


Praxis

Skills are not enough: the globalisation of
knowledge and the future UK economy

By Phillip Brown, David Ashton and Hugh Lauder



“Skills are only a source of
competitive advantage when
they are part of an integrated
strategy of national economic
development.”

Praxis Points

Policy implications: areas for further discussion

This edition of Praxis raises a number of issues about the way in which UK employment and skills policy operates within and is shaped by a wider global context. Here Katerina Rudiger, Policy Analyst at the UK Commission for Employment and Skills explores some of these.

- 1 This paper highlights the key trends that are re-shaping economic competition and the global division of labour. It argues that an increased supply of skills is not enough on its own to secure the UK's position at the high value end of production or to sustain its competitive advantage. How important is knowledge intensive activity and productivity to what happens after skills acquisition takes place? Will the way companies use and manage their workforce, and the kind of working practices they adopt, be a decisive factor for their competitiveness?
- 2 The authors argue that recent developments in emerging economies have demonstrated that 'high-tech' economic development does not necessarily need to go hand in hand with radical changes in the country's underlying social structures. Therefore 'path dependency' is less important than assumed and companies move up the value chain because they are willing to 'raise their game' not because of institutional change. If this is the case, what are the drivers for companies to move into new product markets and knowledge-intensive activity? Is there a need for a policy shift in this area and if so, what would this look like? What policy levers are available to encourage employers to 'raise their game'?

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- 3 Recent trends in the development of global production chains mean that the UK is more likely to compete in niche markets but also that it will be important that the UK will be able to establish itself as a key player in growing knowledge intensive industrial sectors. In England at least there is a shift towards a more active industrial strategy to support this (see BERR, 2009a). What are the implications of this for skills policy? What are the emerging strategic skills requirements? How can government stimulate greater co-investment with employers and individuals in higher level and strategic skills?
 - 4 The study also demonstrates that, as a result of economic liberalisation and technological advancement, transnational companies have much greater control over where they locate their production and research facilities and are thus less dependent on national skills systems. What can government do, if anything, to influence firms' location decisions? What are the most decisive factors?
 - 5 Is there a 'global labour force'? How far are skilled workers really in global competition with each other? Do we need to differentiate between 'direct' competition where companies are sourcing their workforce globally and 'indirect' competition, through imports of goods and services and offshore outsourcing? What are the implications for public policy?
 - 6 The authors describe how the recent wave of globalisation has allowed companies to 'cherry pick' skills across national boundaries. International migration has risen substantially over the last decades, nevertheless, when it comes to accessing a foreign labour market pool through immigration, companies still face considerable hurdles. What is the role of migration policy in this? Are national boundaries irrelevant? How can governments ensure that they attract and retain the right skills?
 - 7 To what extent can knowledge work be standardised (or 'Taylorised')? Is there really a shift from knowledge work to working knowledge? Do we need to re-define the concept of knowledge work to differentiate between those jobs involving innovation and creation and those involving the application of knowledge?

Engage with the debate

The aim of Praxis is to stimulate discussion and debate on employment and skills policy issues and we encourage readers to engage with the questions raised above, or make any additional points in response to this paper, on the Praxis pages of the UKCES website (<http://www.ukces.org.uk/our-work/research-and-policy/praxis/>).

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The views expressed in Praxis are those of the authors and do not necessarily represent those of the UK Commission for Employment and Skills.

Foreword

Welcome to Praxis, the UK Commission for Employment and Skills' series of policy think pieces.

Skills and employment policy in the UK has responded to global competition by developing a clear vision and setting goals for the development of a highly skilled working age population, able to compete effectively in higher value market places. At the same time lower skilled and lower paid industries are increasingly seen as the preserve of emerging economies – as part of a linear evolutionary process.

In this edition of Praxis, Phil Brown, David Ashton and Hugh Lauder argue that this policy approach is based on a dated conception of globalisation. A fundamental shift is required to meet the challenges raised by the current phase of globalisation in which transnational companies can locate almost every element of their operation, including higher skilled roles and functions, across the globe. Accordingly policy makers need a greater understanding of global trends and an ability to see beyond a “national-centric view of the world” (p20).

At the heart of this paper is the argument that an increased supply of skills is not enough on its own to secure the UK's position at the high value end of production or to sustain its competitive advantage. In a market where employers are no longer reliant on national skills structures, the UK's ability to compete will come from a shift in its 'policy mentality' requiring a greater focus on demand side policy and a more proactive approach to engaging with employers and understanding and meeting their needs. Government, the authors assert, must take a more active role including a focus on job creation and job quality, alongside issues of labour supply.

This edition of Praxis raises a number of issues that are the focus of considerable debate. A series of questions are asked in response to this by the UK Commission's policy team at the start of this edition of Praxis and we encourage our readers to engage with this debate by commenting via our website <http://www.ukces.org.uk/our-work/research-and-policy/praxis/>

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Introduction – framing the policy debate

¹ This Briefing draws on a number of recent publications (see bibliography) and the research was funded by the Economic and Social Research Council (ESRC). A twelve month follow-up study began in July 2009 funded by the ESRC Centre for Skills, Knowledge and Organisational Performance (SKOPE).

This Praxis paper explores the policy implications of a major international study¹ of the global HR and skills strategies of major transnational companies (TNCs) operating in seven countries² including China and India.

The study raises key policy issues about globalisation, skills and the future of work, especially as skills stand centre stage in national policy debates on economic competitiveness and social justice. It aims to test the validity of current policy thinking by investigating the strategies of leading transnational companies who are driving change at the global level and offers empirical support for a more active role for government that must include a focus on job creation and job quality, alongside issues of labour supply.

² The study involved 190 in-depth face-to-face interviews conducted between 2004-07 involving company managers and executives and policy-makers from Britain, China, Germany, India, Korea, Singapore and the United States. It focused on four sectors – automotive, electronics, financial services and telecoms. Additional funding from SKOPE also allowed a detailed statistical of global trends in education, skills, employment and the job market (Brown et al, 2008c)

We begin by outlining the current UK policy framework and move on to present some of the key trends highlighted by our research findings, which may challenge this framework. We then examine a number of policy implications that explain why one of the biggest policy challenges is the rise of a global high skilled, low waged workforce.

The Current Policy Debate

Conventional policy thinking is based on the assumption that the UK can no longer compete in global markets based on low value-added production, because of significantly lower labour costs in emerging economies. We are told that we should accept that low skilled, low waged employment will continue to decline and instead concentrate on higher-value markets where we have a comparative advantage. These are seen as the markets for high skilled, high value-added production that will deliver an ever rising standard of living.

This has resulted in government policies dedicated to increasing education and skill levels to ensure that Britain has the requisite human capital to attract investment and sustain leading-edge industries. The intellectual basis for such a strategy was based on an elaboration of human capital ideas (Brown et al, forthcoming). In the early 1990s, writers including Robert Reich (1991) and Peter Drucker (1993) argued that prosperity was based on a global competition for ideas, knowledge and skills. Those countries with the best educated and trained workforce stood the best chance of becoming high skilled, high waged 'magnet' economies (Brown & Lauder, 1996). It was also assumed that the technological superiority of Western economies would limit this competition to OECD economies at the same time as giving emerging nations including China and India the opportunity to grow their economies through their cost advantage for low skilled manufacturing and services.

However, there has been a growing realisation that emerging economies are also moving into high skilled, high value-added activities. Government Ministers have presented this as an 'opportunity for Britain' because the global economy is believed to double the numbers of skilled workers presenting an opportunity for British workers to achieve upward mobility through an expansion of high skilled employment. To take advantage of this individuals are encouraged to increase their investment in higher education and skills through lifelong learning. In what Gordon Brown describes as the 'global skills race' he concluded that "in the past, we unlocked only some of the talents of some of the people; the challenge now is to unlock all the talents of all of the people." (The Observer, February 10, 2008)

While the major thrust of government policy has remained focused on generating a highly skilled workforce, expounded in the Leitch Review of Skills, there is also evidence of a wider policy focus that involves a more 'active' role for the state in industrial policy, as issues of skills utilisation and labour demand assume greater importance, especially in a period of economic recession and rising unemployment. The White Paper *New Industry, New Jobs* (2009) outlines a 'new activism' where:

'Government...has to do more to help equip high potential British firms. We need to take a range of actions. We must improve the skills of our people and adapt them to the specialist demands of a modern economy; strengthen our capabilities in research and development; innovate further in science and technology; and industrialise this innovation in commercially successful ways. These actions are the bridges to our economic future.'

The research on which this paper is based asked a number of questions to test the validity of these policy assumptions including:

- Were transnational companies confining recruitment of highly skilled workers to Western 'magnet' economies?
- Were such companies becoming more dependent on the knowledge of employees and to what extent were they willing to pay a premium to high skilled workers?
- How did companies decide on where to locate new high tech investments?
- Was there any evidence for the emergence of a new pool of global managerial talent?
- How dependent were these companies on national vocational, education and training (VET) systems for the supply of skilled labour?

Key global trends in employment and skills

There are a number of major trends that are re-shaping economic competition and the global division of labour, including:

- An increasingly competitive environment where old and new competitors consistently 'up the ante' in pursuit of competitive advantage;
- The globalisation of high skills. Within a decade there has been a doubling of university enrolments around the world, reaching close to 63 million by 2005. This is leading to a massive increase in the global supply of highly educated workers, able to compete on price as well as knowledge (Brown et al, 2008c). China now has more people in higher education than the United States;
- Rapid economic development in China, India and other emerging economies has enabled them to compete for high value work. These countries have been able to 'leapfrog' decades of technological developments in the West such as through the introduction of cellular mobile communications. This is combined with an 'inside-out' business model where the pre-industrial and the post-industrial share the same postcode. This is giving companies greater flexibility in respect to their sourcing options in emerging economies. Companies are using the very latest technologies to produce high value-added goods and services in the midst of third world poverty as they no longer require the full array of institutional supports to provide the skills base that we are accustomed to in the West.
- Competition is now based on quality and cost. Companies have consistently tried to improve quality while reducing their costs. Such attempts have been limited due to problems with delivering high quality goods and services in lower cost emerging economies. While issues remain, companies reported a rapid narrowing of the 'quality' gap. This is transforming the way companies think about the global supply of talent. The new competition is based on quality and cost that challenge Western assumptions about the inherent

competitive advantage of the developed economies for high skilled, high value economic activity.

- Creativity and innovation remain at a premium, but the application of knowledge to work organisation also remains a key source of competitive advantage. In focusing on innovation and intellectual capital much of the management literature has ignored the shift towards global standardisation or alignment within companies, along with efforts to 'capture' and digitise knowledge that had previously remained locked in people's heads. If the twentieth century brought what can be described as mechanical Taylorism characterised by the Fordist production line, where the knowledge of craft workers was captured, codified and re-engineered in the shape of the moving assembly line by management, the twenty-first century is the age of digital Taylorism. This involves translating knowledge work into working knowledge through the extraction, codification and digitalisation of knowledge into software prescripts and packages that can be transmitted and manipulated by others regardless of location.
- A shift towards the global alignment of business processes and the international benchmarking of quality standards, facilitated by new technologies, have contributed to the development of global value chains from manufacturing to tradable services.
- While Western TNCs stand at the forefront of these developments they are not in control of their own destinies. A high quality, low cost model is key to the rise of Chinese and Indian companies seeking to develop a global presence. Western companies are going to confront intense competition from Chinese and Indian companies in many key industrial sectors, including automotive, telecoms, electronics and IT related financial services. At the same time China and India offer access to major new markets.

These trends have profound implications for the way in which TNCs shape their HR strategies.

Implications for corporate skills strategies: global skill webs

These trends have provided the basis for what we see as a radical transformation of the process of corporate skill formation. We attempt to describe this through the concept of global skill webs. To understand these webs we contrast skill formation in the first wave of globalisation with what we have observed through our research in the second wave of globalisation.

First wave globalisation (1980s and 1990s)

During this wave borderless value chains were limited to low skilled, low paid work, with most high value-added activities remaining close to the home base where the company had their high skilled employees and could closely control corporate activities. Multinational companies (MNCs) experimented with the offshoring of high value-added activities to low cost countries such as India but this remained piecemeal. HR strategies and talent management were restricted within national contexts as access to intermediate and high skilled workers was primarily supplied through local or national training systems and 'closed' job markets.

Second wave globalisation (2000 and beyond)

Second wave globalisation is giving TNCs much greater control over their sourcing options along the full length of the value chain. Almost all aspects of production, design and research can be located across the globe, wherever the costs and other advantages benefit the company most. What we observed was companies also seeking to integrate key aspects of human resource management on a global basis challenging notions derived from past experience within Western economies.

During this phase, TNCs gained greater control over their skills strategies by reducing their dependence on national systems of skill formation in countries where they have production or research facilities. They now have the capability to 'cherry pick' across established borders and boundaries.

We see this as a shift from a 'Toblerone' model of organisation with each national market having its own company hierarchy, including the training function - to a melted Chocolate Orange, where borders and boundaries become increasingly irrelevant within a global organisation. It is this shift from national to international skill webs that distinguish the multinational companies (MNCs) of the past from the transnational companies (TNCs) of the future. Companies have greater freedom over where to source their high value activities given that they are less constrained by national systems.

This has transformed how TNCs think about skills issues and the development of competitive capabilities. The global distribution of labour at all skill levels becomes a source of competitive advantage. These webs now provided the basis for added value as they allow competitive advantage to be derived not just from the sourcing of low skilled work but from sourcing medium and high skilled work in both high and low cost economies.

This process does not imply a convergence among TNCs in terms of their skill strategies. While some global companies were developing global skill webs based on a 'transactional' model of short-term cost reduction and profit seeking, others, mainly from mainland Europe were adopting a 'transformative' model aimed at developing global capacity over the medium term while containing cost pressures.

The creation of global skill webs present TNCs with a series of strategic options. Three of those highlighted in our research were firstly, the question of 'where to think', secondly, the extent to which 'knowledge' work can be standardised through digital Taylorism, and thirdly, the globalisation of talent management.

Deciding Where to Think

New communication technologies, together with the explosion of graduate labour, enable TNCs to locate more of their R&D in low-cost locations. In auto design, research and production, there is a growing tendency to exploit the lower labour costs of scientists and engineers in China and India and to engage in joint ventures with local elite universities. The globalisation of high skills is also being used by Western TNCs to speed up the process from 'innovation to invoice' by using 24 hour design teams, where projects follow the sun, moving from one time zone to another at the end of the working day. This process has been extended beyond manufacturing to the service sector, where high end work in financial services, including consultancy, is now moving to low cost locations, especially India.

The growth of this high end capacity in emerging economies is likely to cause a serious challenge to the West as differences in productivity and quality narrow, contributing to a reverse (Dutch) auction, reflecting a weakening in the trading positions of large numbers of middle class professionals, managers and technicians in OECD economies. Blinder's (2007) analysis of the potential impact of offshoring on the jobs of America workers shows that between 22 and 29 per cent of jobs are potentially offshorable. He also reports that higher skilled workers are just as likely to see their jobs offshored as low skilled workers. Such calculations can only be taken as indicative but he also shows that in 'tradable' areas of high skilled work with the potential to be offshored, there is already evidence of an income penalty of approximately 14 per cent. This is clearly an area in need of urgent research within the UK economy.

These competitive pressures will obviously increase as a result of the current financial crisis, but also due to the increasing prominence of 'transitional' companies. These are TNCs that are emerging out of China and India based on a high-value, low-cost model in their attempt to increase their global market share (Zeng

and Williamson, 2007). This will put increasing pressure on the salaries and employment benefits of workers in older industrial economies as well as on their indigenous labour force, but it also offers potential for 'reverse off-shoring' as these companies expand their operations in Europe and North America.

Second, global skill webs enable TNCs to make more effective use of the process of Digital Taylorism. Just as mechanical Taylorism enabled companies to capture the knowledge of manual craft workers and re-configure it through the use of assembly lines to reduce the cost of manufacturing, Digital Taylorism, is providing similar opportunities for companies to reduce the cost of various kinds of knowledge work currently undertaken by middle class managers and professionals. Here, advances in computing power and software design are enabling companies to digitalise knowledge which can be utilised across the globe, wherever there is sufficiently educated labour.

Digital Taylorism: The Transformation of Knowledge Work

Digital Taylorism is affecting all the sectors we studied, but its future impact is likely to be more severely felt in the service sector where terms such as 'financial factory' and the 'industrialisation of services' are being used by leading consultancy companies to describe the outcome of this process in the workplace.

Digital Taylorism enables innovation to be translated into routines that might require some degree of education but not the kind of creativity and independence of judgement that is often associated with the knowledge economy. In order to reduce costs and assert proprietary rights, companies are experimenting with new ways to move from knowledge work to working knowledge; that is, from the idiosyncratic knowledge that a worker has and applies, to working knowledge, where that knowledge is codified and routinised, thereby making it generally available to the company rather than being the 'property' of an individual worker.

There are many ways in which digital Taylorism can be applied, for example, a leading company producing and selling software handling credit card transactions and credit rating expanded very rapidly over the last decade both within the UK and abroad, mainly through acquisitions. In an interview with the CEO in 2006 he defined the company's major problem as one of how to encourage his staff (mostly university graduates) to be innovative. He thought this was essential for the continued success of the business as they developed products for new markets and customers. Today the problem has changed dramatically. The company has achieved an annual growth rate of 25 per cent and opened offices across the developed and developing world, including China, India and Eastern Europe. There has been a change in CEO, and the major issue is no longer defined as innovation, but of how to align business processes and roll out software products to a global market.

The creative work in producing new platforms, programs and templates, has been separated from what they call routine 'analytics'. Permission to think is restricted to a relatively small group of knowledge workers in the UK, while the more routine work (i.e. customizing products to different markets and customers), also referred to as the 'grunt work', is offshored to their offices in Eastern Europe (where graduates can be hired at a third the cost of the UK) and India.

In an interview with a leading international law firm in the City of London we were told how they off-shored the preparatory work in the development of high profile cases to the Philippines, where lawyers who would cost £125,000 a year in London are paid a fraction of that price. This form of labour arbitrage could only work with standardised processes of analysis and sophisticated software security to ensure confidentiality.

Digital Taylorism does not eliminate the importance of employee motivation or the need for good 'soft' skills such as self-management or customer-facing skills. Standardisation required to achieve mass customisation still needs customers to feel that they are receiving a personalised service. This may contribute to a continuing demand for university graduates, but their occupational roles will be far removed from the archetypal graduate jobs of the past. It raises the intriguing question of the extent to which 'knowledge' work can be standardised, and its impact on the demand for creative knowledge workers and on the returns on investments in higher education.

Global Talent Management

The third strategic option concerns the way companies are globally integrating their approaches to talent management. Despite the rapid expansion in the supply of highly qualified workers, many managers and executives in all seven countries believed they were in a 'war for talent', a competitive struggle to attract and retain 'high potentials' and 'top talent' central to their competition strategy. More corporate resources are being focused on attracting, retaining, and developing the best of the best at the same time that a larger proportion of the labour force hold university degrees. Although all the companies involved in this study anticipated an increase in demand for university graduates, there is little doubt that 'more means different' as companies differentiate their 'knowledge' workers in terms of function, competence and performance.

To this end they were forging strong links with elite universities around the world in order to secure what they saw as the best talent. The implication for national systems of skill formation is to further differentiate elite universities from the rest, as a global elite comes into being, while within companies it may close off avenues for upward mobility as top positions are increasingly reserved for those designated as a class apart.

These strategic options are transforming our understanding of both labour supply and demand. The emergence of global skill webs reflect the salience of skill as a source of competitive advantage within TNCs, but they do not simply reflect the growing importance of knowledge and skills to product innovation (where the value of human capital is likely to remain at a premium), but due to the globalisation of high skills that has far reaching implications for the relationship between skills, jobs and rewards. Global economic recession and corporate attempts to further reduce their operating costs are likely to accelerate the trends identified in this study, which raises the question of policy implications.

Policy implications

There are four policy implications which we would like to highlight from this research and which can be used to re-frame the debate outlined at the start of this paper.

A new policy mentality: beyond 'national-centric' perspectives

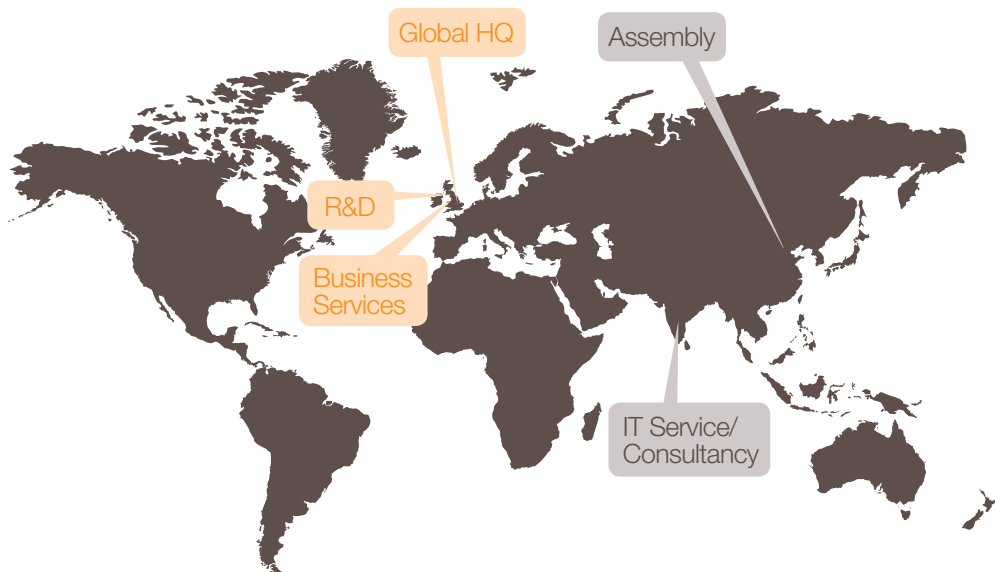
There is the 'knowledge deficit' in understanding the key trends that we have highlighted, including the ability of TNCs to move away from a Toblerone model that has given them greater freedom in sourcing high skills irrespective of boundaries or borders; the standardisation of knowledge work through the application of Digital Taylorism; and the increasing segmentation of managerial and professional work as companies introduce international standards of talent management.

The consequences of some of these trends on labour market opportunities, skill utilisation and incomes, will be masked by the impact of the recession. The reduction of the costs of knowledge work resulting from the downward pressure on wages predicted by our research is difficult to assess due to high unemployment that also tends to depress wages. The challenges posed by the globalisation of high skills and the creation of global skill webs also remain secondary to the need to ensure that the VET system responds effectively to the problems of youth and adult unemployment. But it is imperative that an accurate picture of global, technological and corporate trends is made available to policy-makers in order for Britain to develop a viable national strategy as the economy recovers from recession.

In order to grasp the full impact of these changes we must first persuade policy makers to adopt a less national-centric view of the world. This sees the UK as holding a dominant position in global markets, where the operation of market forces will lead high skilled, high waged jobs to automatically gravitate to the UK. This is a policy mentality that is deeply embedded in policy circles despite the recent focus on a 'new activism'. The White Paper *Getting On, Getting Ahead*, is a discussion paper analysing the trends and drivers of social mobility, published by the Cabinet Office in November 2008. It includes a section on global job opportunities in which it argues that globalisation will provide more opportunities for the UK citizens to move into high end jobs (Cabinet Office, 2008, p41). It then suggests that further technological developments will result in the 'unbundling' of the production chain, creating opportunities for the UK to acquire a larger share of the high end jobs in business services, R&D and senior management (ibid, p46). This view of the world is illustrated in Diagram 1 'The policy maker's perspective', which is reproduced from the White Paper (ibid, p46). It shows all the high end jobs shaded in **orange** in the UK with lower paid, less skilled jobs in the emerging economies shown in grey.

Diagram 1. The policy maker's perspective

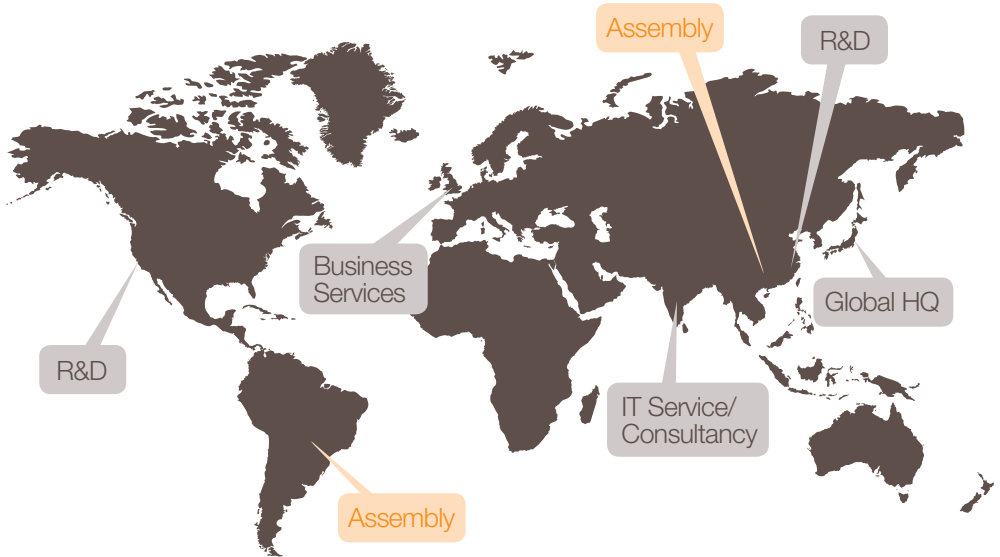
Illustrative globally fragmented value chain model



Our results suggest that this is a dated view of the world associated with first wave globalisation. The reality is now more clearly depicted in Diagram 2, 'Second Wave Globalisation' which shows how this 'unbundling' is working out in practice as a result of the trends we have identified. We argue that Diagram 2 provides a more realistic picture of current global realities. It illustrates how high end jobs, shaded in grey are now dispersed across both the developed and emergent economies. R&D is now located in both low wage and high wage countries: in China, India and Russia, as well as in the Britain, Germany and United States. Global headquarters are not only found in the West but in Japan, Korea and Singapore as well as the emerging economies of China and India. A significant proportion of those remaining in Europe and North America are capable of moving at short notice to other locations as HSBC has threatened to do. Some of the work of business services remains in the UK but financial centres in Hong Kong, Shanghai and Mumbai provide alternative locations, including a new home for consultancy services. The idea that the UK can somehow retain and grow high end jobs because the country has a highly trained workforce needs to be jettisoned in order for us to have a more realistic set of assumptions on which to base policy deliberations.

It means we can no longer assume that economies will follow an evolutionary path of economic development in which countries gradually move from low-skilled to high-skilled forms of production, or from manufacturing to services. China and India are developing the capacity to compete in both high and low value-added markets at the same time. Moreover, when production becomes highly fragmented within global webs (or value chains), it becomes more difficult for national economies to remain globally competitive across whole industries. Given the ability of TNCs to locate different aspects of production in different locations, the UK will increasingly find itself

Diagram 2. Second wave globalisation



competing within niche markets, for example, in developing and servicing aero engines, but not in the production of planes. The trend is for UK based companies to compete in niche markets that require the development of global linkages that form part of the value chain (BERR, 2009b). This is where the UK must learn to compete.

Once we have shifted the policy perspective the next step is to abandon our focus on market failure as the basis for identifying areas of government intervention. Indeed, we have noted evidence of a new policy of 'market-based industrial activism' in the wake of the 2008 financial crisis. Lord Mandelson has identified 'multi-functional technologies' as areas where the UK can excel. When the country is competing in a global arena in which the production of goods and services can be relocated rapidly, and where emergent economies now have a serious cost advantage when it comes to knowledge intensive production, then it becomes crucial that business support is delivered to those activities in which the country has a competitive advantage. As Sir John Rose, chief executive of Rolls-Royce states, 'the government's recent shift toward a more strategic industrial policy is... a step in the right direction. But everything will depend on whether they can follow it up with detailed policies and programmes and, importantly, whether their proposals are competitive with the policies and financial support available in other nations' (Financial Times, 2009). We would also add that if such policies were to be implemented then they would require a shift in the mindset of some policy makers. After three decades of faith in the action of market forces to deliver policy solutions, there is a 'trained incapacity' at the heart of government departments that will need to be addressed if industrial activism is going to make a positive contribution to the Britain's prosperity and the quality of working life.

Capacity building for 'active' government is vital because our studies show that skills are only a source of competitive advantage when they are part of an integrated strategy of national economic development. Building smart governance requires better international expertise. Here lessons may be learnt from countries which have a history of organising international expertise to inform industrial policy. Our findings suggest that the UK lags behind countries such as Singapore in the manner in which economic intelligence is collected and utilised in the policy making process. Through the Economic Development Board (EDB) the Singapore government has a sophisticated system of intelligence gathering through its overseas agencies, where there is a system for feeding information about the latest technological, business and economic trends into policy deliberations. It is also aided by a trained capacity to see government resources as a means of shaping or using market forces to facilitate the achievement of policy objectives (Ashton et al, 1999). Such a system in the UK would mean the state having much better global intelligence and a system to ensure that such intelligence is effectively utilised and linked to the intelligence required for developing the skills infrastructure. However, our knowledge of current government policies in newly emerging economies, as well as in Britain's major competitors within the OECD, remains thin. This is an area where policy could benefit from further research.

Active Government: Challenging the Dominance of the Supply Side

The globalisation of high skills also has important policy implications. It represents a serious challenge to the dominance of the 'supply-side' approach to labour market and skills policy based on a version of human capital theory. Our research suggests that relying on supply-side policies, even if they are complemented by the new demand-side emphasis advocated by Ambition 2020 (UKCES, 2009), are unlikely to deliver the high-skills, high-wage vision of Britain because human capital is itself subject to the laws of diminishing returns.

The relationship between 'learning and earning' looks more like a transitional case, as access to tertiary education becomes widespread both within and across countries. This global expansion of tertiary education has outstripped the demand for high-skilled workers, creating downward pressure on the incomes of technical, managerial and professional employees in developed economies, along with some upward pressure on those in emerging economies.

If the connection between 'learning and earning' is flawed it calls into question the value of relying on the labour market to tackle issues of social exclusion and income distribution. The combination of lower cost graduate labour in the developing world, together with the impact of digital Taylorism, will continue to generate increasing income disparities within the middle classes. As we have shown above, no longer do we have an advantage in our supply of highly educated labour. We are now facing the prospect of competing with increasing numbers of high skilled workers on significantly lower wage rates. Returns to education will not therefore provide the guarantee of higher income that the government is looking for to resolve issues of distributional justice.

*⁴ Some of this new thinking is evident in the UKCES' *Ambition 2020: World Class Skills and Jobs for the UK* (2009).*

This will inevitably raise the politically sensitive issue of national skill formation and its relationship to issues of equity and social inclusion. Just investing in education is not going to provide the answer in an age when the basic assumptions behind human capital theory are being called into question. This is not to suggest that the knowledge, skills and capabilities of the workforce are unimportant, but fresh policy thinking is vital.⁴

Rethinking National VET Systems

The third set of policy issues concern the impact that global skill webs have on national VET systems. As we have seen in the first wave of globalisation, intermediate and higher skilled workers were supplied through the national VET systems in relatively 'closed' job markets. In the second wave, companies become less dependent on specific national systems of skill formation because they are able to develop global skill webs that include the location of high skilled work in low cost locations. From a policy perspective, in the first wave of globalisation, the national system of skill formation was relatively stable as multinational companies had little option other than to rely on the domestic supply of intermediate and highly skilled workers. Policy-makers played a fairly passive role, ensuring that the system operated effectively with employers having to accept the skills it provided.

In the second wave this changes as transnational companies become less dependent on the supply of skilled labour from the specific nations in which they currently operate, and may increasingly question the existing VET system as quality standards improve in other national or regional locations. This requires policy-makers to be more active or proactive in engaging TNCs in identifying their needs and requirements. This is essential if the country is to compete against the threat of the relocation of high skilled labour to a national competitor, including low cost countries. An active policy needs to be based on a better understanding of

how global value chains are developing, which represent areas of innovation that may lead to high employment growth and where policy interventions may be effective (BERR, 2009b). We view such an approach as a key component of a more active industrial policy.

The problem here is how to support companies and workers within those parts of global value chains located within Britain, and how to identify areas of future growth, including those consistent with creating a low-carbon economy. In some respects we are well placed to tackle this problem precisely because of our sector approach to skills development. This enables those sectors which are heavily involved in global markets to develop their own support mechanisms to help companies lock into global value chains. In the automotive industry, the SEMTA skills council, and other sector based organisations such as the Society of Motor Manufacturers and Traders, have already developed innovative programmes to help firms compete better in global markets. However, the demise of General Motors bears testament to the scale of transformation required to compete within today's global economy. Here there is a need for more research in order to help Sector Skills Councils to learn from each other and help build capacity to support British workers and companies to compete in global value chains.

Beyond Path Dependency: the dislocation of value chains from the national context

Finally, we believe that it is time to question some of the conceptual tools that underpin our existing approaches to skills policy. Foremost among these is the concept of ‘skills equilibrium’ (Finegold & Soskice, 1988). This concept, either in the form of the high skills or low skills equilibrium, assumes that skills are one component of an integrated system of institutional structures and incentives that reinforce each other throughout the economy. It implies that the incentives for employers to invest in skills are aligned with a nation’s industrial relations framework, education institutions and welfare regime, contributing to either a high or low skills equilibrium. This approach has much in common with what are known as ‘varieties of capitalism’ that also assume a close connection between institutional, economic and societal development (see Hall & Soskice, 2001; Lauder et al, 2008).

Yet our studies show that the assumption that high-tech economic development depends on social sophistication in the form of democratic politics, welfare provision and high GDP per capita, fails to capture the extreme forms of uneven development, especially in emerging economies (Brown et al, 2008b). Business organisation is being turned ‘inside out’ because although companies need a decent infrastructure (roads, communications), and supply of well educated and motivated workers, they are able to set up ‘oasis operations’, high-tech factories, offices and research facilities in ‘low-spec’ locations. Here, our argument is not that varieties of capitalism have given way to a universal or convergence model, but rather that national ‘varieties’ explains less about the source of comparative advantage than is typically claimed. A key question is how companies achieve international quality standards within such extreme ‘varieties’ of capitalism?

Conclusion

The nature and extent of an inside-out business model requires further investigation, but it may suggest that the British economy is not as 'path dependent' as the proponents of the low-skills equilibrium would have us believe, as it could be possible for companies to move up the value chain or enter new product markets without systemic social and institutional change. But this will depend on companies being willing to 'raise their game' as they lock into global networks of leading-edge companies, universities, and research institutes, that may also require 'active' government sponsorship.

It also means that we should stop thinking about the UK as a uniform institutional system that can be centrally co-ordinated to tackle single problems such as that of low skills. The reality is that the UK skills policy has to face in different directions at the same time. Obviously many jobs in the UK economy are non-tradable, although the companies providing goods and services for domestic consumption may be in foreign hands. But these have traditionally been areas of low-skilled, low-waged work. Jobs in the retail industry, for instance, have played a key role in achieving record high levels of employment over the last decade. But these have been based on a combination of high levels of consumption and personal debt. This may not be sustainable in the long run, post the current recession, which makes the question of the UK's ability to compete in global markets for high-value work all the more important. The 'tradable sectors' also drive a great deal of business innovation. Britain's economy depends on an ability to compete within global value chains where competition knows no boundaries, as some foreign companies may create more high skilled employment than some British companies that offshore a large proportion of their high value activities.

In conclusion, we would stress that all we have been able to do in this paper is highlight the main trends identified through our research. There is already evidence of an explosion in the global supply of graduate labour; an ability of some emergent economies to compete on both quality and cost; and the increasing importance of global skill webs that extend through the entire value chains in both manufacturing and services. The full impact of what we've called digital Taylorism remains to be seen but it could become a defining feature of work organisation in the early decades of the twenty-first century. What is not in question is the need for a better understanding of the impact of global economic recession on the trends, corporate strategies and national skill formation strategies outlined here. We must avoid the trap of viewing our economic and employment problems simply as a result of the current economic recession. While the immediate issue of unemployment must be tackled, we need nothing short of comprehensive re-evaluation of UK skill formation and the policy assumptions on which it was built.

We are already starting to see signs of such change. Steps towards a more active role for the state in industrial policy and an increasing recognition that issues of labour demand and skill utilisation are integral to Britain's skills strategy represent a significant start.⁵ But this promise will not be fulfilled unless there is a better understanding of the trends raised in this paper and without a major initiative to build government capacity to actively pursue new policies capable of enhancing the UK's competitive position in a globalised market. To be forewarned is to be forearmed.

⁵ See UKCES *Ambition 2020: World Class Skills and Jobs for the UK* (2009).

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