers also pay more for green energy. Mads Andersen said: “Not only companies, but the population also pays a lot more for energy than the energy costs, in taxes, and some of this tax is going to change the Danish energy system to a greener energy system... I think the population in Denmark think green more today than they did 20 years ago.” The Danes, like people everywhere, complain about the tax they pay. However, as Thomas Fischer, the senior shop steward at Siemens in Aalborg told us, some people want to pay more for energy from windmills. Consumers can choose if they want green energy, and many choose it, paying 10 per cent more for their electricity as a result.

### **Social partnership**

As we saw in evidence from Germany, to bring about a green energy transition in the UK, we need a roadmap, a plan. This raises a question about the role, and the limits, of government in this process. Rasmus Prehn, a Social Democrat MP in Denmark, told this report: “I would say that the social democratic model is not to have the state do everything. It's to have co-operation between the government and the private sector. So you should have competition and you should have innovation and a private market. But you should have this democratically driven organisation, so you use society and the government as a locomotive, and to put this collective energy into the direction of where you would like to go as a country. Because if you don't have any regulation, then sometimes you will only have the lowest fruit and not the best fruit. That would be my argument.”

## Section six

# Does the UK need an 'energiewende'?

This report has highlighted a growing popular consciousness around the threat of global warming and the importance of action to meet the challenge of climate change. What started as a fringe issue pursued by climate activists and seen as eccentric by mainstream opinion is now generally understood to be the biggest threat facing the planet today.

Addressing the threat of climate change has wide implications for economic, industrial and social policy. It is influenced by, and it influences, wider geopolitics. Lord Stern highlighted that while meeting the climate challenge was expensive, failing to meet it would be more expensive, in the long term. Politicians such as Angela Merkel have taken this one step further by consciously seeking out the industrial opportunities of meeting the climate challenge, thereby turning on its head the argument that green policies are a luxury that cannot be afforded in difficult economic times.

This report has discussed how Germany and Denmark have sought an energy transition. However, we cannot ignore the fact that this has industrial costs as well as benefits. As Germany winds down its nuclear sector, it must face the job losses and lost industrial opportunities that goes with it. Germany is better placed than most to deal with such change, given its traditions of active government and strong social partnership. Nevertheless, there is the suspicion that when German unions express their confidence that this can be done painlessly, they are trying to put a brave face on a difficult situation. Moreover, Germany is not closing its coal industry. Some critics describe coal as Germany's "dirty secret" and believe the greener solution would have been to keep nuclear and phase out coal, as the UK is doing. The fact that coal is centred on economically vital areas and regions of Germany is not, of course, a coincidence.

There are no easy answers to this dilemma and the art of policy-making is to balance a complex and sometimes contradictory set of needs. This report starts from an acceptance of Ralf Bartels' definition of sustainability. Ralf distinguished between green policies, which stressed environmental concerns, and sustainable policies, which held social, economic and environmental needs in balance.

With that in mind, we ask the question, does the UK need a green energy transition, an 'energiewende' of our own? To answer that question, we need first to ask where we get our energy from now, how much energy we will need in the future and where we anticipate getting it from. Specifically, we must know how the new Department for



Business, Energy and Industrial Strategy (BEIS) predicts we will keep the lights on in, say, 2030, whether that is consistent with climate targets, contained in the Paris Agreement and elsewhere, whether it is realistic and, if not, what changes we need to make. We then consider: what are the industrial costs and opportunities of bringing about this energy transition?

### **Where does the UK get its energy from?**

Before considering our energy mix, it is necessary to state that the UK consumes less energy than it did in 1970, despite an extra 8.9m people living here<sup>5</sup>. One reason, a positive, is that we are more efficient at both producing energy and using it. Another, less positive reason is the rise of the service sector and the decline of manufacturing – services being much less energy intensive. This immediately has wider policy implications: the TUC has long sought the revitalising of manufacturing and we support the words – even if they have proved rather empty – of the outgoing Chancellor, George Osborne, in his call for a 'march of the makers'. This means that if the UK does pursue an active industrial policy to strengthen its manufacturing sector, we must factor in the environmental costs of that and seek to mitigate them as far as possible in the design and development of that industrial policy.

Specifically, households use 12 per cent less energy, while industry uses 60 per cent less. However, there has been a 50 per cent increase in energy use in the transport sector, due to a big rise in the number of cars on the road since 1970. This suggests that greener cars, through developments such as hybrids and battery technology, are fundamental as we seek to support our world class automotive sector. A large increase in the number of flights since 1970 also underlines the fact that tough environmental standards must accompany the building of a third runway in the South East of England, as the TUC has consistently argued that they should. The former DECC believed that energy efficiency will continue to offset population growth, so we will use the same amount of energy in 2030 as we do today. This is plausible, given the growth in energy efficiency and given the trajectory of the last 45 years, but it is important to be alert to possible economic and industrial scenarios that could alter that prediction.

### **Coal**

The major change in our energy consumption in the last 45 years has been the rapid decline of coal and associated fuels, such as coke and blast furnace gas. The void has been filled by a rapid rise in the use of natural gas. This story has implications; indeed it has lessons that the UK would be well advised to learn from.

First, the decline in UK coal production since the 1970s does not match the decline in coal use during that time. In 1970, coal accounted for about two-thirds of all

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<sup>5</sup> Population figures for 1971 and 2016 from 'Population' by Jen Beaumont, Social Trends 41, ONS.

electricity. Apart from a sharp dip in the mid-1980s because of the miners' strike, coal use fell most dramatically during the 1990s. Coal use has increased slightly in recent years, due to cheap imports. Oil use has also fallen sharply, and the big fall in coal and oil use in the 1990s was because of the so-called "dash for gas", which was underpinned by cheap North Sea gas and the privatisation of the electricity market.

Even leaving the politics of the miners' strike aside, the closure of the UK's coal industry without any active government strategy to bring new industries to former coalfield communities was a disaster. The economics of coal were complex: the industry began to decline after the First World War, although that decline accelerated after the Second World War and particularly after the miners' strike and subsequent pit closures. Coal produced in the 1970s became uncompetitive, both in contrast with coal from abroad (UK coal faced higher unit costs of production, partly as a result of higher wages) and other sources of energy, such as gas, which are cheaper. Increasing awareness of global warming added to arguments against coal and, indeed, the government has announced its intention to phase out unabated coal-fired power stations by 2025 if it is confident that a shift to a wider use of gas can be achieved within the necessary timescales.

But this does not tell the whole story. As recently as three years ago, the government expected coal and gas fired power stations fitted with Carbon Capture and Storage (CCS technology) – which seeks to siphon off CO<sub>2</sub> and bury it underground – to start producing electricity in 2017. Some argued that this was optimistic three years ago, given the absence of a large scale, fully operational CCS station in the UK. It is now impossible, following the government's decision to scrap the £1bn competition for a CCS demonstration project in last year's Autumn Statement. It seems the government cannot decide if it has given up on CCS or not; the former Prime Minister, David Cameron, appeared to question the viability of CCS technology, while DECC ministers insisted that the government was still committed to CCS, while claiming that the cost of the demonstration project was simply too high. Meanwhile, the Committee on Climate Change believes it will be more expensive for the UK to meet its carbon reduction targets without the development of CCS technology. The TUC believes the previous government pulled the plug on a new and exciting technology purely to cut costs, rather than seeing CCS as an investment in our industrial and environmental future. Given that many other countries, from Poland to China, will continue to use coal, the loss of CCS risks being the loss of a major export technology too.

Furthermore, while it is impossible to measure social cost in statistics, the devastation of the former mining communities after the loss of their only form of livelihood cannot be underestimated. It could be argued that the decline of the coal industry was inevitable, but the real government failure was the absence of economic regeneration in the former coalfields. In this context, it is impossible to criticise Germany for its refusal to phase out its coal and lignite sectors at this stage.

## Renewables

DECC also believed that growth in the use of natural gas and in renewables – such as wind and solar power – would compensate for the reduction in coal production, in the short term. By 2030, it expected renewables to be by far the biggest source of energy used in electricity generation, making up about 40% of the overall mix.

Again, we must ask the question, is this realistic, given the current trajectory? In the government's favour, the news on 3 February 2016, that DONG Energy is to build the world's largest offshore wind farm 75 miles off the Yorkshire coast was a huge boost to renewable energy in the UK. Hornsea One offshore wind farm will be capable of powering over one million UK homes with a capacity of 1.2 gigawatts. The project has the potential to create around 2,000 jobs during its construction, with up to 300 additional jobs supported during its 20-25 year operational phase. As we have discussed, a new Siemens blade factory in Hull is due to be built by the end of 2016 to support the Hornsea One project; many of the skilled workers employed by Siemens in Hull will undertake some of their training at Siemens in Aalborg. Hornsea One is expected to be fully operational in 2020.

The government has also said it could support up to 10 gigawatts of new offshore wind projects in the 2020s, with a further three auctions in this Parliament if conditions on cost reductions are met.

Set against this, shortly after the General Election the government "revised" a number of renewable energy subsidies, which entailed:

- removing the guaranteed level of subsidy for biomass conversions and co-firing projects for the duration of the Renewable Obligation (RO)
- launching a consultation on controlling subsidies for solar photovoltaics of 5MW and below under the RO
- a consultation on changes to the preliminary accreditation rules under the Feed-In Tariff (FIT) scheme, followed by a wider review of the scheme to drive significant further savings.

The government argues that it has provided vital financial support for the renewable sector, but points to projections from the Office for Budget Responsibility which show that subsidies raised from bills are set to be higher than expected when schemes were set up, under the Levy Control Framework. This is partly due to lower wholesale electricity prices, but is also the result of higher than expected take-up of the demand-led Feed in Tariffs and the Renewables Obligation (such as solar panels on roofs) and a faster than expected advancement in the efficiency of the technology, meaning renewables are projected to generate more electricity than previously planned. However, while this might be true, it remains the case that we could have gone even further in the use of renewable energy if subsidies had been maintained.

## Nuclear

The final piece of the UK's energy jigsaw is nuclear. The TUC, like the government, believes the UK's nuclear industry has a pivotal role to play in a future balanced energy policy.

The government's carbon plan to reduce CO2 emissions to 2050, published in 2011, aims for there to be competition between different forms of low carbon electricity generation. Within three of the four key scenarios in the carbon plan, nuclear energy is shown to deliver a much larger amount of generation than that available now, with the potential to deliver between 16GW and 75GW of the UK's electricity needs. The 75 GW from nuclear energy is part of a scenario where total installed capacity in the UK is around 160 GW by 2050. Nuclear could contribute between 40 and 50 per cent to the energy mix under this scenario, compared with nearly 20 per cent today.

In the words of the government's nuclear industry strategy: "The size of the UK's nuclear new build programme will therefore largely depend on industry's ambition, the success of the initial new build programme, subsequent reduction in cost through experience, growth in investor confidence, and realising economies of scale."<sup>6</sup>

As we have seen from the difficulties experienced by the building of Hinkley Point C, the new build programme cannot be considered to be successful. Yet Hinkley Point C is vital to the energy mix: if it goes ahead – and trade unions will do all we can to support it – it will power six million homes for 60 years and will also provide 25,000 jobs.

A rethink of how the UK's nuclear programme is taken forward is vital. We will return to this issue later in this report.

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<sup>6</sup> 'The UK's Nuclear Future', HM Government, 2013.

## Section seven

# What are the industrial policy implications of a green transition?

So far, this report has discussed the ways in which the UK might move towards a 'green energy' model. However, this debate can be widened to consider the role that industrial policy could play in such a transition.

The TUC has published much on industrial policy in recent years. We have made the case for strategic government support for those key sectors where the UK is or could become competitive in the global economy. In our view, the 21st century will be dominated by Asia, but that does not mean there is not everything to play for from a UK perspective. As the Singapore Cabinet Office Minister and NTUC General Secretary Lim Swee Say told us, if a country has nothing to export to China, then the rise of China is the biggest threat that that country faces. But if a country has something to export, China becomes a massive opportunity<sup>7</sup>. Like other advanced western economies, the UK must ensure that it has a portfolio of goods and services that it can export to dynamic Asian economies. We already do well with law, accountancy and financial services. But we must do better with job-rich industrial sectors such as manufacturing. Furthermore, China is on an uneven path to sustainable development. Those parts of China that already enjoy wealth – such as the cities along the Pearl River Delta – are thinking hard about how to become green. Other parts of China that are still catching up are industrialising via heavy industry, as so many other economies did before them, and are not focusing on greening the economy – for now.

## Building on existing strengths

The TUC will continue to focus on industrial strategy – and whilst this will inevitable mean developing new sectors, it will also mean nurturing existing strengths. Neither the UK nor other western economies are at a standing start. All have developed specialities in different sectors, so it is worth asking whether we can build on existing strengths in the development of a green industrial strategy.

Earlier in this report, we saw the development of Denmark's wind energy sector, a sector that is now a world leader. We have seen the way in which Denmark's commitment to renewable energy developed, but Denmark already had an innovative wind energy company, Vestas. In developing this sector, how much was Denmark

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<sup>7</sup> 'The Way of the Dragon', TUC, 2013.

nurturing an existing strength, in the knowledge that if it was successful, it would gain first mover advantage?

Vestas began experimenting with alternatives to traditional energy production in the early 1970s. In fact, it developed wind turbine technology in secret, but with the oil crisis looming and with the Danish government exploring alternatives to oil, it might be said that Vestas was, technologically speaking, in the right place at the right time. Vestas sold and installed its first turbine – with a 10-meter rotor and capacity of 30KW – in 1979, the year in which Denmark created its Ministry of Energy. In the early 1980s, US legislation giving tax breaks to wind energy investors led to orders for Vestas turbines. In 1991, by which time Denmark was targeting a CO2 emissions reduction of 20 per cent between 1988 and 2005, Vestas sold its 1,000th turbine. By 1998, when Denmark was seeking a still higher proportion of renewable energy, Vestas had floated on the Copenhagen Stock Exchange and with a share of 22.1 per cent of the world's wind power, the company had become the industry's dominant player.

Some of this might be coincidental, but the rise of Vestas mirrored the rise of renewable energy in Denmark. We must not be surprised, nor cynical about this. Surely it makes sense for governments to focus on areas of existing strength as they develop future industrial strategy?

And if that is the case, does the UK have such areas of existing strength, on which to build? The answer is yes and this report will focus on two such areas, in particular: offshore wind and automotive.

## **Offshore wind**

The UK has a highly successful offshore wind industry. With more operational wind farms than the rest of the world put together, the current generating capacity in UK waters provides almost 15 terawatt hours of electricity annually, equivalent to the electricity consumption of over three-and-a-half million homes. Industry projections suggest that by 2020, offshore wind will supply between eight and ten per cent of the UK's electricity.

The downside to the UK's offshore wind sector is the relative weakness of UK content, i.e that the UK supply chain does not currently contribute as much to the wind farms as is desirable. Employment in the sector now stands at around 6,800 full-time employees – a significant number, but one which could be higher. The offshore wind sector has agreed a target to deliver 50 per cent of UK content.

The Offshore Wind Industrial Strategy, published in August 2013, argues that due to the risks involved in procuring such high value technology, a company with a proven track record enjoys a major advantage over new entrants, even though the latter are necessary to increase competition, increase capacity, introduce innovation and reduce costs. The strategy discusses the importance of sharing best practice,

framework agreements between developers and suppliers, prequalification criteria and methods such as awarding smaller portions within contracts.

There is nothing wrong with any of these suggestions, but they are unlikely to have a major effect. It is often argued that local content requirements are contrary to international trade rules, although the Energy Minister at the time, Michael Fallon, was quoted as saying that it is “only reasonable” that projects supported by the taxpayer deliver a supply chain plan that contains local jobs, local content and local benefits.<sup>8</sup>

The TUC agrees. In fact, we would go further. We have long supported the full use of EU procurement rules that allow social clauses including the provision of skills and the addressing of long-term unemployment, which is surely the case in those areas of industrial decline in which future offshore wind capacity could be built. Any new trade agreement between the UK and EU post-Brexit should allow for similar social clauses.

The UK has an offshore wind sector to be proud of; it now needs to create more high quality jobs for UK workers.

### **Automotive**

According to the Society of Motor Manufacturers and Traders, more than 1.5m cars were built in the UK in 2014, the most recent year for which figures are available.<sup>9</sup> 770,000 people were employed across the UK automotive sector, of which 161,000 were directly employed in manufacturing. 41,000 people worked in motor sport, a highly specialised area clustered along the M4 corridor. Motor manufacturing is an industry with great future potential: 50,000 automotive manufacturing jobs will need to be replaced by 2020, with implications for high skill youth employment.

The motor industry is also a high exporter: 78.2 per cent of vehicles built in the UK were exported and the European Union accounted for more than half of UK-built vehicle exports in 2014. Among non-EU destinations, China was the top destination, followed by the USA, Russia and Turkey. The UK exports vehicles to more than 100 countries worldwide.

The automotive sector is taking positive strides towards greener vehicles. A new car in 2014 was nearly 20 per cent more fuel-efficient than one bought in 2009. Registrations of plug-in cars quadrupled in 2014, to 14,495 cars.

Starting from this strong base, there is clear potential for the UK to strengthen its position in cleaner, greener cars. This should be a particular focus of UK industrial policy.

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<sup>8</sup> <http://www.businessgreen.com/bg/interview/2287472/uk-to-seek-local-content-assurances-from-offshore-wind-farm-developers>

<sup>9</sup> The Society of Motor Manufacturers and Traders: Motor Industry Facts 2015.

Some companies are already stealing a march. For example, Nissan (which manufactures 500,000 cars per year in the UK) set out its vision for the future of electric cars, including a new charging infrastructure and battery technology to deliver a range of more than 340 miles on a single charge. This technology is likely to be included in an updated version of the Nissan LEAF which, along with the Juke, Note and Qashqai is one of the models built in the UK. The challenge, of course, continues to be to develop a long-range battery at an affordable price.

How to encourage more companies to invest in low carbon and energy efficient technologies is a major policy challenge. In its 2012 document 'Growing Pains', the Institute for Public Policy Research (IPPR) called for a targeted 'green deal' for manufacturers. The IPPR argued that there are few positive incentives for conventional manufacturers to reduce process emissions and retrofit their plants and premises. The IPPR called for a targeted green deal for manufacturing firms<sup>10</sup>.

The economist Mariana Mazzucato has highlighted the role of the state in fostering innovation, thereby challenging the received wisdom that the development of ground-breaking technologies is the preserve of the private sector. Mazzucato notes that since the commercial development of lithium-ion batteries (i.e. the rechargeable batteries common in consumer electronics) in the early 1990s, the challenge has been to store and release power effectively enough to make sustainable energy sources viable alternatives to fossil fuels<sup>11</sup>.

Mazzucato points to the Advanced Research Projects Agency Energy (ARPAE), part of the US Department of Energy, which can expect more funding in the light of commitments made by President Obama and other world leaders at last December's Climate Change Conference in Paris, but says that embedded energy infrastructure retains incumbency advantages, while renewable energy sources are in the early stage of development, and so will find it hard to raise capital by themselves. The need for the state to step in, making investments but also ensuring that it reaps an appropriate share of the rewards, is crucial.

It is time for UK policy makers to consider what our own version of ARPA-E might look like.

Finally, there is the role of demand-pull innovation in the automotive sector. In 'London: Global Green City', IPPR argues that London is only three per cent of the way towards its 2020 target of 100,000 electric vehicles<sup>12</sup>. One factor contributing to this slow growth is the inadequacy of the charging network. IPPR called on the next mayor to work with key stakeholders to ensure that barriers to accessibility were reduced. The TUC endorses this challenge to Sadiq Khan, the new Mayor of London. By designing policy to support green vehicles, we are more likely to prompt businesses to make the necessary investments for green development.

<sup>10</sup> 'Growing Pains: British Industry and the Low Carbon Transition', IPPR, May 2012.

<sup>11</sup> 'A State Powered Green Revolution', Mariana Mazzucato, Project Syndicate, May 2016.

<sup>12</sup> 'London: Global Green City', IPPR, April 2016.



Section eight

# Conclusions

## **Build a social, political and business consensus**

It is crucial that a social, political and business consensus is developed in order to tackle climate change. Henning Kruse of Siemens Wind Power spoke of the business confidence that this provides to investors. It is the nature of democracy that governments change, but a shared understanding needs to develop over a climate change strategy, in order to protect the planet.

Speaking before the 2015 General Election, the former Secretary of State for Energy and Climate Change, Amber Rudd said: "I don't think you could get a cigarette paper between me and Labour on our commitment to getting a deal in Paris," Rudd added: "We are all completely committed to it, so whatever the outcome – and I certainly hope for a Conservative victory – it wouldn't slow down or speed up. Everyone is doing what they can."<sup>13</sup>

Similarly, the CBI business lobby is engaging with climate change as, of course, is the TUC. The fact that both these organisations have committed to support a modern industrial strategy in recent years has helped solidify support for such a policy. The same commitment is necessary on climate change.

## **Develop a roadmap for change**

Consensus must develop into a joint strategy, a roadmap. It was uncharacteristic of Germany to develop its 'energiewende' policy in such a kneejerk fashion, notwithstanding longstanding scepticism about nuclear power in Germany. The TUC is confident that 'energiewende' will be a success, but problems associated with the lack of long-term strategy were highlighted by Sabrina Schultz in this paper and care should be taken to avoid any such problems in the UK.

Much of the institutional architecture is in place. In the Climate Change Act, we have the Committee on Climate Change, chaired by a former Government Minister, Lord Deben, who commands the respect of all interested parties. Carbon budgets – at least in theory – keep the government on track to meet carbon reduction targets.

We need, however, to identify the optimum energy mix going forward. Where we need new sources of energy, we need to identify how we will deliver them. Where we need to phase out others, we must consider how to do that sustainably, i.e. in a way that takes into account the social and economic needs of the workforce and

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<sup>13</sup> <http://www.businessgreen.com/bg/interview/2371516/amber-rudd-im-a-thatcherite-when-it-comes-to-climate-change>

communities that will be affected, and not just the environmental concerns. One of the main attractions of ‘energiewende’, over and above its content, is the way in which it builds a sense of national mission. The same is true of Denmark’s energy transition. The UK needs a national mission for a new, overarching industrial, energy and climate change policy.

Clearly, such a strategy cannot be led by one government department alone. It was noted above that, under the Conservative-Liberal Democrat Coalition in the UK, tensions existed between HM Treasury and the Department of Energy and Climate Change. Addressing an IPPR conference, ‘The Path from Paris: The Implications of the Paris Climate Agreement on UK Policy and Business’, Lord Deben said that as he travels the world, all countries complain about their finance ministries, because those ministries think in the short term and they struggle to relinquish power. This will not do. A national mission requires the Treasury and the new Department for Business, Energy and Climate Change to pull together.

### **Implement a balanced energy policy**

The TUC has always supported a balanced energy policy. In our view, a new energy policy should seek:

- support for nuclear power – sustainably funded by a diversity of suppliers
- an increase in our production and use of renewable energy sources
- a new strategy to develop Carbon Capture and Storage (CCS) technology
- the appropriate use of gas from the North Sea.

### **Agree a sustainable strategy for nuclear development**

The argument for a balanced energy policy is played out in the current story surrounding the UK’s nuclear capacity. The UK has had a nuclear energy sector since the 1950s and trade unions have long represented the workforce in that sector. There is an irony to the history of nuclear power in the UK, given that it has been viewed as a low carbon technology only comparatively recently and its use still divides the green movement.

A nuclear industry strategy, ‘The UK’s Nuclear Future’, which was launched under the coalition government, spoke of plans to deliver around 16GW of new nuclear power by 2030, which broadly translates to at least 12 new nuclear reactors at five sites currently earmarked for development: Hinkley Point, Sizewell, Wylfa, Oldbury and Moorside. The delivery of the strategy would mean a significant programme of new plant building for the UK.

Hinkley Point was given development consent for the construction of the first new nuclear power station in the UK since 1995. It was to be constructed and operated by

EDF Energy and would cost £12-14 billion. Hinkley, the government hoped, would be the first of five new sites to be developed.

The problems affecting Hinkley have been well rehearsed in the media. The finance director of EDF resigned in opposition to the project and question marks over its cost, to be borne by the British taxpayer, have also been highlighted.

The TUC remains committed to the development of Hinkley Point C, which is essential for the UK's energy security and will provide thousands of skilled jobs in the South West; it is an important economic opportunity for a region which has not shared the prosperity enjoyed by London and the South East in recent years. Yet clearly this is no way to develop energy policy. We are attracted to the idea set out by three environmentalists, George Monbiot, Mark Lynas and Chris Goodall, that the government should produce a comparative study of nuclear technologies, including the many designs for small modular reactors, and make decisions according to viability and price<sup>14</sup>.

### **Build the capacity of renewable energy sources**

The UK must raise its game with regard to renewable energy sources. The government expects 40 per cent of UK energy use to be delivered by renewable energy sources by 2030. We believe the government needs to be more ambitious: 40 per cent of Danish energy already comes from wind and the Danes are aiming for 100% green energy by 2050. The government should aim for at least 50 per cent of energy to come from renewable sources by 2030.

In the aftermath of the general election, as we have seen, the government "revised" key support for renewable energy sources, including biomass conversion, solar photovoltaics and Feed-in Tariff schemes. This was clearly short-sighted and should be reversed. The government's rationale for these cuts was that targets for solar panels and other green energy schemes were being overshot. This is no reason; as Lord Deben told the IPPR, government should not always plan for the most optimistic outcomes when it comes to the take-up of renewable energy sources, but should plan instead for the more pessimistic. This is surely correct.

More specifically, this report has discussed the power of 'active government' and we now recommend a new green industrial strategy to do two things: first, the government must conduct a study into the technologies that the UK would need to bring us up to 50 per cent of renewable energy and what industries could be developed in the UK; second, those new industrial sectors should be targeted on those communities that lost their livelihoods with the demise of heavy industry, most obviously the former coalfields.

This is particularly important, post-Brexit. There has been a growing recognition, that was reflected in the referendum campaign, that former industrial communities

<sup>14</sup> <http://www.theguardian.com/environment/2015/sep/18/we-are-pro-nuclear-but-hinkley-c-must-be-scrapped>

in England have been by-passed by the opportunities that globalisation has presented to other parts of the UK. Polling for the TUC has found that Brexit was as much a verdict on elites as on the EU, with 71 per cent of Leave voters saying that politicians, business leaders and other members of the “establishment” had “let most ordinary people down”. Here is an opportunity to offer real economic change to a section of the population too-often overlooked.

This is a long-term project. Those companies building the green technology of tomorrow will mostly be in the private sector, but Germany and Denmark have shown how, when the government sets its strategy and designs its economic, industrial and environmental policies around that strategy, it creates the certainty that the private sector needs to invest. Government should offer sufficient financial incentives, such as loan guarantees, to companies that may wish to be a part of this project. The expansion of apprenticeships to deliver the skills necessary for these new industries in green technology must form part of this project. Government needs to be a hands-on partner. It finds large amounts of money for major investment projects, whether Hinkley Point C or infrastructure projects such as Crossrail. Some criticise this government spending, but the TUC believes this is exactly what government is for. In one major policy, government could champion the renewal of industry in some of the UK’s most deprived communities and a greener future, both at the same time.

### **Relaunch Carbon Capture and Storage through international cooperation**

The biggest energy disappointment since the new Conservative government came to office last year has, however, been the cancelling of the £1bn competition for a CCS demonstration project. This broken manifesto pledge makes it harder for the UK to meet its greenhouse gas reduction targets, as the Committee on Climate Change has pointed out. The TUC believes this decision was a huge mistake. The question, however, is what to do now.

The door is slightly ajar on CCS, given that DECC Ministers continued to maintain their support for it. It is necessary for the new Prime Minister to show similar commitment, given that her predecessor questioned the viability of CCS technology. However, assuming this hurdle can be overcome, the TUC calls on the government to put together an international consortium to finance a CCS project, sharing both the risks and the rewards.

The UK is involved in many major science projects that are international collaborations. Perhaps the most important is CERN, the European Centre for Nuclear Research, in Geneva. Founded in 1954, CERN was one of Europe’s first joint ventures and now has 21 member states. According to Forbes, the Large Hadron

Collider, based at CERN, costs about \$1bn per year to run<sup>15</sup>. Without international collaboration, the costs would be simply impossible for any one member state.

This is an argument for international cooperation. The cost of funding the demonstration project that has been cancelled would be about the cost of operating the Large Hadron Collider for a year and a quarter. The idea would not be to try to enlist 21 states, but perhaps five states with an interest in clean coal could come together in an industrial collaboration. China is obviously interested in coal, and it would certainly be a good idea to explore the possibility of China as a partner, but simply seeking a handout from Beijing should be avoided. The prize for investment would be the accrued benefits of international co-operation, resulting in a technology that allows coal burning in a sustainable manner, thereby helping the UK and other industrial partners to meet the climate change targets that they agreed in Paris.

### **Reduce reliance on imported gas**

In its ambition to close unabated coal-fired power stations by 2025, the UK government believes that gas and nuclear will fill the gap. Burning gas emits about half as much carbon as coal. It is not as green as either renewable energy or nuclear power, but it has an important part to play in the UK's energy mix as we make the long journey towards zero carbon. Gas is likely to be used for many decades to come; about 80 per cent of homes are heated by gas.

However, according to the former Energy Secretary, Amber Rudd, the UK currently imports around half of its gas needs and by 2030 that could be as high as 75 per cent<sup>16</sup>. This is not acceptable. The UK should seek to be as self-sufficient as possible in energy policy and while we support a gas industry that provides jobs and skills to UK plc, we should seek to balance our energy portfolio so that we are not so reliant on imported gas.

### **Expand the skills base for an energy transition**

The three pillars of energy policy are security, economy and sustainability. We need to ensure that we “keep the lights on”, that energy is as affordable as possible and that it is produced in a way that minimises the threat to the environment. There is an inevitable degree of trade-off between the second and third of those pillars, at a time of the development of green energy. Eventually, of course, we would expect the optimum energy mix to be both economic and sustainable. The TUC believes there should be a fourth pillar of energy policy: skills.

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<sup>15</sup> <http://www.forbes.com/sites/alexknapp/2012/07/05/how-much-does-it-cost-to-find-a-higgs-boson/#38e9852e64f0>

<sup>16</sup> <https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>

Technological change is disruptive by nature and that leads to uncertainty among those people working in modern technology. It is often feared that more technology will lead to fewer jobs, even though evidence suggests that technological breakthroughs create more jobs than they destroy. It is, however, essential that if today's workers are to become tomorrow's workers, using new technology, they will need the skills for this change. Upskilling must become a normal and regular part of a worker's life. This is especially true if today's jobs in higher polluting industries are to be replaced over time with jobs in greener sectors. In addition to upskilling the existing workforce, the expansion of apprenticeships to deliver the skills necessary for these new industries in green technology must also form a key part of this project.

There are isolated elements of the government's existing skills policy that do demonstrate a strategic approach to addressing forthcoming skills needs resulting from major infrastructure initiatives. For example, the TUC has welcomed the establishment of the high-speed rail national college and the HS2-TUC Framework Agreement includes a number of important principles in support of boosting skills and apprenticeships as high-speed rail is rolled out. The TUC is also a member of the Strategic Transport Apprenticeship Taskforce (STAT) and is working closely with affiliated transport unions to develop union input to this initiative. The STAT has been established to support the government's ambition to create 30,000 apprenticeships in the sector by 2020 and to increase the diversity of the workforce. National large-scale initiatives of this order provide some examples of what could be put in place to plan for, and meet, forthcoming skills needs in the context of rolling out a sustainable industrial policy.

The TUC has welcomed the general thrust of some of the ongoing reforms of apprenticeships, especially the introduction of regulatory measures – the apprenticeship levy and new procurement regulations – to address long-term under-investment by UK employers. However, the TUC has also emphasised the need for the levy to underpin high quality apprenticeships and for employers and unions to agree these apprenticeship standards as is the case in much of the rest of Europe. A new body – the Institute for Apprenticeships – is to be established shortly and this presents a real opportunity to adopt the principles of social partnership that govern similar bodies in other European countries. This body could play a role in working closely with employers and unions to plan for apprenticeship provision that met the needs of a sustainable industrial policy.

However, a coordinated skills strategy of this kind would require a rethink of some current policies. Firstly, the government would need to revitalise support for the role of sector skills bodies that have had a remit for facilitating employer-union dialogue on both apprenticeships and adult upskilling in different industries and sectors. Without this infrastructure it would be especially difficult to plan for the upskilling strategies involving adult employees. Large numbers of adult employees transitioning to a new occupation or career would also entail significant support structures being put in place and there would be a vital role for unions, especially through union learning reps, to provide support at the workplace level.

Secondly, there would need to be a review of the increasing demands on adults to take out student loans (i.e. “Advanced Learning Loans”) to fund vocational upskilling. In light of the fact that the bulk of funding for apprenticeships will switch from government to employers in the coming years, there is a strong case for government providing more direct subsidy for retraining and upskilling of adult employees in priority areas as the economy transitions to a sustainable industrial scenario.

Evidence to date shows that uptake of Advanced Learning Loans have been concentrated among young adults and indications are that this is partly due to greater debt aversion among the older adult workforce.

### **Guarantee the work of the Green Investment Bank**

The TUC has consistently supported the Green Investment Bank. We give credit to the Coalition government for creating the world’s first green investment bank; it is the UK’s most active investor in the green economy and for every £1 of public money, the GIB mobilises £3 of private capital. Less welcome was the decision by the Conservative government, shortly after last year’s General Election, to sell its majority stake in the GIB to help fund its austerity agenda. This is a particular concern as the UK needs to invest billions of pounds to upgrade the UK’s energy and transport infrastructure, in order to meet the climate change targets agreed in Paris last December.

The decision to sell the GIB appears to have been rushed through to get it off the government’s balance sheet. The House of Commons Environmental Audit Committee found that the decision was taken without due transparency, consultation, or proper consideration of alternatives<sup>17</sup>. Even the Daily Telegraph has reported that the government has not said whether it will judge bidders on price, green credentials or other features. In the words of the Daily Telegraph: “what is already clear is its aim to raise more than £4bn for Treasury coffers”.<sup>18</sup>

The TUC continues to oppose the decision to privatise the Green Investment Bank. We have long called for it to be given additional borrowing powers to encourage it to develop and extend its role. A transition to a sustainable economy should be seen as a national project, as it is in Germany and Denmark. Such a national project should not be privatising its key assets, selling them to the highest bidder with no guarantee that it will put green transition first.

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<sup>17</sup> <http://www.theguardian.com/environment/2016/mar/06/the-green-investment-bank-must-be-allowed-to-stay-green>

<sup>18</sup> <http://www.telegraph.co.uk/business/2016/05/01/green-investment-bank-privatisation-starts-to-bear-fruit/>

### **Create incentives to fund an energy transition**

The government puts a lot of emphasis on the low cost of energy. It is, of course, quite right that none of us want to pay more for our energy than is necessary. But to put such emphasis on cost perhaps risks missing a bigger prize. We have seen that energy prices have risen in Germany during the 'energiewende' process. The prize will be cheaper, and greener, energy in 30 years' time. The Danish trade unionist Thomas Fischer told us that many Danes pay 10 per cent extra for green energy. Consumers know that cost is important, but cost is not everything.

Of course, Germany and Denmark have an advantage over the UK. Neither of these northern European countries have UK levels of inequality. It may be that the richest people in the UK can afford higher bills to pay for green energy, but those already living in fuel poverty cannot. For this reason, the TUC is attracted to the DGB's idea of energy transition paid for through progressive taxation. In this way, a greater cost falls on the shoulders of those most able to bear it.

The top priority for innovative energy solutions comes in the need for storage systems for renewable energy. Sometimes, there is not enough wind to use wind power. Sometimes there is more wind than we can use. The ability to store wind power for when we require it is a crucial need for renewable energy, as highlighted by Ralf Bartels of the German IGBCE. And as Ralf told us, trade union members, the workforce at innovative companies, will be central to this work. The TUC recommends incentives for companies to link up with universities and propose the development of innovative solutions to the problem of storage.

Finally, tax credits and other financial support is available for new business start-ups, including small scale energy companies. However, as noted by Frederik Moch of the DGB, some of these small companies are poor employers. The TUC believes that government financial support should only be made available to companies meeting agreed standards around pay and apprenticeships.



The TUC produces regular reports on economic and social issues, providing up to date analysis and commentary on key policy debates.

You can also read TUC policy officers' comments on the issues in the report series and the ongoing economic situation at the TUC public policy blog: **[touchstoneblog.org.uk](http://touchstoneblog.org.uk)**

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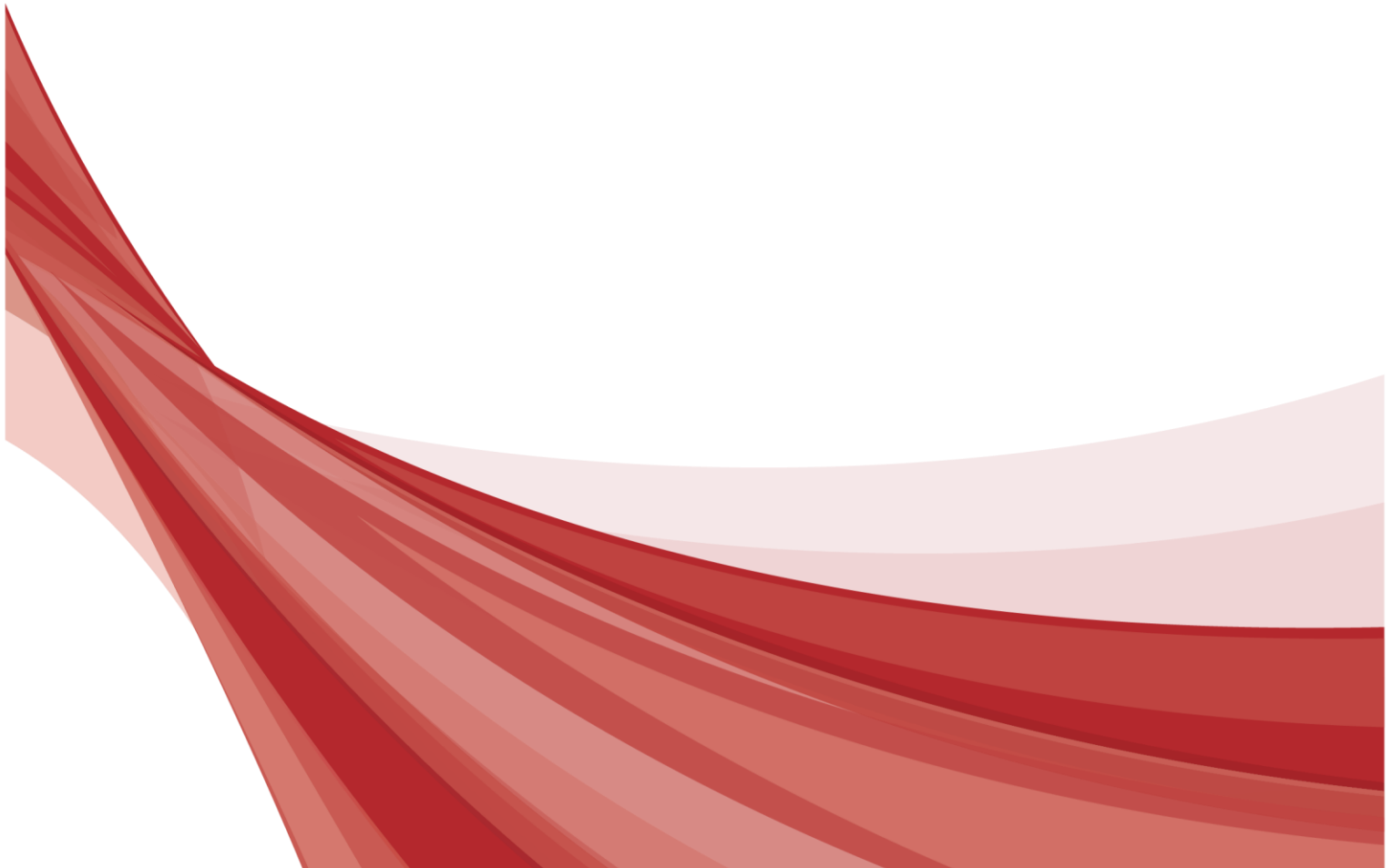
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# Shaping Our Digital Future

**A TUC Discussion Paper**



## **Contents**

### **3 Foreword**

### **4 Summary**

### **5 Introduction**

*What on earth are we talking about here?*

*Digital Technology as a potential force for good*

### **10 What impact has new technology had in the past?**

*What's happened to employment?*

*What about wages?*

*What does this mean for the next wave of technological progress?*

### **19 What can we expect to happen to work following this latest technological revolution?**

*The impact on jobs*

*What about wages?*

### **26 Policy recommendations from the United States and Germany**

*The White House Paper*

*'Re-Imagining Work' – Germany's response to 'industrie 4.0'*

*Case Study One: the Work of IG Metall*

*Case Study Two: Airbus Works Council, Hamburg-Finkenwerder*

*How might digitalisation affect Airbus?*

*How can the UK learn from Airbus?*

**38      What should we do about digitalisation?**

*Taking advantage of the potential of new technologies*

*Protecting workers whose jobs are most at risk of change*

*Sharing the rewards of increased productivity*

*Next steps*

*What could government do now?*

## Section one

# Foreword

We are living through a period of profound and rapid technological change.

The phone that many of us carry in our pockets is millions of times more powerful than the combined processing power of the computers NASA used to put man on the moon just over four decades ago. We take for granted instant access to information and content in a way that was literally inconceivable 30 years ago. And in the last few years new digital technologies have driven changes in our everyday lives from the way we shop and watch films, to how we book holidays, pay bills, or keep in touch with friends and families.

This new technological wave is changing the way we work as well. From banks to supermarkets, call-centres to offices, classrooms to hospitals, new technologies are reshaping the world of work. Not all of these changes are immediately apparent. Robots on an assembly line or self-service check-outs are very visible manifestations of this new industrial revolution, but just as profound will be the widespread use of artificial intelligence and big data. Likewise, the pace and scope of technological change is not constant across, or even within, sectors. But even in those sectors where human interaction is, and always will be, key – education, health, social care – there is growing evidence that new technology will change the way we work.

**This report takes as its starting point that technological change is not only inevitable, but also brings with it real potential benefits.** But this doesn't mean that unions and their members can afford to be passive recipients of such change. How new technology is introduced; how its benefits are fairly shared; how workers are engaged and supported through this period of industrial transformation – all these questions and more point to the need for government employers and policy-makers to seriously engage unions in shaping Industry 4.0.

This report doesn't attempt answer all these questions, but instead marks a first contribution to understanding what the coming wave of technological change will mean for Britain's workplaces, and how best unions can shape it to the benefit of working people, their families and communities.

That's precisely what we have done throughout the history of the trade union movement: engaged with the world of work as it is; shaped new technologies and ways of working to the benefit of working people; reached out to those working in new jobs and in new ways of working. I'm confident working together, we can do the same again and put great, well-paid, secure jobs at the heart of Industry 4.0.

**Paul Nowak, Deputy General Secretary**

## Section two

# Summary

The digital revolution is visible all around us. Artificial Intelligence, Big Data and the Internet of Things, taken together, are set to change the way we live, including the way we work. New technologies could bring massive benefits to aspects of our lives as varied as medical diagnostics and the fight against climate change. But at present, digital technologies are causing a degree of fear among the working population, with many people asking the simple question: is a robot about to take my job?

Based on the evidence before us, there is no need to panic about the impact of digitalisation, but there is a need to plan. Britain has the potential to become a digital world leader, using new technology to deliver growth and jobs. But that must be accompanied by a mission to ensure that the benefits of digitalisation are fairly shared across the workforce and society – avoiding the disruption to jobs and livelihoods and the rising inequality that have accompanied technological change in the past.

This report is an initial discussion about how trade unions and others should respond to the latest wave of technological change. It looks at the evidence of how technology has affected jobs and wages in the past, examines projections of the potential impact of new technologies, and draws on evidence from the US and Germany of how other countries are responding to the challenges posed by technological change.

The fact that digitalisation is sometimes called the ‘fourth industrial revolution’ reminds us that there have been three periods in which breakthrough technologies disrupted the established industrial order over the last 250 years. In each previous case, those technologies resulted in more, not less jobs. The UK employment rate is currently at a record high – despite widespread technological change over the past thirty years; it’s worth remembering that the iPhone is only ten years old this year.

But the new jobs created in the last wave of technological change, from the 1970s onwards, have been different jobs, requiring different skills, and industrial change has brought widespread disruption to many workers’ lives. In 1950, almost one in three workers worked in manufacturing, while one in 12 worked in professional and technical services. By 2016 these shares had reversed.

And while over the long run, technological change has enabled living standards to rise, in the last wave of change, the gains from growth have not been fairly shared. The share of national income going to labour has fallen over the last thirty years. Declining levels of union density is part of the reason for this, as is increased

## Summary

globalisation. But technology has also played a role, with the automation of some jobs reducing workers' bargaining power.

Many have argued that 'this time is different' when it comes to the impact of technology on jobs. A landmark study by Frey and Osborne predicts that 47 per cent of US jobs are at high risk of automation over the next couple of decades. A Bank of England analysis of Frey and Osborne's data suggests that, for the UK, this could amount to 15 million jobs. Projections for wages in the wake of widespread technological change also suggest that the lowest skilled will lose out, and that income disparities could widen further. These of course are projections – not certainties, and it's worth noting that as yet, the promised productivity gains from new technology have yet to turn up; UK productivity has not increased since the financial crisis.

Several other countries have begun to discuss potential policy responses to automation, and this report looks at policy from the US and Germany. The Obama White House highlighted three important areas of focus in meeting this challenge: accepting the digital revolution, investing in more, not less, Artificial Intelligence; ensuring that the workforce is digital ready, meaning a skills revolution from pre-school years to college education, while expanding access to apprenticeships, and widening the pool of science, technology, engineering and maths talent to cover more women and other sections of society currently under-represented in STEM; and supporting the adaptation of the workforce, so that the benefits system is aligned with the needs of career transition, and minimum wages and strong unions are on hand to promote higher pay.

In Germany, a White Paper on work, to coincide with moves towards digitalisation, involved companies, unions, churches and other actors in planning and developing a response, in line with that country's social partnership philosophy. The DGB and the German metalworkers union, IG Metall, has driven the workforce response in Germany. The Works Council at Airbus in Hamburg has used its influence to protect jobs, skills and wages through a time of anxiety for many in the workforce.

How should the UK respond? Rather than a comprehensive set of policy recommendations, this report sets out directions of travel, for discussion by trade unions and others.

**First, we believe that rather than attempt to hold back the technological tide, the UK should plan how to use it to enhance productivity, jobs, and wages, particularly in the areas which previous waves of industrial change have left behind.**

As part of the government's industrial strategy, we suggest a "mission" for the UK to become a top five digital economy. Britain's current low levels of government and business investment, alongside cuts to higher and further education funding mean that at present we are at risk of falling behind.



That mission needs to be developed in consultation with the workforce. We advocate a UK equivalent of Germany's White Paper on work, so that digitalisation is approached as a workforce issue as well as a technological one.

Consultation is vital at the workplace level too. As the example of Airbus in Germany shows, where workers' have a say in the use of new production techniques, jobs can be protected. The UK has an exceptionally weak level of workforce participation, coming sixth from bottom in a European league.

Many unions are already planning how to respond to new technology, including piloting the use of technology agreements in companies in which they have representation, and thinking through how to respond to the challenges of, for example, autonomous vehicles. But a wider sectoral approach is needed, with a voice for unions on sectoral bodies charged with using technology to drive up productivity and pay.

In the past, technological change has caused widespread disruption to some workers' jobs and livelihoods. **A key aim for managing this wave of technology must therefore be to protect workforces and communities who are at greatest risk of seeing their jobs change.**

Dealing with this disruption will require significant investment in the skills of the existing workforce. Two thirds of those who will be in work in 2030 are already in the workforce –so investing in mid-career workers will be key to making sure that the next wave of technological change is one which benefits everybody.

At present, the UK invests half the EU average in workforce training – turning that around must be a priority. All workers should have access to a mid-life training review to assess their skills, and despite their chequered history, government will need to reintroduce individual learning accounts to give everyone a personalised budget for training. Some workers will need more extensive support from government to safeguard their position in the labour market. Groups facing redundancy due to industrial change should have access to retraining programmes to equip them with the skillsets required in a digitalised economy.

**Finally, we need to ensure that if the productivity benefits from new technology do show up, the rewards are fairly shared.**

Some have suggested that if robots threaten widescale unemployment, a tax on their owners could be used to help fund a Universal Basic Income.

We don't think that dis-incentivising investment in robots and other technological developments is the right approach. These technologies have the potential to liberate working people from routine, tasks and drudgery, and so make jobs more skilled and satisfying. But we do want to ensure that where these technologies lead to new wealth, the benefits are shared – both in terms of more free time and more money.

Sharing the benefits of greater productivity is at the heart of Trade Unions' mission. As widespread evidence shows, countries with greater collective bargaining have lower inequality in wages.

## Summary

And we don't need to look to taxing robots as a means to ensure a fair balance of taxation between those who work with technology and those who own it. At present, cuts between the end of the financial crisis and the end of this parliament are set to see corporation tax fall by a third, while support for working families is cut. Changing that balance should be a priority.

Finally, if technology threatens to reduce the total amount of work, and there is a need to look again at how work is distributed, we could start by looking at the pension age. At present, government is suggesting saving 0.3 per cent of GDP in 2066/67 by bringing forward increases in the state pension age to 68 for workers now in their forties. Estimates of the productivity gain from artificial intelligence dwarf that figure, with PWC suggesting a 10 per cent boost to GDP by 2030 as a result of AI. If we do see those benefits arrive, reversing increases in the state pension age and enabling more people to enjoy a decent retirement should be a priority. This would be one way to ensure that new technology enables a fairer share of the rewards from work, and to help those whose working lives may be disrupted by technological change.

Over the course of the following year we will be developing this work further in consultation with unions, and looking at other aspects of new technology that affect working people, including the rise in surveillance at work, how platform companies are treating their workers, and the potential of digital technology to help trade unions ensure the rewards from growth are fairly shared

## Section three

# Introduction

The digital revolution is upon us. Artificial Intelligence (AI), Big Data and the Internet of Things, taken together, are set to fundamentally change the way we live, including the way we work. These breakthroughs could bring massive benefits, around issues as varied as medical diagnostics to the fight against climate change. And they are set to bring huge disruptions to the established order too. As Klaus Schwab, the Founder and Executive Chairman of the World Economic Forum has put it: “There has never been a time of greater promise, or greater peril.”<sup>1</sup>

Among those focusing on the promise are, perhaps inevitably, the technology companies themselves. Erik Schmidt, the Executive Chairman of Google USA, has said: “Everyone gets smarter because of this technology ... and the empowerment of people is the secret to technological progress”.<sup>2</sup> According to Vittorio Colao, CEO of Vodafone in the UK, “Today you’re at the start of something amazing ... I see the freeing up, not just of productivity and money, but also positive energy which can bring a more equal world”.<sup>3</sup>

But there is more to this story. As we saw, robots introduced into industry in the last generation put many semi- and lower-skilled industrial workers out of a job. Some fear the next technological revolution, in which robots and other pieces of equipment ‘talk’ to each other, programme each other, and self-diagnose problems, could render another tier of workers redundant. The jury is out on how big an effect digitalisation will have on our lives: Angel Gurría, the Secretary General of the OECD told the organisation’s 2017 forum that we are witnessing “a moment when the divides in our societies question the efficiency of our theories, of our policies, of our governments...”.<sup>4</sup> There is certainly a fear that a new divide between the lucky few that thrive from digitalisation and the many that do not will create a new fissure in our societies. Digitalisation, alongside globalisation and climate change could be one of the great challenges of our age.

As the reader might expect, trade unions will try to meet these challenges head on. It is our job to campaign for a fairer, more equal society, so this report will seek to mitigate those threats. Where digitalisation can bring benefits – and some benefits will be huge – we will ask: how can those benefits best be shared? Where it brings

<sup>1</sup> <https://www.weforum.org/agenda/2016/01/9-quotes-that-sum-up-the-fourth-industrial-revolution/>

<sup>2</sup> <https://www.weforum.org/agenda/2015/01/17-quotes-on-the-future-of-technology-from-davos-2015/>

<sup>3</sup> <https://www.weforum.org/agenda/2015/01/17-quotes-on-the-future-of-technology-from-davos-2015/>

<sup>4</sup> <http://www.oecd.org/about/secretary-general/oecd-sg-opening-remarks-2017.htm>

risks, how can we minimise and mitigate those risks? What is the relationship between new technology, with its greater productivity, and the sharing of the gains from that productivity, so that workers are better rewarded? What more should we expect of governments to deliver fair outcomes and of companies to provide good jobs? This paper will explore these themes.

The next section seeks to define digital technology and explores the potential benefits of digitalisation.

The third section of this report considers what this means for the UK labour market. How has technology impacted on productivity, employment and wages up until now?

The fourth section considers lessons from the United States and Germany, where ‘industrie 4.0’ is perhaps the most advanced model of digitalisation that we currently have.

The report then sets out a framework for how trade unions and others could respond to the latest wave of technological change, focusing on how we can embrace the potential of new technology, the need to protect workers and communities as industries change, and on ensuring that the benefits of new technology are fairly shared.

### **What on earth are we talking about here?**

Before going any further, it might be helpful to define more fully the technology under discussion in this report. The pages that follow discuss the impact of a range of

- Artificial Intelligence (AI), which has been defined as “the work processes of machines that would require intelligence if performed by humans. The term ‘artificial intelligence’ thus means ‘investigating intelligent problem-solving behaviour and creating intelligent computer systems’.”
- ‘Deep learning’, which is machine learning based on a set of algorithms that attempt to model high level abstractions in data. Deep learning describes a connectedness, which means that if one machine makes a mistake, all autonomous systems will keep this in mind and will avoid the same mistake the next time.
- ‘Robotisation’, which has been in existence since the nineteenth century, sees the use of machines to work alongside, or in some cases, instead of humans’.
- The ‘smart factory’, in which the intelligent machine takes an active part in the production process. In this context, the machines exchange information and control themselves in real time, which causes the production to run fully automatically.
- ‘Big Data’ is self-explanatory, although ‘big’ often refers to a scale so exponential that many might struggle to conceptualise it. The uses of ‘big data’ may also be difficult to understand, so it is a concept that we return to shortly.

- Technologies that are not necessarily digital in themselves but that are linked to those that are, also need to be considered. Industrial biotechnology, 3D printing and nanotechnology can all interact with digital processes in new and exciting ways.

This report is concerned with the impact of digital technology on jobs and wages, rather than its impact on the way we work. Technology is also having significant impacts on the way work is organised and monitored whether that is through platform companies, or the impact of surveillance at work. Those will be the subjects of future TUC reports.

### **Digital Technology as a potential force for good**

These technologies appear both overwhelming and highly disruptive, so it is worth us outlining, at the outset, the scale and range of some of the benefits.

According to ‘Artificial Intelligence, Automation and the Economy’, published by the Executive Office of the [United States] President [Barack Obama] in December 2016 (henceforth referred to, for simplicity, as the White House paper), AI should be welcomed for its potential economic benefits. The Chair of the US Council of Economic Advisors, Jason Furman, says his biggest worry about AI is that “we don’t have enough of it”. AI technology has opened up new opportunities in health, education, energy, economic inclusion, social welfare, transportation, and the environment. Substantial innovation has taken place in AI, robotics and related tech over the last decade, but, it’s argued, the US will need a much faster pace of innovation in these areas to significantly advance productivity growth going forward.

One illustration of the potential benefits of these new technologies, is given in a 2013 article in the Atlantic Magazine, ‘The Robot will See You Now’.<sup>5</sup> Oncologists at Memorial Sloan-Kettering Cancer Centre are using IBM’s Watson computer and big data to provide chronic care and cancer treatment diagnostics.

*“Knowledge from 600,000 medical evidence reports, 1.5m patient records and clinical trials, and two million pages of text from medical journals, are used for benchmarking and pattern recognition purposes. This allows the computer to benchmark each patient’s individual symptoms, genetics, family and medication history, etc, to diagnose and develop a treatment plan with the highest probability of success.”*

Digitalisation could help us to address the productivity crisis that has affected many countries since the economic downturn of 2008. Alastair Nolan, Senior Policy Analyst in the Directorate for Science, Technology and Innovation at the OECD, was interviewed for this report, Alastair Nolan said:

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<sup>5</sup> <https://www.theatlantic.com/magazine/archive/2013/03/the-robot-will-see-you-now/309216/>

## Introduction

*“... all of the OECD economies are facing a productivity crisis, and better use of digital technologies could help to remedy the decline in the rate of growth of labour productivity that we’ve seen, and which has been particularly marked since the financial crisis... the UK’s challenges are particularly acute, because the UK has lower labour productivity than in many OECD counterparts, and also has relatively low levels of investment in research and development.”*

Alistair Nolan gave further examples of the varied ways in which digitalisation can increase productivity:

*“General Electric has developed an AI for its wind turbines, so that each individual wind turbine can orientate itself to maximise its own electricity generation. Then it takes into account the effect of the backdraft from itself on other windmills in the farm, so there’s a sort of collective optimisation process.”*

*“Nano technology can ... allow you to make certain plastics electrically conductive, so that if you’re spray painting a car that has many plastic parts you can spray those plastic parts along with the metal parts. They don’t have to be taken aside into a separate process. That alone will save about \$100 a car.”*

Alistair Nolan also described how digital processes developed by Deep Mind, the AI company owned by Google, were used to save energy at Google Data Centres:

*“... Google’s data centres account for about 0.01% of all electricity consumption in the world... In 2016 Deep Mind’s learning algorithms were applied to the management of Google’s data centres and within hours that AI was able to reduce electricity consumption by around 15% and to reduce costs by about 40%. That’s within hours, the system learning by itself, and potentially reducing 15% of 0.01% of global electricity consumption, that’s a significant and immediate payback....”*

As well as saving energy – and costs – for Google, of course, this use of AI reduced the company’s carbon footprint and so played a small part in the battle against climate change. Other, possible sustainable practices require more monitoring and regulation. Alastair Nolan gave another example, this time with regards to nanotechnology:

*“... scientists at Manchester University have found a way of using nano technology to develop a nano sieve from graphene. So this is a sieve where the pores would be so fine that they could physically filter out salt modules. That opens the possibility of water distillation processes with minimal energy consumption... which could have huge benefits for the developing world in particular for obvious reasons... At the same time there is a lot that we don’t understand about the long term health impacts of nano particles. Nano particles are not easily recognised by the immune system, and they can get into the bloodstream because of their dimensions... So that’s an example of where new technology requires monitoring, and possibly new regulation and enforcement on the part of public authorities; the technology could have socially beneficial effects ... helping to deal with water purity issues, but also potentially harmful effects on health and safety.”*

There is little doubt as to the positive impact of much technology; its impact on the world of work, however, is not straightforward.

## Section four

# What impact has new technology had in the past?

AI and robotics have sometimes prompted a dystopian vision of the future but, of course, technological change is nothing new. The fact that these technologies are sometimes referred to as the ‘fourth industrial revolution’ indicates that there have been three similar breakthrough periods of economic history before this one.

## **The three previous ‘industrial revolutions’<sup>6</sup>**

### *Industry 1.0: Industrialisation*

This is the beginning of the industrial age, around 1800. For the first time, goods and services were produced by machines. The steam engine was the essential invention of the first industrial revolution, replacing many employees, which led to social unrest. Steam engines provided energy at any location for any purpose.

### *Industry 2.0: Electrification*

Electrification began at the end of the nineteenth century and led to the assembly line, which was first used in the automotive industry. Separate steps were executed by workers specialised in respective areas. Automatically manufactured goods were transported to different continents for the first time.

### *Industry 3.0: Information Technology*

The 1970s saw information technology and further automation through electronics. Personal computers and the internet meant global access to information and automation of working steps.

Fears about the impact of these changes on jobs and wages have been persistent. In a speech given to the TUC in November 2015, the Deputy Governor of the Bank of England, Andy Haldane, quotes Gregory Ray Woirol as stating that fears of the negative impact of technology on jobs – so called technological unemployment – go back at least to the invention of the wheel.<sup>7</sup> John Maynard Keynes addressed this issue in the 1930s, though rather than seeing technology as a curse, he believed it to be a blessing that would create a new “leisure class”. In 1964 US president Lyndon B Johnson convened a “Blue-Ribbon National Commission on Technology,

<sup>6</sup> As set out in IBA Global Employment Institute (2017) *Artificial Intelligence and Robotics and Their Impact on the Workplace*

<sup>7</sup> <http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech864.pdf>



Automation, and Economic Progress”, and in 1978, UK Prime Minister Jim Callaghan asked a Whitehall think tank to investigate the potential impacts of silicon technology on jobs.<sup>8</sup>

These fears rest on the idea that new technology will replace humans in the workplace, leading to lower employment, and, as workers compete for a decreasing supply of jobs, lower wages for those still in work.

Set against these fears is an optimistic vision that focuses on how the gains in productivity that technology can deliver lead to increased prosperity. As goods and services can be produced more efficiently, they become cheaper – for example, Hewlett Packard’s first foray into producing a business computer in 1972 cost around the equivalent of \$500,000 in today’s prices<sup>9</sup> – compared to a cost of around \$500 today. This means that people have more to spend on other goods and services – meeting new needs, or wants, and raising employment in these new areas of work and production.

Here we briefly review the evidence on what has happened in the past to employment and wages as technology has developed, before going on to examine the question of what might happen in the future. We find that while employment has survived previous industrial revolutions, since the 1970s, the share of wages going to workers has fallen.

### **What’s happened to employment?**

With record employment rates in the UK, fears about the impact of technology on jobs are yet to be realised. The graph below uses the Bank of England’s long-run dataset to show the number of people in employment, unemployment, and the average hours worked per week since 1855.

Throughout the three ‘industrial revolutions’ experienced to date, employment has continued to rise. While unemployment hasn’t yet returned to its post war lows, the fears of the ‘60s and ‘70s seem misplaced. Looking at hours suggests that some of Keynes’ predictions have come to pass; there is more leisure in the working week, with average hours worked falling by 50 per cent between the 1950s and today – though the current trend would not quite get us to the 15 hour working week he predicted for the year 2030.

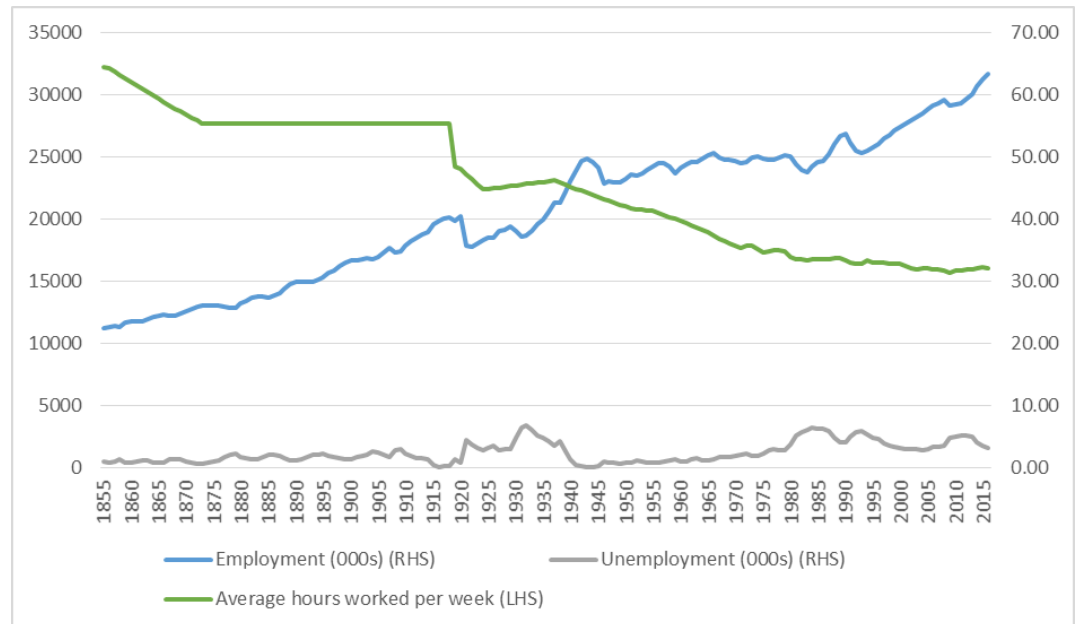
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<sup>8</sup> Via <https://timeline.com/robots-have-been-about-to-take-all-the-jobs-for-more-than-200-years-5c9c08a2f41d> see <https://news.google.com/newspapers?nid=2507&dat=19780620&id=8LZAAAAAIBAJ&sjid=sqUMAAAAIBAJ&pg=5867,4456977&hl=en>

<sup>9</sup> <http://247wallst.com/special-report/2016/04/15/how-much-a-computer-cost-the-year-you-were-born/2/>

## What impact has new technology had in the past?

**Chart 1: Employment, unemployment and average hours worked per week 1855-2016**

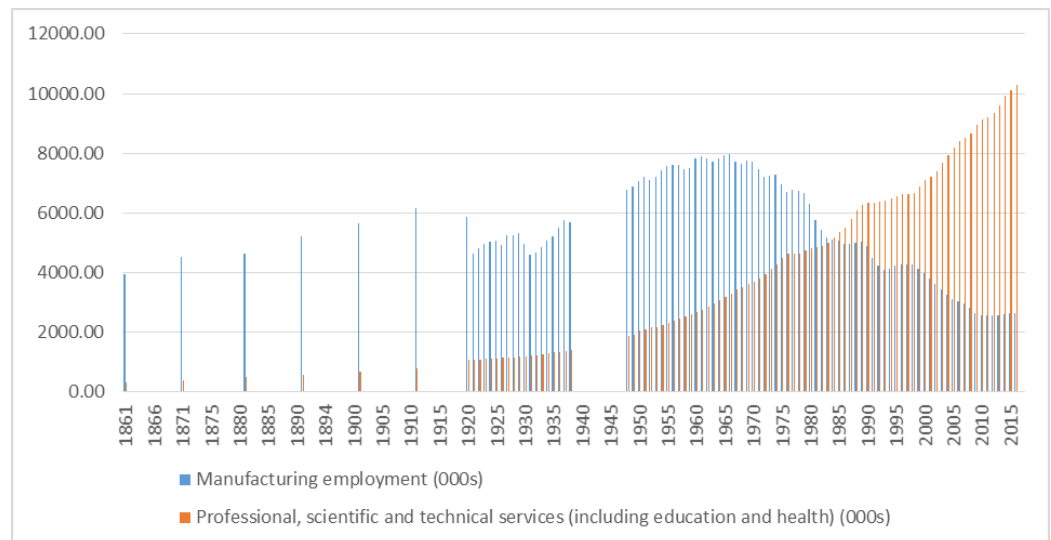


Source: Bank of England: *A millennium of macroeconomic data for the UK*  
*The Bank of England's collection of historical macroeconomic and financial statistics*  
 Version 3 - finalised 30 April 2017

This doesn't mean that the introduction of technology has come without disruption. The nature of work has dramatically changed; the graph below (again from the Bank of England's long run data set) shows the shift in employment during the most recent phase of industrial change away from manufacturing, and towards professional service jobs. The graph shows the numbers of people employed in each job; looking at the share of employment in 1950, almost one in three workers (29 per cent) worked in manufacturing, while one in 12 (8 per cent) worked in professional and technical services. By 2016 these shares had reversed (29 per cent worked in professional and technical services, and 9 per cent in manufacturing).<sup>10</sup>

<sup>10</sup> Bank of England – a Millennium of Macroeconomic data  
<http://www.bankofengland.co.uk/research/Pages/datasets/default.aspx>

**Chart 2: Number of people employed in manufacturing and professional and technical services, 1861 - 2016**



Source: Bank of England: *A millennium of macroeconomic data for the UK*  
*The Bank of England's collection of historical macroeconomic and financial statistics*  
 Version 3 - finalised 30 April 2017

While the trend across the country may have been for one type of job to be replaced by another, this effect has been felt unevenly across the UK. In areas previously dominated by heavy industry, median pay is now around ten per cent lower than the national average, reflecting the poorer quality of jobs now available in these areas.<sup>11</sup>

### What about wages?

In the middle of the longest wage squeeze since Napoleonic times, the impact of technology on wages may seem like a more pressing question than the impact on employment.

*The last thirty years have seen a fall in the labour share*

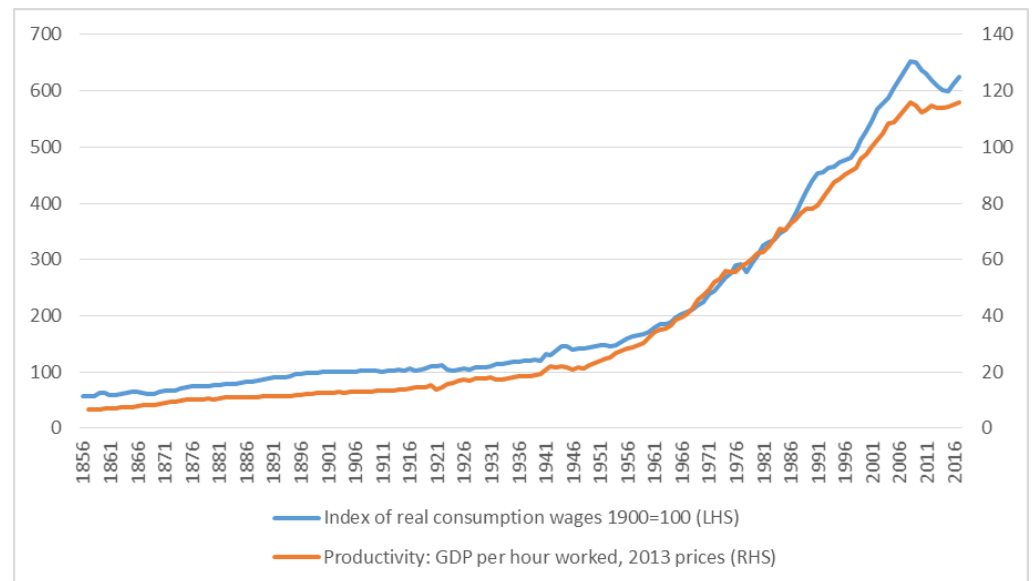
We are often told that for wages to rise, productivity needs to rise first – that is, before employers can afford to pay their staff a higher wage, they need to be able to produce more for each worker employed. The long-term evidence shows a strong link between wages and productivity – and suggests that the impact of technology on living standards has been positive. The graph also makes clear just how unusual the

<sup>11</sup> Industrial Communities Alliance (2017) Low pay in older industrial Britain  
[http://www.industrialcommunitiesalliance.org/uploads/2/6/2/0/2620193/low\\_pay.pdf?mc\\_cid=454b722eed&mc\\_eid=43e55eb60f](http://www.industrialcommunitiesalliance.org/uploads/2/6/2/0/2620193/low_pay.pdf?mc_cid=454b722eed&mc_eid=43e55eb60f) The Industrial Communities Alliance defines 'older industrial Britain' as "places once dominated by industries such as coal, steel, shipbuilding, textiles and heavy engineering".

## What impact has new technology had in the past?

current flatlining in both productivity and wages is in historical terms, and recent data shows that productivity has not risen in the UK since the financial crisis.<sup>12</sup> Looking at this suggests that future increases in productivity – fuelled by an upsurge in technology, could be what we need to help boost wages in the future.

**Chart 3: Real wage growth and productivity 1856-2016**



Source: Bank of England: *A millennium of macroeconomic data for the UK*  
*The Bank of England's collection of historical macroeconomic and financial statistics*  
 Version 3 - finalised 30 April 2017

However, there is some evidence that the most recent wave of technological change – from the 1970s onwards - has not seen the full benefits of the productivity increases that we have seen passed onto workers.

This is clearest at an international level, where there is increasing concern about the decline in the ‘labour share’ – the proportion of national income ending up in workers’ pockets.

The Organisation for Economic Cooperation and Development (OECD) calculates that between 1990 and 2009 the labour share fell in 26 of the 30 advanced economies for which data was available. The median labour share in these economies fell from 66.1 per cent to 61.7 per cent over this period.<sup>13</sup> More recently the OECD has

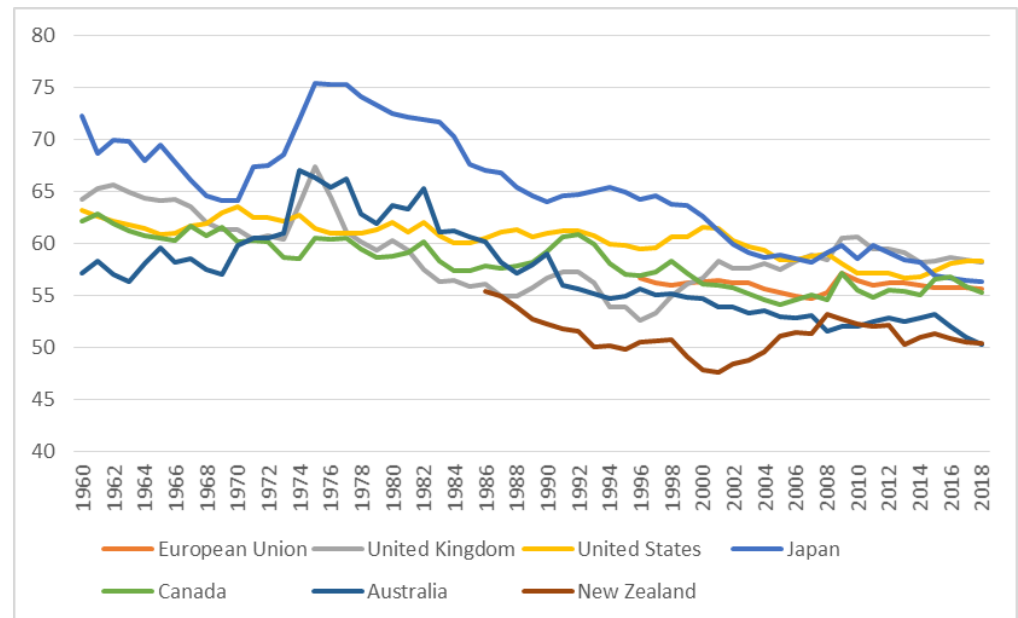
<sup>12</sup> ONS (2017) UK productivity introduction: Jan to Mar 2017

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/article/s/ukproductivityintroduction/jantomar20177>

<sup>13</sup> [http://www.oecd.org/els/emp/EMO%202012%20Eng\\_Chapter%203.pdf](http://www.oecd.org/els/emp/EMO%202012%20Eng_Chapter%203.pdf)

calculated that the average labour share in G20 countries shrank by approximately 0.3% a year in the three decades from 1980.<sup>14</sup>

**Chart 4: Adjusted labour share, selected advanced economies<sup>15</sup>**



Source: AMECO<sup>16</sup>

There is debate about the drivers behind the decline in income going to wages, but the fact that it is common to such a wide range of countries, not just the UK, suggests that many of the causes are global. The IMF calculates that 90% of the decline in labour share occurred within – rather than between industries, rather than as a result of employment moving from labour intensive sectors to more capital intensive ones.

There are broad trends that can be seen across most developed economies. Falling taxes on corporate profits can strengthen the incentive to invest in capital rather than employ more workers, for example, while a fall in union density has weakened the bargaining power of many workers. Globalisation has also put pressure on the wage share in sectors of advanced economies that are most at risk of outsourcing to lower wage countries.

But the IMF finds that technological change has been the largest contributor, accounting for about half of the decline in the labour share across advanced economies. The impact of technology is twofold. Firstly, faster productivity growth in the capital goods sector compared to other areas of the economy means that the

<sup>14</sup> <https://www.oecd.org/g20/topics/employment-and-social-policy/The-Labour-Share-in-G20-Economies.pdf>

<sup>15</sup> Compensation per employee, multiplied by number of employees, divided by GDP at factor costs

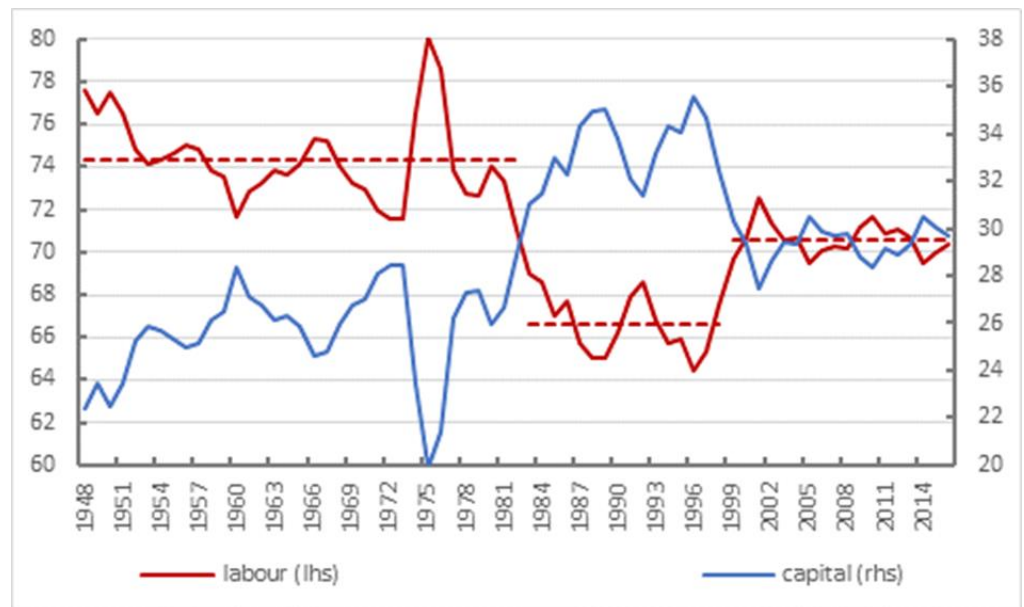
<sup>16</sup> [http://ec.europa.eu/economy\\_finance/ameco/user/serie/ResultSerie.cfm](http://ec.europa.eu/economy_finance/ameco/user/serie/ResultSerie.cfm)

## What impact has new technology had in the past?

relative price of investment in advanced economies has declined by more than 13% since 1990.<sup>17</sup> This has lowered the price of substituting capital for labour in many sectors. Secondly, advances in information technology have greatly expanded the range of jobs that can be automated or routinised. These two factors appear to interact, and the IMF calculates that, for a given change in the relative price of investment, economies with high exposure to routinisation experienced about four times the decline in labour share as those with low exposure.<sup>18</sup>

Within the UK, the share in income going to wages seems to have held up slightly better, but to have fallen since the 1970s. There was a strong fall in the labour share between the 1940s and the early eighties (with an average share of 74.3 between 1948 and 1982 falling to 66.7 between 1983 and 1998), with spikes around the three recessions over this period. These spikes were the result of the time lag that generally occurs between economic output shrinking, and wage levels responding to this, and do not affect the overall trend. The wage share then recovered somewhat in the decade ahead of the 2008 financial crisis, but has not recovered its previous heights (with the average between 1996 and 2016 at 70.6, around four percentage points below the 48-82 average).

**Chart 5: Labour and capital shares 1948-2016**



Source: ONS and TUC calculations (derived as a share of compensation of employees plus gross operating surplus)

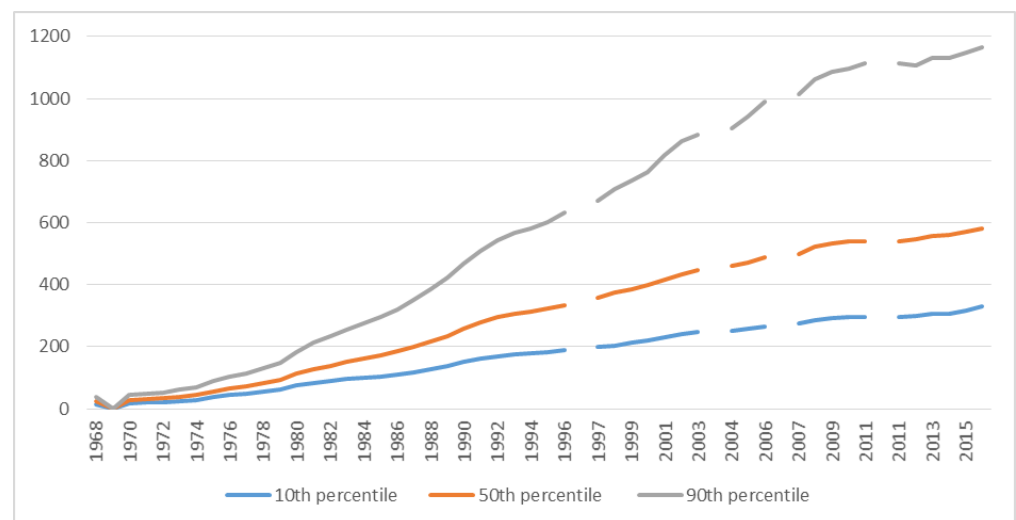
<sup>17</sup> <http://www.imf.org/en/Publications/WEO/Issues/2017/04/04/world-economic-outlook-april-2017>

<sup>18</sup> <http://www.imf.org/en/Publications/WEO/Issues/2017/04/04/world-economic-outlook-april-2017>

### *Earnings inequality has also risen*

Wage prospects depend not just on the share of GDP going in total to workers, but also to how that share is distributed. The other significant trend in the last three decades has been a significant increase in the gap between the highest paid and the average workers. In 1968, the average male worker earned 60 per cent of a worker in the top ten per cent; by 2016 this had fallen to 50 per cent.

**Chart 7: Male median weekly earnings at the 10th, 50th and 90th percentile, 1968 to 2016**



Source: ONS analysis of New Earnings Survey and ASHE<sup>19</sup>

Shifts in the nature of work due to technological change have helped drive some of this change. The OECD's 2017 employment outlook identified technology as the main driver of increasing job polarisation over the past two decades, with a decline in middle skill jobs accompanied by a rise in low and high skilled employment in all countries they examined, including the UK.<sup>20</sup>

However, technology is not the only cause. The declining coverage of unions is likely to have widened inequality: As the International Labour Organisation have shown "... broad collective bargaining coverage contributes to a narrower distribution of income and more stable growth."<sup>21</sup>

The chart below shows the association in the UK, with the increase in inequality in the UK coinciding with the fall in the share of the workforce represented by a trade

<sup>19</sup> See

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/adhocs/006302annualsurveyofhoursandearningsashetimeseriesofmediangrossweeklyearningsfrom1968to2016>

<sup>20</sup> OECD (2017) Employment outlook 2017

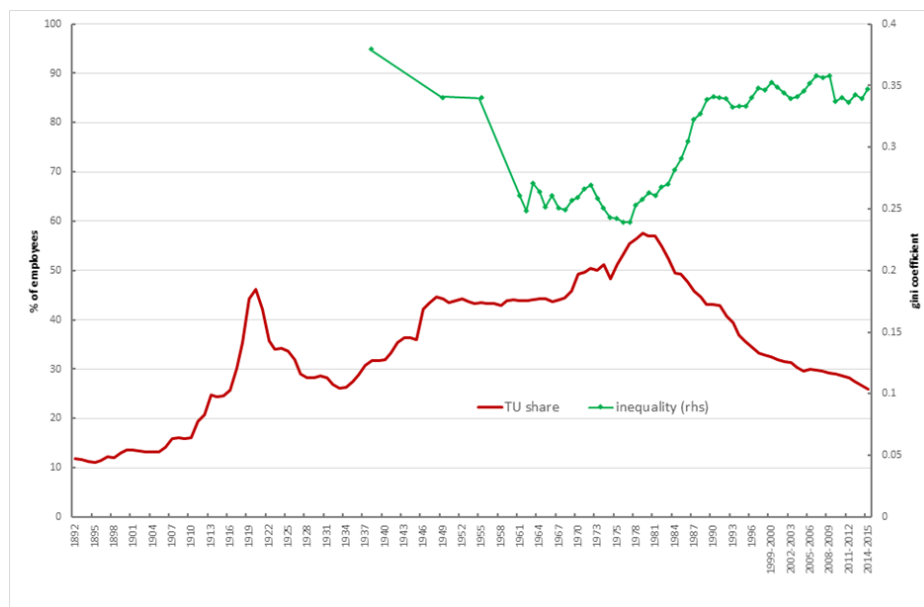
<sup>21</sup> ILO (2017) ILO Global Wage Report 2016/17 see [http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms\\_537846.pdf](http://www.ilo.org/wcmsp5/groups/public/-dgreports/-dcomm/-publ/documents/publication/wcms_537846.pdf)

**What impact has new technology had in the past?**

union, suggesting the importance of increasing collective bargaining within the UK as a key means of tackling inequality.



**Chart 8: Trade union coverage of the workforce and inequality in the UK**



Source: *TUC analysis of ONS data on trade union coverage and World Income Inequality database<sup>22</sup> on the gini co-efficient*

### What does this mean for the next wave of technological progress?

In the next section we look at a range of predictions for how the next wave of technological progress could play out. Of course, there is nothing to say that this wave should have the same impact as previous episodes of technological change, and there are many who argue that ‘this time is different’. But the evidence to date suggests that while perhaps we should be less worried about the impact of productivity gains on the level employment, we need to look closely at how the rewards from productivity are shared.

<sup>22</sup> See here: <https://www.wider.unu.edu/database/world-income-inequality-database-wiid34>

## Section five

# What can we expect to happen to work following this latest technological revolution?

So far in this report, we have identified what digital technologies are and we have explored their potentially positive impact on the economy, including boosting productivity. We have also seen how historically, productivity increases associated with new technologies have led to a rise in real wages but that this trend started to break down in the 1970s and has stuttered since. So what do we think will happen to jobs and pay following this latest technological breakthrough?

## The impact on jobs

Previous technological changes have seen major shifts in the nature of work, for example, in the shift from employment in manufacturing to employment in professional services. Many of these shifts have involved a move from jobs involving more physical tasks, to those involving more cognitive work. A major question arising from the new wave of digital technologies is what will happen as more of these cognitive tasks can be performed by artificial intelligence and other forms of new technology.

The most famous study to attempt to predict the effects of digitalisation on jobs is *'The Future of Employment: How Susceptible are Jobs to Computerisation'*, by Carl Frey and Michael Osborne, published in September 2013.

Frey and Osborne distinguish between high, medium and low risk occupations, depending on their probability of digitalisation. According to their estimate, 47 per cent of total US employment is in the high risk category, which means that associated occupations could potentially be automatable over a certain timeframe, perhaps one or two decades.

Frey and Osborne foresee two waves of digitalisation, separated by a “technological plateau”. In the first wave, they argue, most workers in transportation and logistics occupations, along with the bulk of office and administrative support workers, and labour in production occupations, are likely to be substituted by computer capital. Frey and Osborne also find that a substantial share of employment in services, sales and construction occupations show high probabilities of digitalisation.

Since its publication, the Frey and Osborne study has been subject to considerable scrutiny. Perhaps the best known alternative estimate is by Melanie Arntz, Terry Gregory and Ulrich Zierahn, authors of *'The Risk of Automation for Jobs in OECD Countries'*, a report which challenges the methodology of Frey and Osborne.

Whereas Frey and Osborne assume that whole occupations, rather than single tasks, would be automated by technology, the OECD study believes that many occupations listed by Frey and Osborne as high risk occupations often still contain a substantial share of tasks that are hard to automate. For this reason, Arntz et al suggest that Frey and Osborne's numbers are an over-estimate. Arntz et al estimate the job automatibility of jobs for 21 OECD countries, based on a task-based approach and find that, overall, on average across the 21 OECD countries, nine per cent of jobs are at risk of automation. The threat from technological advances thus seems much less pronounced compared to the occupation-based approach of Frey and Osborne.

Other studies have drawn on these two methodologies. The Bank of England has used Frey and Osborne's methodology to produce estimates of job susceptibility for the UK. The Bank's figures are shown in the following table:

**Table One: Percent of employment at risk of automations:**

| <b>Risk of automation</b> | <b>US (Frey and Osborne [2013])</b> | <b>UK</b> |
|---------------------------|-------------------------------------|-----------|
| Low (< 33 %)              | 33                                  | 37        |
| Medium (33-66%)           | 10                                  | 28        |
| High (> 66%)              | 47                                  | 35        |

Source: Frey and Osborne (2013); Bank calculations. Notes: The UK probability of automation figures are based on estimates in Frey and Osborne (2013) matched against UK occupations

For the UK, roughly a third of jobs by employment fall into each category. Administration, clerical and production tasks, in the UK as in the US, are among those occupations most at risk. Andy Haldane told the TUC in December 2015 that by taking the probabilities of automation and multiplying them by the numbers employed, we can reach an estimate of the number of jobs potentially at risk of automation. For the UK, according to Haldane, up to 15 million jobs could be lost to automation.<sup>23</sup>

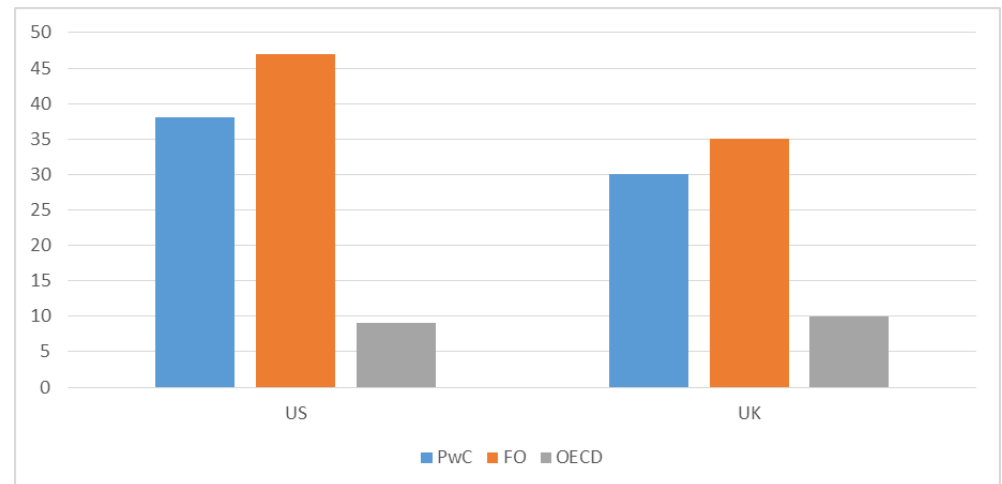
Following from the Bank's analysis, the consultancy PwC has offered a third look since, it argues, that whilst Frey and Osborne used a different methodology to the OECD, the difference in their results is nevertheless very large given that they started from a similar assessment of occupation level automatability. Using additional data and developing its own machine learning algorithm for identifying automation risk, PwC concluded that the methodology used at the OECD over-exaggerated the

<sup>23</sup> Andy Haldane (2015) Labour's share – speech at the Trades Union Congress  
<http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech864.pdf>

## What can we expect to happen to work following this latest technological revolution?

mitigating effect of measuring tasks rather than roles. Using its preferred methodology, PwC found that around 30% of jobs in the UK are at potential high risk of automation, compared to around 38% in the US.

**Chart One: What proportion of jobs are potentially at high risk of automation?**



Sources: *PwC analysis; FO; OECD*

A variety of studies have looked at how automation might affect different sectors and occupations. PwC found that over half of the potential job losses they identify are in four key industry sectors: wholesale and retail trade, manufacturing, administrative and support services, and transport and storage. The Resolution Foundation has suggested that the ‘industry sectors’ with the highest probabilities of automation are legal and accounting activities, forestry and logging, crop, animal production and hunting, and fishing and aquaculture.<sup>24</sup>

Perhaps the main conclusion to be drawn from this is that the impact of automation on jobs is uncertain – with estimates ranging from 10 per cent to 30 per cent of jobs in the UK being at risk. It is important to note that these do not mean that the total number of jobs will decrease by 10-30 per cent; if the past is a guide to the future, then the likelihood is that these jobs could be replaced by new occupations and professions. What we do know is that a significant number of current jobs are liable to be lost to digitalisation and that policy makers must plan to mitigate that outcome.

### What about wages?

If, as the long run evidence suggests, wages rise with productivity, then the new wave of technological innovation could enable workers’ pay to rise. PwC have estimated that UK GDP will be up to 10 per cent higher in 2030 as a result of

<sup>24</sup> <http://www.resolutionfoundation.org/app/uploads/2016/07/Robot-wars.pdf>

artificial intelligence, the equivalent of an additional £232 bn, and equivalent to extra spending power of up to £2,300 a year per household by 2030.<sup>25</sup>

It's worth noting that these productivity improvements have yet to make their mark on the UK economy – with no increase in productivity since 2007 – a historic period of flatlining.<sup>26</sup> Could a new bout of robotisation help kickstart a productivity and in turn a wage revival?

Fewer predictions have been made about the impact of technology on wages in the future than on jobs, although as set out in the previous chapter, there is evidence that the last wave of technological change may have led to wider employment polarisation, and a decline in middle skill jobs. However, estimates of the types of jobs that are likely to be lost suggest that it is those who currently experience low wages who may see their work most at risk.

The PwC study included a breakdown into gender and levels of education, as shown in table 2:

**Table 2: Employment shares, estimated proportion and total number of employees at potential high risk of automation by UK worker characteristics**

| Worker characteristics        | Employment share (%) | Job automation (% at potential high risk) | Jobs at potential high risk of automation (millions) |
|-------------------------------|----------------------|-------------------------------------------|------------------------------------------------------|
| Gender:                       |                      |                                           |                                                      |
| Female                        | 46%                  | 26%                                       | 4.1                                                  |
| Male                          | 54%                  | 35%                                       | 6.3                                                  |
| Education:                    |                      |                                           |                                                      |
| Low education (GCSE or lower) | 19%                  | 46%                                       | 3.0                                                  |
| Medium education              | 51%                  | 36%                                       | 6.2                                                  |
| High education (graduates)    | 30%                  | 12%                                       | 1.2                                                  |

Sources: *PwC estimates using PIAAC data*

This table shows that those with lower levels of education are at greatest risk of job automation, and that men face a greater risk than women.

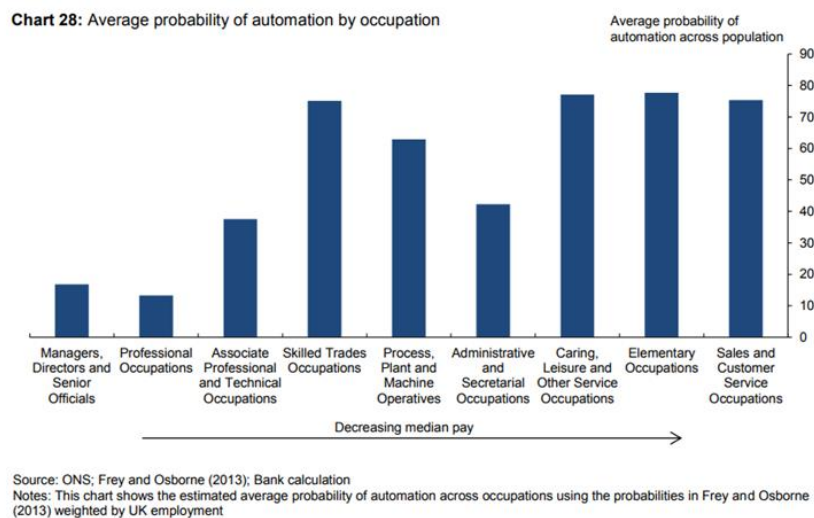
<sup>25</sup> <https://www.pwc.co.uk/economic-services/assets/ai-uk-report-v2.pdf>

<sup>26</sup>

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/labourproductivity/bulletins/labourproductivity/jantomar2017>

## What can we expect to happen to work following this latest technological revolution?

The Bank of England have also used Frey and Osborne's methodology to see how automation might affect wages and skills throughout the economy. As is perhaps predictable, those most at risk from automation tend, on average, to have the lowest wages.



This pattern suggests that we may see a repeat of wage trends in the most recent wave of technological change. As those with 'lower' skill levels see their jobs change or disappear, competition for the remaining jobs available may push wages downwards – unless there is pressure from elsewhere – leading to a further rise in wage inequality.

In a 2016 paper, IMF economists tried to develop a simple model estimating what would happen to wages, following the Frey and Osborne initial prediction that around half of all jobs could be replaced by robots. Their conclusions were gloomy, and again suggest that lowest skilled workers are at the greatest risk. They argue that robots will increase the supply of total effective labour – driving down wages. Investors will then choose to invest in robots rather than other forms of capital – for example, buildings or machinery, meaning there's less demand for workers in those areas, and lowering their wages again. Over time, robots become more productive, increasing the returns to their owners – with wages falling still further:

*"Inequality now increases for two fundamental reasons.... capital receives a greater share of total income. In addition, wage inequality worsens dramatically. Productivity and real wages paid to skilled labor increase steadily, but low-skilled workers wage a lonely battle against the robots and lose badly."*<sup>27</sup>

Much like the estimations of job loss, this is work based on a model using a range of assumptions – not a certain prediction about the future. But the fall in the labour

<sup>27</sup> <http://www.imf.org/external/pubs/ft/fandd/2016/09/berg.htm>

share, and rise in wage inequality experienced during the last period of technological change suggests that we should think not only about the impact of increased productivity on the number of jobs, but more widely about how the benefits of that increased productivity are shared.

The next section looks at how two different economies, America and Germany, propose to address that challenge.

## Section six

# Policy recommendations from the United States and Germany

This section compares policy responses to digitalisation from the United States and from Germany.

The evidence we present here from the US comes from the White House paper introduced above. The evidence from Germany, presented in two case studies, is based on new research undertaken through interviews with an official from the metalworkers union, IG Metall, and a senior member of the Airbus Works Council. Before that, we explore Re-imagining Work, Germany's White Paper, and Work 4.0. This latter report is the result of a consultation paper launched in April 2015, to which trade unions, businesses and other interested parties submitted evidence. The over-arching aim of the consultation paper was to preserve, or even strengthen, Germany's vision of quality jobs and decent work in an era of digital transformation and societal change.

## The White House Paper

'Technology is not destiny'. Those four words were written by the Executive Office of the US President but could easily have come from the trade union movement, which has consistently argued that it is not economic developments or breakthrough technologies, as such, that determine the fortunes of working people; the issue is the policy response that greets those developments and technologies.

The White House paper recommends that we invest in and develop Artificial Intelligence for its many benefits. This includes AI research and development, and to develop AI for cyber defence and fraud detection.

The White House paper also calls for the development of a larger, more diverse AI workforce, especially in entrepreneurship, as well as science, technology, engineering and mathematics (STEM) fields. The paper highlights research showing that diverse groups are more effective at problem solving than homogeneous groups, further strengthening the argument for seeking more women and workers from minority ethnic backgrounds in STEM. Most of those recommendations could equally apply to the UK.

The single most important government intervention to prepare for digitalisation is education and training. Calls made in the White House paper with regard to education and skills include:

- high quality early education;



- education that results in all students leaving school either college- or career-ready and for young people to have access to an affordable post-secondary education that
- What is known in the UK as ‘lifelong learning’ i.e. “A commitment to preparing Americans to adapt to continuous and rapid technological change in the future... significantly expand[ing] the availability of high-quality job training to meet the scale of need;
- expanding access to apprenticeships, with the paper noting that, according to research, “apprentices earn a significant premium for their skills – as much as \$300,000 more than their peers over a lifetime.”

The third strategic recommendation from the White House paper is to aid workers in the transition to a digital future and to empower workers to ensure broadly shared growth. Aiding workers, according to the White House paper, includes:

- strengthening the social safety net, in areas such as improving unemployment insurance;
- work-sharing programmes to help employers to keep their key staff by reducing their hours instead of laying them off during times of transition, with workers whose hours are cut receiving partial unemployment benefits;
- Job-search assistance for workers who lose their jobs;
- strengthening other social safety net programmes, especially among low income workers;
- raising the minimum wage;
- modernising US regulations to protect overtime.

The White House paper then states:

“Growing and sustaining the middle class requires strong labour unions. Labour unions help to build the middle class and have been critical in restoring the link between hard work and opportunity so the benefits of economic growth can be more broadly shared. Unions have been at the forefront of establishing the 40-hour work week and the weekend, eliminating child labour laws, and establishing fair benefits and decent wages. Policymakers should explore ways to empower worker voice in the workplace through strengthening protections for organising and creating new and innovative ways for workers to make their voices heard.”

The White House paper calls for ‘place-based’ initiatives, focused on economically challenged areas, which empower local leaders in participating communities.

**‘Re-Imagining Work’ – Germany’s response to ‘industrie 4.0’**

- ‘Re-imagining Work’ focuses on the six key questions that it believes the policy response to digitalisation must address:
- Will digitalisation enable everyone, as far as possible, to have a job in the future?
- What will be the impact of new business models such as ‘digital platforms’ on the work of the future?
- How can employees’ legitimate entitlement to data protection be guaranteed?
- If humans and machines work together ever more closely in the future, how can machines help to support and empower people in the way they work?
- What might solutions to flexibility look like which also improve options for workers, in terms of when and where they do their work?
- What will the modern company of the future look like?

For ‘Re-imagining Work’, the technological and economic transformation that we are experiencing will likely transform occupations and activities, in the light of which it is necessary to invest in boosting skills and improving individual prosperity for advancement at an early stage. This support must be focused on prevention; it should not only target low skilled workers, take effect later in a person’s working life or immediately prior to redundancy. Instead, it should follow a broader approach.

‘Re-Imagining Work’ proposes a new monitoring of future skilled-labour needs, to be undertaken by the Federal Ministry of Labour and Social Affairs. Analytical results could then be discussed by the government and social partners when assessing future skill requirements. This must be accompanied by a comprehensive strategy for long-term skills development and continuing vocational training, the implementation of which would involve all relevant ministries of the Federal Government, the Lander (regional governments), the social partners and other stakeholders.

Skills development must take into account both the specific needs of companies in relation to their immediate requirements and the wider needs of the workers for whom continued vocational education and training helps to maintain and improve their individual employability. The costs relating to continuing vocational education and training, release from work and wage replacement, must therefore be shared fairly between the state (as education and training is also in the national economic interest), companies and individuals.

Continuing education and training must address the relatively large disparities in the distribution of access, particularly bearing in mind the needs of people over the age of 50, low-skilled people, people from migrant backgrounds, employees of small companies and temporary, agency workers.

Another recommendation from ‘Re-imagining Work’ is the gradual transformation of the current unemployment insurance into an employment insurance, to allow more preventive support for workers. This would include the right to independent advice

on lifelong learning, training and upskilling. A future aspiration would be the introduction of a legal right to continuing vocational education and training.

‘Re-imagining Work’ also proposes the piloting of a Working Time Choice Act, which would combine greater choice for workers with regard to working time and location, with a conditional possibility to derogate from some provisions of the Working Time Act on the basis of a collective agreement between the social partners. Such a piloted derogation would initially be limited to a two-year trial period. ‘Re-Imagining Work’ also proposes the extension of collective bargaining coverage and, eventually, a generally binding collective agreement for the social care sector.

‘Re-imagining work’ suggests the strengthening of firm level negotiations between the social partners. In order to encourage more self-employment and start-ups, it also proposes the inclusion of self-employed individuals in the statutory pension insurance system, alongside employees. This paper also suggests a Personal Activity Account, as a form of “social inheritance” which can be used for skills development, starting a business or career breaks for personal reasons.

Both the White House paper and ‘Re-Imagining Work’ are rich in ideas about meeting the challenge of digitalisation. The first paper focuses on digitalisation and Artificial Intelligence as concepts while the second is more concerned about those concepts as they affect the world of work. More than this, however, the two papers differ in tone and culture. The White House paper is fulsome in its recognition of the importance of trade unions (it’s hard to imagine the current White House recognising unions’ value in this way), but there is little sense of unions helping to shape the ideas in the paper, despite the fact that US unions are engaged in this issue; ‘Re-Imagining Work’, by contrast, has union ideas and interests running through the document. Leaving aside the importance of trade unions, the White House paper presents digitalisation as something that happens to economies (and by extension, to workers), to which political actors respond; ‘Re-Imagining Work’ casts the digital agenda as something that workers themselves help to shape. They become active participants, not passive observers, in shaping their own destiny.

‘Re-imagining Work’s emphasis on security and flexibility is vital. Clearly workers as well as employers need security and workers understand the company’s need for flexibility (a concept that can benefit workers too), but flexibility cannot be used as an excuse for exploitation. Unions are important in defining and implementing flexibility at the workplace as an important safeguard against that danger. Similarly, the question posed by ‘Re-imagining Work’, asking “how can machines help to support and empower people in the way they work” is important, as it can feel that this debate is too often focused the other way around.

### Case Study One: the Work of IG Metall

IG Metall is Germany's metalworkers union. The largest union in both Germany and Europe, IG Metall has about 2.2 million members. Moritz Niehaus of IG Metall's "Future of Work" Department has considered the nature of employment in the age of digitalisation, or what is known in Germany as Industrie 4.0.

The term Industrie 4.0 was coined by, among others, Henning Kagermann, Head of the German Academy of Science and Engineering, ACATECH, in light of the fact that, as we have seen, three previous industrial transformations happened before this one. In essence, Industrie 4.0 refers, according to Moritz Niehaus, to *"an integration, a networking of production, all along the value-chain: from the suppliers, throughout the production process, with all its indirect aspects, to the customer. Track it, network it, integrate it, make it totally digital - that's the vision (of Industrie 4.0)."* This means that *"humans and machines interact just as if they were the same. It shall not matter whether they're human or machine, they are all in the so called cyber-physical system..."*

#### Attitudes towards Industrie 4.0

The debate around digitalisation has provoked concern for the future of employment in many countries. In Germany, there is much less fear than elsewhere. Moritz says the perception in the public sphere is, "something big is coming, but it's not going to hit us so hard that we will have millions more unemployed people. At least that's the perspective here in Germany."

That is not a universal view. There is some fear of the unknown, in Germany as elsewhere. Moritz is also aware that workers in unionised companies or those with strong Works Councils usually face less fear than others. However, Moritz says that, compared to the UK, it might be more difficult to fire workers in Germany, partly for cultural and partly for legal reasons: *"...companies in the industrial sector have a culture of keeping people on board, they don't fire easily. Also because the qualification level in German industry is rather high, people aren't so easily replaceable .... there is a lot of tacit knowledge as well. Also if there is a works council or a high union membership rate on the worksite, then there would be pressure on the company not to fire people. Additionally, the legal situation in Germany needs to be considered; In order to lay off employees with permanent contracts, the company needs to have business related reasons for it. If there is no such proof, the company can still lay off, but subsequently the employees can sue their (former) employer. Then ... the company has to prove in a labour court that there is no workplace where this worker could be shifted to within the entire company."*

Industrie 4.0 will bring positives and negatives, in terms of jobs created or lost. One example of an area that could be impacted will be predictive maintenance, which could threaten, or at least will change, the jobs of skilled workers: *"... a worker with 30 years of experience hears that at a machine something sounds wrong, there's a tune in there that's not correct. In the Industrie 4.0 vision this knowledge is supposed*

*to become obsolete because of sensors that track the sound, vibration, temperature, etc. of machines. Another example: experienced employees go over a sheet of metal with their hand and they feel little faults. Now, with further digitalisation, the idea is to have high resolution cameras or other technologies that do the job to standardise it...”*

Remote maintenance, on the other hand, might provide opportunities: “In Germany there are many factories that build machines, which are then used in other countries... For example at a factory in Portugal where there is down-time because the machine broke... So, in a digitalised industry, somebody in the factory in Portugal goes to the machine with a tablet, films the scene, what's happening there. On the other end of the line there's an expert technician sitting in Germany and she can see the situation, talking via a headset to the mechanic in Portugal. The expert can, for example, draw arrows in the filmed scene that are displayed in Portugal and give some advice, what to do. This reduces downtime and could create employment in Germany – but would also make another expert technician in Portugal obsolete.”

Digitalisation will change some skillsets within jobs. Moritz says: “...Automation is likely to increase and there will be more assistance systems that tell workers what to do. In this way, relatively simple jobs remain or will be created (by de-qualification). This is called the 'polarisation thesis' because there is a very high skilled group of employees who programme those systems, maybe maintain them, set out the algorithms that then define what the other people have to do. But also the 'upgrading thesis' is largely discussed in Germany. Because things are getting more and more complex in a digitalised workplace, low skilled jobs will be replaced partly. Not that they would disappear, but a share will be replaced, and the jobs that remain or will be created are on a higher qualification level.” This points to the need for a skills system that supports those workers in the lower skilled jobs to upgrade.

### **Union responses to Industrie 4.0**

Notwithstanding the fact that many German companies have no union presence, unions are, nevertheless, more influential in Germany than in many other countries and IG Metall has been in dialogue with the Works Ministry with regard to the implementation of industrie 4.0'. An alliance has been formed of the government, big business and unions, and workstreams established. IG Metall is particularly engaged in a work and qualification workstream, from which policy recommendations will be sent to the Federal Government. Moritz argues that IG Metall has brought aspects of employment and working conditions to the debate about Industrie 4.0 because, in Moritz's words, “*at the beginning it was a totally technology driven discourse [with] the vision of networking, computers, robots, automation...and so on, [but] there was not really space for humans in there.*” Moritz believes that a success for IG Metall has been to change the nature of the discussion, from one based on technology to one also concerned with work.

This change in narrative has manifested itself in White Paper Work 4.0. According to Moritz, “*the idea was to have a social dialogue about the future of work*”. This invited a range of stakeholders, including churches, unions, companies, business

associations and NGOs to make submissions with regard to how they see the future of work, which were then brought together in the White Paper. Moritz says: *“So it's a differentiated view, you have all the statements on the side, which come from business associations or from unions. The paper then tries to sum this input up, how a policy could look in the future”*. Moritz believes it to be *“a success, especially compared to the situation in other European countries”* to have a government in Germany under Conservative leadership publishing a paper about the future of work and strongly emphasizing co-determination rights, works councils, trade unions and collective agreements. He says, *“all those things are essential to shape the change”*. Moritz is sceptical about many things in the White Paper, such as the stress on flexibility to meet the demands of globalisation and digital markets which, he argues, is not a new argument. Instead, business associations try to liberalise labour protection, such as working time regulations. But the fact that the Christian Democrat led Government of Angela Merkel is addressing this development on a social partnership basis is an optimistic start to build on for unions.

IG Metall is also acting at the regional level to meet the challenge of digitalisation, for example in the Ruhr Valley, a region of traditional industries such as coal and steel. As Moritz told us: *“There are the same problems as probably in northern England ... high unemployment and poverty ... less and less industry over the last decades - now it's stable, but it's not at a high level.”* IG Metall initiated a project bringing together employers, research science institutes and the local office for employment. This led to dialogue, public meetings and press coverage to promote a regional industrial policy, to think about how the Ruhr Valley can prepare itself for change. As Moritz says: *“The goal is not to lose further industrial employment, but to be ahead or, at least, within this development towards the digital industry. For the region, it is important not to experience the same downturn that happened with steel and coal, when industries were just shut down and not replaced. Nowadays, the Ruhr Valley is eager to see the change, be aware of it and shape it because everyone will lose in that region, if they ... just stick to old things, as they did in the 60s and 70s, as they have experienced before.”*

Moritz believes that works councils improve the implementation of Industrie 4.0 – and there is a great need to improve the application of new technologies: This is illustrated by a survey of attitudes and experiences of digitalisation, carried out last year by the DGB, the TUC's sister organisation. It found 46% of respondents saying that digitalisation had increased their workload, with half of employees saying their workload had remained stable and very few reporting a decrease. Meanwhile, 74% of respondents said that they had no or little influence in the way in which digitalisation is shaping their work.

Moritz said: *“Which is, if you think about it, not surprising. The picker at Amazon or the nurse, who has to document everything digitally now, has no influence over it. But it is fatal ... if you can't shape your working conditions: this is a big problem for good working conditions and it would undermine a sense of coherence... When I participate in research networks with engineers from industrial companies and other research institutes, they think about technologically advanced solutions and how to*

*implement them. They consider the use of more robots or smart glasses. The attitude among these engineers is rather: 'we develop it, we're smart enough knowing what's best and most productive, and then the works council can implement it with workers...' But that is not a good way to go. In contrast, the real participation of employees and the works council at an early stage would be a big opportunity for German companies. To really let the workforce participate would help employers as well as the employees, I think. The social dialogue could in this case be a real strength of the German industrial relations model in the digital era."*

### **Case Study Two: Airbus Works Council, Hamburg-Finkenwerder**

Airbus has four German factories, based in Hamburg, Bremen, Stade and Buxtehude. The largest of those four sites, Hamburg, employs approximately 12,500 people and takes on over 150 apprentices each year. Hamburg is the home to the A320 Family programme, comprising the A318, A319, A320 and A321 aircraft. Structural assembly and equipping of fuselage sections of all four aircraft, as well as final assembly, takes place in Hamburg. This plant is also home to Airbus's A380 major component assembly hall, which houses the structural assembly and the equipping of the forward and complete rear fuselage sections for this new generation of very large aircraft.

Jan Hinz is Vice Chair of the General Works Council of the German civil Airbus factories. Jan is former Chair of the local Works Council in Hamburg. He is also Deputy Chair of the Supervisory Board of Airbus operations, GMBH, and co-chairs the European Airbus Committee, which is a committee of the European Works Council. Jan is a member of IG Metall, the German metalworkers union.

### **The Implementation of Industrie 4.0 at Airbus, Germany**

Jan tells the story of how Industrie 4.0 was implemented at Airbus:

*"It was only in 2015 that we first started tackling Industrie 4.0 from a quantum perspective, place at the company level ... We are increasingly seeing that Industrie 4.0 is impacting working conditions at the local sites and here we are talking about the future ways of working in the aeronautical industry, at Airbus."*

*"So back in 2015 we had a meeting of all German Works Councils, including the management. During this meeting we invited representatives from the German Institute of Artificial Intelligence, the Fraunhofer Institute and our union IG Metall, who are researching the impacts of Industrie 4.0. We wanted to get it from the horse's mouth how far we are going to be impacted by Industrie 4.0."*

*Airbus is a European company and Industrie 4.0 is a very important political issue. It is about getting the development and production on the latest technological level and keeping the topics in Europe. It is very important to get a structure on how to collaborate in the change of work. Therefore, together with the company, the union decided to form a round table to develop the policy. The result is a common explanation for technology, productivity and employment."*

*It was important to have the Federal Ministry on board, because we have to talk about the whole value chain and all the risk share partners must be part of this effort, and this is why we have ensured that the Federal Ministry was a key part of this.”*

*”We told management that we will play our part, but at the same time we want to make sure that you take care of the defence of the job. Within the scope of this system, the works council is involved in projects that relate to the ‘factory of the future’. The first step is to understand which Industrie 4.0 projects exist in the company. When looking at the topics discussed, the works council would then decide where they would get involved..”*

Jan gave the example of Exoskeletons – sometimes known as ‘wearable robots’ and the role of the works council in monitoring their use:

*“Exoskeletons are perhaps a way to encourage people who can no longer perform their work and who want to carry it out, even though they can be physically impaired... Thus the Exoskeleton brings positive employment effects and it can also help reduce the disease rates. But the downside is that the Exoskeleton is linked to a system (wearables) that collects data as long as you carry it. It can perhaps prove my movement and “tell” what I do when I wear it... So it’s all about how we act and manage data, how to exclude certain things, and what needs to be discussed with the company’s management.*

*“When it comes to the planned projects within Industrie 4.0, we have ensured that they are not carried out in an isolated location outside the company. We have ensured that the locals who are later to work in these projects are involved during the test phases so that they know what to expect and this helps to mitigate their fears. It is also important to know that besides the works council we also have shop stewards (395 in Hamburg) from IG Metall monitoring the way these projects are implemented.”*

The works council cannot do this alone, according to Jan. The main principle is to “involve colleagues who are affected by the changes”.

Jan continues:

*“The agreement also states that there is no negative impact on pay or working time during the projects and that jobs are not lost. The employee representatives are very well networked with the politicians in Germany and we are also interested in the fact that Airbus remains a profitable company, in which works councils and trade unions talk about productivity, but a part of the productivity gains must flow back to the workforce in the form of training etc. When it comes to the successful implementation of Industrie 4.0, colleagues have to be trained on the changed processes. This is fundamental.”*

### **How might digitalisation affect Airbus?**

Jan believes that if management and works council work together in the agreed structure at Airbus, the “Industrie 4.0 projects will be implemented well. But it will



*obviously affect the number and different types of jobs. For example, 3D printing will have an effect. Those who work on milling machines and lathes are no longer required in large numbers in the age of 3D printing.”*

On the other hand: “...we still have cable trees that need to be connected to the aircraft, which is manual work and it can't easily be replaced. It may be an option in the future that electronic circuits and the cable trees can be printed on top of the skin of the aircraft that may be an option.” If that were to happen, “colleagues currently responsible for the installation of the cable harnesses must be retrained in order to carry out another activity within the company. And I think this is the responsibility of the company, but this is still something in the future.” Having said all that, “there will always be a role for manual work”.

Jan believes that in logistics companies like Amazon the number of employees can drop dramatically, since the work of digital solutions is taken over. Jan also believes that large companies have better access to politics. For smaller industries, it can become more difficult to get support. This shows that all works councils must work closely with the trade union federations. Together, Jan believes, we must strengthen small companies. However, in a company like Airbus, things will be quite different. Jan adds: “We are particularly supported by the strong company law in Germany. In this way, the works councils have a co-determination with the company.”

It is clear that the Airbus Works Council, along with IG Metall, have achieved major successes in protecting the workforce at the company, but does this come at a cost? Is there not a danger of the company inventing jobs that are not necessary in order to keep to the agreement of no job losses as a result of digitalisation? Would that not have a downward effect on productivity, as well as create difficulties for the employee, as workers need to know that the job they are doing is of value if work is to provide them with self-esteem?

Jan believes that a number of things will happen. First, to say that there will be no job losses is not the same as to say that the workforce remains will stay the same. It could be that, as workers retire, they will not be replaced. In Jan's words, “[The baby boomers] will leave the company and so [management] could try to ensure by natural decline to offset that effect on the workforce.”

Second, some new jobs will be created in, for example, data management. Jan says: “We are seeing that a massive amount of data is collected. Not only production data, but personally identifiable data relating to people like me and you. Based on this data, algorithms are created. I think it is absolutely important that human beings, people, manage these algorithms and that they are not managed by robots, because that would be a big risk. So I think it's these over-arching skills, to make sure that the algorithms are managed adequately, and these are high skilled jobs that cannot be replaced.”

A great strength in Germany, of course, is the country's long-standing industrial policy. As Jan puts it: “I would claim that across the political spectrum it has been

*recognised in Germany that the industrial backbone of the country is key for value creation.”*

### How can the UK learn from Airbus?

Given Jan's belief that Airbus will manage the Industrie 4.0 process so positively, does he have any advice for the UK?

Jan says he is not in a position to distribute advice, but he says that we should reject the doomsayers: *"... there have always been doomsayers who would predict the end of the world when the Industrial Revolution came in. We have always said that there were also changes during Industrie 1.0, etc, and there were changes on a massive scale, but the first step to cope with these changes is to ... understand what is going on.... And when we return to the European level, our main focus in Europe is on the quality of our work and the quality of our employees... Quality is everything and that will make us successful in the long run."*

Jan also suggested that management and unions work together to meet this challenge: *"The answer is quite simple: unions and companies need to unite... the United Kingdom has proud tradition of union federation and humanisation at enterprise level .... I think you can only relieve anxiety if you show that management and labour are working in unison and that they know that you are joining together."*

The testimonies of Moritz and Jan show the influence of trade unions in action, grappling with a difficult challenge: how to protect jobs – and even enhance them – in the face of the digital future? Jan's description of the involvement of local people, those who will be working with new digital technology in the years to come, during trial periods – a process which is "geared towards alleviating the fears" that are associated with those technologies – speaks exactly to the idea, described above, of workers shaping their own destinies as digitalisation is introduced.

Of course, not all workers will be in that position. How much say will the picker at Amazon have in shaping his or her destiny? Jan highlighted how large companies have better access to government, and so more influence in the way digitalisation is introduced, so we state clearly here that trade unions are not the only stakeholders that need a greater say in this debate. The representatives of small companies need to be around the table too.

The value of reduced working time during transition phases, and even the sharing of workers between companies during difficult periods, as described by Jan, shows the value of co-determination in action. The White House paper described the benefits of this practice in theory; Jan Hinz of Airbus spoke of how it has worked in practice, to the real benefits of working people at a time of vulnerability and change.

Jan also spoke of how headcount can be reduced through workers not being replaced as they retire. Moritz described evidence of greater work intensity as a result of digitalisation. It may be, if there are fewer jobs in the economy as a result of digitalisation, that we need to think creatively about the lengths of peoples working lives and about the intensity and demands placed on people when they are in work. In both cases, digitalisation could be a help, not a hindrance, if the productivity gains that it provides can be more fairly shared. This is a theme that we return to in the next chapter.



## Section seven

# What should we do about digitalisation?

It is clear from the evidence presented in this report that the so-called fourth industrial revolution will be transformative, as other disruptive economic and technological breakthroughs were before. We can speculate as to how big or disruptive this change will be, but we cannot know for sure. More than any particular technology, it is the sheer breadth, the pervasiveness of the new technologies coming on stream, which will form the greatest part of the challenge.

However, what we also know is that predictions of the end of the world as we know it are not new. Previous waves of technological change have delivered improvements in living standards. In the midst of a prolonged productivity crisis in the British economy, new technologies could offer an opportunity to revitalize growth across the country, as well as to solve some of our most pressing challenges such as climate change.

That does not mean that all fears about the impact of technology are misplaced. The last wave of technological change – from the 1970s onwards – was accompanied by real disruption for many working people. Industries that had been the mainstay of many local economies disappeared, without thought for what might come in their place, or investment in those who had worked in them. Across the developed world, the share of economic growth going to workers has fallen, and the share going to the average worker fallen still further. Of course, not all of these changes are due to technology – globalization, and the decline of union coverage across most industrialized countries have played a significant role.

But the lesson of the past when it comes to confronting technological change is that while there is no need to panic, there is a need to plan. The final section of this report therefore sets out suggestions for where Trade Union campaigners could focus their attention when it comes to dealing with the impact of technological change, with the aim of kickstarting a broader discussion.

We focus on three aims:

- How the UK can use new technology to enhance productivity, jobs, and wages, particularly in the areas which previous waves of industrial change have left behind;
- Protecting workers and communities whose jobs are most at risk of change; and
- Sharing the rewards of increased productivity.

## Taking advantage of the potential of new technologies

### A new mission?

New technologies have the potential to deliver huge benefits, including new ways to tackle climate change, to deliver medical advances, and to produce more goods in the UK rather than overseas.

And as the recent conversion to Industrial Strategy by all main political parties recognises, Government has a key role to play in developing and encouraging this kind of industrial growth.

At present, the UK is at risk of falling behind our main competitors in our ability to make the best use of the potential of new technology to help deliver new growth. Our weak productivity figures in part reflect the fact that business investment in the UK remains low, and the prolonged imposition of government austerity means that growth is subdued. While the government has recognised some of this problem with the introduction of a ‘National productivity and infrastructure fund’ in Autumn 2016, government investment as a proportion of GDP is set to remain below the level seen in the last parliament.<sup>28</sup>

With the UK’s strong scientific base, and world leading universities, we should have the potential to be at the forefront of delivering new technologies. Setting an industrial ‘mission’ to be one of the world’s top five digital economies by 2030 could help provide focus for government intervention in this area – and a new spur for investment.

But as Germany has recognised, moving towards a digital economy requires a partnership approach, in which workers, business and civil society get a chance to shape the direction of policy. The first step for Government in this area could therefore be to replicate the German approach, and convene a year-long inquiry on the future of work, with representation from unions, business organisations, and experts in the field. The inquiry could investigate how to ensure that technology can help meet the aims of the government’s industrial strategy, including raising productivity, addressing regional inequalities, and most importantly improving the quality of and reward for work.

Consultation at workplace level will also be vital to ensuring that companies introduce new technology in partnership with workers.

*“[Policy should] empower worker voice in the workplace through strengthening protections for organising and creating new and innovative ways for workers to make their voices heard”* White House Paper

The Works Council structure in Germany provides a forum for discussion between business and management in which to agree how change will be introduced – leading, for example, to the commitment at Airbus that no jobs will be lost as a result

<sup>28</sup> TUC analysis, see <http://touchstoneblog.org.uk/2016/11/autumnstatement-chancellor-goes-little-way-meet-investment-challenge/>

of automation. But the UK falls behind in this area: the most recent version of the European Participation Index puts the UK sixth from bottom of the EU28 Member States in terms of workforce participation; only Cyprus, Lithuania, Latvia, Bulgaria and Spain perform worse.<sup>29</sup>

Many unions are already planning how to respond to new technology, including piloting the use of technology agreements in companies in which they have representation, and thinking through how to respond to the challenges of digitalisation. Unite, for example, have been working with the automotive sector to look at the potential impacts of automation and the digital revolution in manufacturing on the future of the industry,<sup>30</sup> as well as the impact of automation on other sectors.

But a more widespread approach is needed. The TUC has long argued for new sectoral bodies that could look at how to drive up pay, conditions and productivity across an industry, with representation from unions and business. These could be given an additional role of considering the impact of new technology on an industry, and what it means for the workforce.

### **Diversifying the AI workforce**

Taking advantage of new opportunities offered by technology will require a skilled and diverse workforce, with widespread evidence showing that more diverse workforces perform better.<sup>31</sup>

But at present, those working in new technologies are overwhelmingly male. A 2015 report from the UK Commission on Employment and Skills found that less than a third of those employed in the UK's digital industries are women;<sup>32</sup> only 16 per cent of computer science graduates in 2016 were female, and only 25% of wider STEM (science, technology, engineering and maths) subject graduates.<sup>33</sup>

These problems are not unique to the UK; a recent report found that just 20 per cent of graduates in computer science across the OECD are women. But if the UK wants to demonstrate ambition in this area, addressing the gender gap in the tech workforce would be a good place to start – perhaps by setting an ambition to get to double the proportion of female STEM graduates being female within the next ten years.<sup>34</sup>

<sup>29</sup> See 'The Gig is Up!': <https://www.tuc.org.uk/sites/default/files/the-gig-is-up.pdf>

<sup>30</sup> See for example Unite's work in the automotive sector: <http://www.unitetheunion.org/news/unite-conference-to-secure-the-future-of-the-uk-automotive-industry/>

<sup>31</sup> See, for example <https://economics.mit.edu/files/8851> or <http://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters>

<sup>32</sup> <https://www.theguardian.com/technology/2015/jun/09/women-uk-digital-workforce>

<sup>33</sup> <https://www.wisecampaign.org.uk/resources/2017/02/higher-education-statistics-2016>

<sup>34</sup> See 'Hybrid Cars and Shooting Stars, TUC, 2007 – for the TUC's approach to tackling this issue, including our call for a woman Doctor Who – a call that has finally been heeded ten years later.

### **Protecting workers whose jobs are most at risk of change**

Those with higher skills have been the main beneficiaries of technological change, and most predictions of the impact of digitalisation in the future suggest that this pattern will continue.

To make sure workers have the skills they need to take advantage of new opportunities, government needs to focus on those in the workplace now. Two thirds of the 2030 workforce have already left higher education, and it is likely to be these mid-career workers who are most at risk of being left behind in the face of rapid industrial change.

At present, the UK is particularly bad at equipping people with new skills throughout their working lives; IPPR calculate that employer investment in continuing vocational training per employee in the UK is half the EU average and investment in training and learning per employee fell by 13.6 per cent per employee in real-terms between 2007 and 2015.<sup>35</sup> Meanwhile the OECD have shown that spending on out of work training in the UK is less than 40 per cent of the OECD average.<sup>36</sup> This means that the risks associated with losing your job are greater in the UK than elsewhere, as it's less likely you'll get the help you need to train for a different type of work.

Technological change is not the only reason to invest significantly more in adult education, which can bring benefits in terms of higher productivity, and more satisfied employees. While the expansion of apprenticeships is welcome, it's clear that government now needs to go further. Steps could include:

- Setting an ambition to increase investment in both workforce and out of work training to the EU average within the next five years.
- Introducing a right to a mid-life career review, and face to face guidance on training.
- Introducing a new life-long learning account, providing the opportunity for people to learn throughout their working lives.
- Introducing a new targeted retraining programme aimed at those facing redundancy due to industrial change.

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<sup>35</sup> [https://www.ippr.org/files/publications/pdf/skills-2030\\_Feb2017.pdf](https://www.ippr.org/files/publications/pdf/skills-2030_Feb2017.pdf)

<sup>36</sup> OECD data from 2011 – the most recent currently available.



*To set out a sort of wish list for the UK one would be that we have stronger generic skills across the population more generally. Everybody thinks the digital revolution, high tech skills, STEM [science, technology, engineering, mathematics] skills, we need more scientists and so forth, yes we need those. Yes we need the data analyst, industrial data scientists and the computer programmers, the AI experts, etc. But we also need strong and broad levels or, widespread generic skills and literacy and numeracy and problem solving because that's a way of future-proofing human capital, because you can't acquire those more technical, precise and fast changing skills unless you have a foundation in good generic skills, unless you have that basis. So that's part of the challenge."*  
Alastair Nolan, OECD

*"College and career ready skills in math, reading, computer science, and critical thinking are likely to be among the factors in helping workers successfully navigate through unpredictable changes in the future labour market"* White House Paper

### **Sharing the rewards of increased productivity**

PwC have estimated that UK GDP will be up to 10 per cent higher in 2030 as a result of artificial intelligence, the equivalent of an additional £232 bn, and equivalent to extra spending power of up to £2,300 a year per household by 2030.<sup>37</sup> The key challenge in dealing with the new wave of technological change is how to ensure that if these benefits arrive they are fairly shared – reversing the trend seen since the 1970s which has seen a larger share of reward go firstly to the owners of capital, and then to the richest workers within the ranks of the employed.

Some have suggested that the risk of large scale unemployment is so great that we should give up on the idea of work at all as the primary means of distributing the gains from productive activity. Advocates of a Universal Basic Income have suggested that this should be funded through a tax on 'robots', as the most effective way of ensuring that those who own capital do not end up with an ever increasing share of the financial rewards from growth.

We are sceptical that this is the right approach at this time. As we set out above, we need more investment in technology, not less. And while there is considerable risk of disruption to jobs from the introduction of new technologies, fears of large scale job losses have as yet been misplaced.

In addition, as a discussion paper on the Universal Basic Income (UBI) published alongside this one argues, there are more effective ways of ensuring that everyone has an adequate income, including reforms to the existing social security system.

<sup>37</sup> <https://www.pwc.co.uk/economic-services/assets/ai-uk-report-v2.pdf>

## What should we do about digitalisation?

Third, we don't need to wait until we have enough robots to tax them to move towards fairer shares of the rewards from work. As we set out below, increasing collective bargaining, a renewed look at the current structure of taxation, and a reduction in working time could help to ensure better quality work for everyone, rather than giving up on work altogether.

### Increasing collective bargaining

The best way to protect pay is to encourage collective bargaining, as the evidence suggests that this is the most effective way to both increase the share of wages going to workers in general, and to ensure that this is fairly shared.

There are many sources to back up this argument. As the ILO Global Wage Report, 2016-17, states:<sup>38</sup>

*“Collective bargaining can ... help in reducing wage inequality within and between enterprises... When collective bargaining takes place at the national, industry and/or branch level in multi-employer settings with coordination across levels, a larger proportion of workers are covered and inequality is likely to be reduced both within and between enterprises... When the collective bargaining system is narrow, taking place at the company or workplace level, the effect is restricted to wage inequality within enterprises. It is thus not surprising that wage inequality tends to be lower in countries with an inclusive system of collective bargaining (Alvarez et al., 2016; Engbom and Moser, 2016).”*

As we set out earlier, evidence from the UK suggests that declining trade union membership, following attacks on union rights throughout the 1980s, is likely to have been one factor lying behind the increase in inequality.

Increasing the share of workers covered by collective bargaining agreements will therefore be a critical tool to ensuring that the rewards of technological change are fairly shared. As a first step, government should give unions a right to access workplaces to tell individuals about the benefits of joining a union.

### Taxation

While taxing robots is premature, it is right to suggest that the balance of taxation between workers and the companies who employ them could be shifted.

Since 2010 the balance of taxation has been shifted significantly away from corporations. The IFS find that by the end of the parliament, corporation taxes will be a third lower as a proportion of national income than before the crisis. Part of this is due to the fall in North Sea Oil revenues, and therefore taxation, and part due to a fall in banks' profitability (slightly offset by new taxes levied on banks). But a significant reason is the policy of successive cuts to Corporation Tax, set to cost £10.8 billion a year in 2015–16 terms.<sup>39</sup>

It is sometimes argued that ultimately, workers pay the cost of higher corporation tax, in the form of lower corporate investment and lower growth and wages. But at present, there is no sign that corporation tax cuts have encouraged either higher business investment, or led companies to pay higher wages: business investment is

<sup>38</sup> [http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms\\_537846.pdf](http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_537846.pdf)

<sup>39</sup> [https://www.ifs.org.uk/uploads/publications/bns/BN\\_182.pdf](https://www.ifs.org.uk/uploads/publications/bns/BN_182.pdf)

low despite low interest rates, and high levels of corporate profitability, and wage growth is exceptionally weak despite low inflation.

Meanwhile, significant planned cuts to in and out-of-work benefits are set to contribute to a rise in inequality over the next five years – with income at the 10th percentile of the earnings distribution projected to fall, while those at the 90th percentile rise.<sup>40</sup>

A shift in resources from working families to the owners of technology is not a theoretical possibility – it is current government policy. Shifts in the rates of current taxes could be a more effective means to turn this around than focusing on taxing one particular form of capital investment.

### Working time

Previous technological revolutions have not seen a decline in the number of jobs. But they have seen a reduction in total hours worked. One potential benefit of technological change that should be embraced is its ability to improve the quality of working life.

This report is not about the impact of technology on forms of employment – for example, the rise of platforms, or about the impact of technology on the experience of work, and the rise of surveillance within the workplace (though these will be the subject of future TUC work), and the impact of technology on work intensity is a growing health and safety concern. We should also consider the extent to which robots and forms of artificial intelligence can minimise dangerous, boring, unrewarding work, and offer a chance to consider what good, meaningful work looks like.

But if we are seeking to share the benefits of productivity gains more fairly, we should consider whether they can help deal with the challenges of an ageing population.

In July 2017, it was announced that Britons born between 1970 and 1978 will have to wait until they are 68 to claim their state pension. This rise comes seven years before previously planned and will affect seven million people born between 1970 and 1978, that is, those in the middle of their careers now. The rise was justified on the basis of cost. At present, spending on the state pension is expected to rise from 5.2 per cent of GDP in 2016/17, to 6.2 per cent in 2036/37, and 7.1 per cent of GDP in 2066/67. Under the proposed changes, spending will instead rise to 6.7 per cent of GDP in 2066/67 – a reduction of 0.3 per cent.<sup>41</sup>

But if the boost to GDP from technology is as large as set out by PWC, who predict a ten per cent rise by 2030, the question of how to fund our ageing population could have been answered, and such changes should be unnecessary. Rather than worrying

<sup>40</sup> <https://www.ifs.org.uk/uploads/publications/comms/R127.pdf>

<sup>41</sup>

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/611460/independent-review-of-the-state-pension-age-smoothing-the-transition.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/611460/independent-review-of-the-state-pension-age-smoothing-the-transition.pdf)

about whether robots will take our jobs altogether, we could concentrate on how whether they can help us to finish our working lives at a time when most of us would choose.

### **Next steps**

We hope that this paper will be the start of a discussion – with Unions, business and government about how best to address the challenges and seize the opportunities posed by the next wave of technological change.

Over the course of the following year we will be developing this work further in consultation with unions, and looking at other aspects of new technology that affect working people, including the rise in surveillance at work, how platform companies are treating their workers, and the potential of digital technology to help trade unions ensure the rewards from growth are fairly shared.

### **What could government do now?**

*Using new technology to enhance productivity, jobs, and wages*

Set a mission for the UK to be a top five digital economy by 2030

Establish a commission on the future of work, engaging unions, business and civil society in how technology should be introduced

Ensure that workers have a say in the introduction of technology at company and sector level, with new sectoral institutions to bring unions and business together.

Diversify the tech workforce, with a target to double the proportion of female STEM graduates in ten years.

*Protecting workers whose jobs are most at risk of change*

Focus on older workers and set an ambition to increase investment in both workforce and out of work training to the EU average within the next five years.

Introduce a right to a mid-life career review, and face to face guidance on training.

Introduce a new life-long learning account, providing the opportunity for people to learn throughout their working lives.

Introduce a new targeted retraining programme aimed at those facing redundancy due to industrial change.

*Sharing the rewards of increasing productivity*

Promote collective bargaining to tackle wage inequality, including by giving unions the right to access workplaces to tell workers about the benefits of joining a union.

Prioritise supporting families, rather than cutting corporation tax.

Consider how the gains from increased productivity could be used to lower the state pension age.



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