

# Transforming North Staffordshire Evidence Paper A: The Changing Economy

the work foundation



Prepared for the North Staffordshire Regeneration  
Partnership

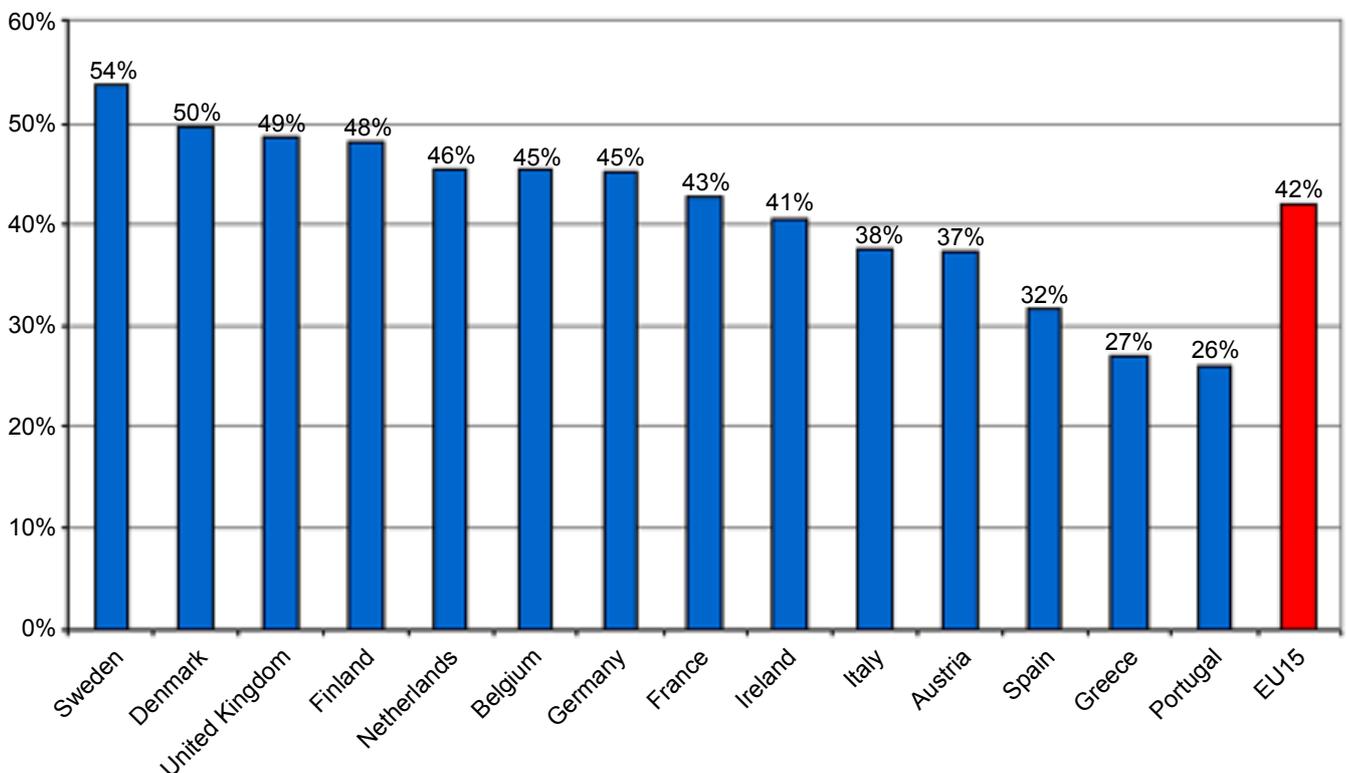
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## What is the knowledge economy

The expansion of the knowledge economy has been one of the most striking features of economic change in developed countries over the last thirty years. Since the 1970s, the ability to use, share and analyse knowledge has become a key driver of economic growth and wealth creation. More sectors and more firms rely primarily on the use and application of knowledge and technology. Indeed The Work Foundation's Knowledge Economy programme shows that we are fast approaching the point where more than half of economic activity and employment in many advanced economies will be generated within knowledge based industries<sup>1</sup>, as Figure 1.1 illustrates below:

**Figure 1.1 Share of total employment in knowledge based industries, 2005**



*(Share of total employment using Eurostat definitions [high to medium tech manufacturing, finance, business services, communications, health, education, cultural services, air and sea travel].)*

<sup>1</sup> Brinkley, I. (2006) *Defining the Knowledge Economy*: The Work Foundation

And, whilst **not everyone working in a 'knowledge based industry' is a 'knowledge intensive worker'** – for example, universities rely heavily on their cleaners, caterers and administrative staff, all of whom are skilled workers but would not be classified as 'knowledge intensive workers' – there has also been **rapid growth in 'knowledge jobs' in all sectors** in the UK. This takes the shape of demand for high level IT skills in retail and for scientists and engineers in manufacturing. It also creates demand for buying in knowledge based services (such as management consultancy or accountancy) within non-knowledge sectors. Both trends create increased demand for people to fill these 'knowledge jobs'.

But why is this 'knowledge economy' so different from the way that knowledge has always been used to create products and services?

There are three main reasons identified by The Work Foundation.<sup>2</sup> First, **information and communication technology** (ICT) now allows knowledge to be processed, analysed, shared and used at an unprecedented scale and speed: a scale and speed which are increasing all the time. This ICT can be used by organisations to draw on global networks of scientific, technical and creative knowledge, enabling the creation of new and innovative products, processes and services that respond to consumer demand.

Second, the **opening up of higher education** has been critical. Without an increased number of knowledge workers who have the tools to develop expertise, apply knowledge and communicate with one another about complex ideas, the technological advances could not have been exploited.

And third, the economic growth associated with the use and application of knowledge would not have happened without strong and growing **demand from industry and from increasingly affluent consumers** for the innovative, tailor-made products and services associated with the knowledge economy.

These three factors have combined to create the growth of the 21<sup>st</sup> century knowledge economy, which can be characterised as 'what you get when you bring together powerful computers and well-educated minds to meet an

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<sup>2</sup> Brinkley, I. (2006) *Defining the Knowledge Economy*: The Work Foundation

expanding demand for knowledge based goods and services'. Or, more formally:

*'The share of national income and employment produced by innovating organisations combining ICT and highly skilled labour to exploit global scientific, technological, and creative knowledge networks.'* (Brinkley, 2006)<sup>3</sup>

The impact that these changes have had upon the whole UK economy is often under-estimated. There are three main dimensions to this story. First and most strikingly, there has been considerable **growth in 'knowledge based industries'**, industries that rely upon the use and application of knowledge as their main source of income. Although there is not one agreed definition of these industries, there is some consensus that knowledge based industries include high-tech and professional services. The Work Foundation regards the best available definition as Eurostat, which includes the following industries:

**Figure 1.2 Eurostat definition of knowledge industries**

Definition	Industries included
<b>High Technology Manufacturing</b>	Manufacture of: <ul style="list-style-type: none"> <li>• pharmaceuticals, medicinal chemicals and botanical products;</li> <li>• office machinery and computers;</li> <li>• radio, television and communication equipment and apparatus;</li> <li>• medical, precision and optical instruments, watches and clocks;</li> <li>• aircraft and spacecraft.</li> </ul>
<b>Medium Technology Manufacturing</b>	Manufacture of: <ul style="list-style-type: none"> <li>• chemicals and chemical product (excluding pharmaceuticals, medicinal chemicals and botanical products);</li> <li>• machinery and equipment;</li> <li>• electrical machinery and apparatus;</li> <li>• motor vehicles, trailers and semi trailers;</li> <li>• other transport equipment (excluding building and repairing of ships and boats and manufacture of aircraft and spacecraft).</li> </ul>
<b>Knowledge intensive services</b>	<ul style="list-style-type: none"> <li>• Financial intermediation;</li> <li>• Real estate, renting and business activities;</li> <li>• Education;</li> <li>• Health and social work;</li> <li>• Recreational, cultural and sporting activities;</li> <li>• Water transport;</li> <li>• Air transport;</li> <li>• Post and telecommunications.</li> </ul>

<sup>3</sup> Brinkley, I. (2006) *Defining the Knowledge Economy*: The Work Foundation

Definition	Industries included
<b>High technology knowledge intensive services</b>	<ul style="list-style-type: none"> <li>• Computer and related activities;</li> <li>• Research and development;</li> <li>• Post and telecommunications.</li> </ul>
<b>Market services (excluding finance and high tech services)</b>	<ul style="list-style-type: none"> <li>• Real estate activities;</li> <li>• Renting of machinery and equipment without operator and of personal and household;</li> <li>• Water transport;</li> <li>• Air transport;</li> <li>• Other business activities.</li> </ul>
<b>Financial knowledge intensive services</b>	<ul style="list-style-type: none"> <li>• Financial intermediation.</li> </ul>

Over the past ten years employment in these Eurostat defined ‘knowledge intensive industries’ grew by 24 per cent in the UK, whilst exports of knowledge intensive services have trebled from being worth £27bn in 1995 to being worth £75bn in 2007. We are fast approaching the point where nearly half of our national income, half of our employment, and a quarter of our exports are generated by knowledge based services<sup>4</sup>.

Importantly, these knowledge based industries include manufacturing, as the **distinction between manufacturing and services is blurring in the knowledge economy**. Although employment in manufacturing has fallen in the UK, productivity in the sector has increased as more manufacturing companies, such as Rolls Royce, are benefiting from highly skilled workers developing innovative products as well as providing knowledge based services associated with these products. Two-thirds of knowledge service exports come from non-financial sectors, with manufacturing generating significant knowledge service exports such as business services, royalties and licence fees and technical and trade related services<sup>5</sup>. This is likely to create ongoing opportunities to develop the ‘high value’ aspects of these industries and to grow the numbers of ‘knowledge jobs’<sup>6</sup>.

What is happening in manufacturing highlights that it is not just industries that the knowledge economy has affected, but also jobs. Across all industries there

<sup>4</sup> Brinkley, I. *Trading in Ideas and Knowledge*, The Work Foundation

<sup>5</sup> Brinkley, I. *Trading in Ideas and Knowledge*, The Work Foundation

<sup>6</sup> Brinkley, I. (2007) *Trading in Ideas and Knowledge*: The Work Foundation

has been **greater demand for ‘knowledge workers’** who can use, analyse and share knowledge in a way that improves the products and services of an organisation.

Like the definition of ‘knowledge industries’, capturing who ‘knowledge workers’ are is not easy given the constraints of official data classifications. The Work Foundation has identified three possible ways of capturing who knowledge workers are<sup>7</sup> – all of them with their own difficulties:

1. **All those who work in the top three standard occupational classifications – managers, professionals, associate professionals** – this definition focuses on job roles, which is useful as it focuses on what people do but does not necessarily distinguish between ‘knowledge intensive’ tasks and less knowledge based tasks. The ‘managers’ category is particularly problematic here as it includes a wide range of people across all industries: both the CEO of a large multinational and the manager of a local petrol station. Whilst all jobs use ‘knowledge’, we would imagine that it is the CEO of a large MNC who would make considerable use of knowledge to innovate in their job. Using this definition, around 40 per cent of the UK workforce would be considered ‘knowledge workers’.
2. **All those with high levels skills, indicated by degree or equivalent qualifications (NVQ level 4)** – this indicates that the individual possesses a qualification and therefore may be more likely to be employed in ‘knowledge work’ – but some people are under-employed, and it ignores those who do not have formal qualifications but still use knowledge considerably in their work. Using this definition, around 20 per cent of the UK workforce would be considered ‘knowledge workers’.
3. **All those who perform tasks that require expert thinking and complex communication skills with the assistance of computers** – this is a very useful way of thinking about knowledge workers, and distinguishes between those who ‘manage information’ and those who actively use knowledge to do their job. It is not, however, easily captured in existing datasets.

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<sup>7</sup> This is discussed in detail in Brinkley, I. (2006) *Defining the Knowledge Economy*: The Work Foundation

Some combination of these definitions is likely to be most useful as a way of assessing how many knowledge workers there are, for example graduates working in the top three occupational classifications.

Whichever definition of knowledge worker is used, however, the argument that there is increased demand for these types of worker in the UK stands. For example, the proportion of managers, professionals and associate professionals in the economy has increased, and the Sector Skills Development Agency (SSDA) predict that by 2014 more than 45 per cent of all employees will be in these three occupational groups<sup>8</sup>. Skills measured by qualifications have also increased: the number of people with degrees has quadrupled since 1974, with the Leitch review finding that 34 per cent of men and 38 per cent of women now have a level 4 qualification by the age of 25<sup>9</sup>. The number of people with no qualifications has also decreased, from more than half of men and two thirds of women in 1974 down to 13 per cent of men and 15 per cent of women in 2001<sup>10</sup>. And early indications from The Work Foundation's 'knowledge worker' survey pilot are that the use of knowledge as a significant part of a job is not confined to those with degrees or within the top three standard occupational classifications.

As mentioned earlier in this section, it is important to **maintain a distinction between knowledge based industries and knowledge jobs**. All industries are becoming more dependent on 'knowledge jobs': for example, 16 per cent of productivity growth in the US in the late 1990s is attributed to 'ongoing managerial innovation' by knowledge workers in the retail sector<sup>11</sup>. This means that you can be a knowledge worker even if you are not working in a 'knowledge based industry'. Conversely, working in a knowledge based industry does not necessarily mean you are a knowledge worker. Whilst knowledge based industries rely primarily on exploiting ideas and technology, and so have higher numbers of knowledge jobs than other sectors, not all of the jobs are 'knowledge jobs'. These knowledge based industries could not prosper without a mix of skills: financial services needs call centre workers and expert economists; hospitals rely on cleaners and healthcare assistants as well as nurses and doctors. In other words, having high levels of employment in knowledge based industries does not mean that all the employment is itself high level knowledge work.

<sup>8</sup> Working Futures 2004 – 2014, published by the SSDA 2006

<sup>9</sup> HM Treasury Leitch Review of Skills, 2006

<sup>10</sup> Hutton, W. – presentation to HM Treasury November 2006

<sup>11</sup> McKinsey Global Institute, *US Productivity Growth 1995 – 2000*, October 2001

The final effect of the **growth in the knowledge economy important to note is the growth in services and in the ‘experience economy’**, defined as the sectors in the economy providing experiences – leisure, retail, tourism etc – tailored to the desires of the affluent consumer<sup>12</sup>. Demand from consumers and from industry for knowledge based services has contributed to the growth in these sectors, with spending on services, rather than physical goods, doubling between 1970 and 2005, from 27 per cent of household income to 54 per cent. Whilst many of these services may have been shaped by ‘knowledge workers’ at some point, often these services are delivered by people working in service occupations. For example, designer clothes may be created by a designer, but they still have to be made, transported and sold and this creates demand for service jobs as well. Demand for customised services, cappuccinos, clothes, cleaners and childcare, as well as various other leisure pursuits, is likely to continue to generate a need for lower and intermediate skill occupations, as well as knowledge jobs.

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<sup>12</sup> SSDA Working Futures 2004 - 2014

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