

# Ideopolis: Knowledge City-Regions

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Alexandra Jones  
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# Executive summary

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- Increasing the volume of knowledge intensive economic activity is essential if developed countries are to remain prosperous. This reflects a transition from an economy based on land, labour and capital to an economy where the source of comparative advantage is likely to be found in the production of information and knowledge.
- Knowledge intensity increases productivity growth and prosperity through innovation. It is important to be clear too that the knowledge economy is not just about science and technology: it is about highly skilled individuals adding value to all industries and about knowledge intensive industries, which are more likely to employ highly skilled individuals.
- Cities matter to businesses in the knowledge economy: they are the places that offer organisations access to highly skilled workers, affluent consumers and the opportunity to innovate and exchange ideas.
- The Ideopolis is the vision of a sustainable knowledge intensive city that drives growth in the wider city-region. It gives cities a framework for developing knowledge-intensive industries that will be economically successful and improve quality of life.
- Cities benefit enormously from using the Ideopolis framework to increase their knowledge intensity. Cities with more knowledge intensive industries and occupations are more economically successful and can improve quality of life for many local people.
- Ideopolises are characterised by:
  - High levels of economic success
  - High levels of knowledge intensity based on The Work Foundation's definition of knowledge intensity (see Box D on page 28)
  - A diverse industry base including distinctive specialist niches
  - One or more universities that have a mutually beneficial relationship with the city, leading to industries built on research strengths, transfer of knowledge to businesses and the retention of graduates
  - Strong communications infrastructure and good transport links within the city and to other cities, including by air, rail and road
  - A distinctive long-term 'knowledge city' offer to investors and individuals alike, created by public and private sector leaders
  - Strategies to ensure that all communities benefit from the economic success associated with knowledge.

- There are nine drivers of an Ideopolis:
  1. Creating the physical knowledge city – having the architecture and accommodation that knowledge intensive businesses and workers require
  2. Building on what's there – recognising the city's existing strengths and weaknesses and playing to these
  3. 'Diverse specialisation' – having a diverse range of economic specialisms for which the city is known
  4. High skill organisations – organisations that rely on the 'high road' to productivity through high quality jobs and highly skilled people
  5. Vibrant education sector embedded in community and economy – one or more universities linking closely with the city and businesses, supported by good education institutions helping all individuals develop their skills
  6. Distinctive 'knowledge city' offer – a distinctive offer for knowledge intensive businesses and workers who are considering investing, working and living in the city, supported by diverse cultural and leisure facilities
  7. Leveraging strong connectivity within and outside the city-region – good communications infrastructure combined with quick links both within the city and to other cities via air, rail and road
  8. Strong leadership around knowledge city vision, supported by networks and partnerships – civic or private sector leadership around the vision of a knowledge intensive city, based on strong networks across different industries
  9. Investing in communities – investing in strategies to ensure the benefits of knowledge intensity are experienced by the whole community.
- Ideopolises need to consider economic success and sustainability together.
- The Ideopolis is a framework for growth within a region. Successful Ideopolises need to work with, and will drive economic growth in, other cities and areas within their region. Smaller cities can use the framework to drive growth and work with the core Ideopolis:

**Secondary Ideopolis:** Some cities are not the main drivers of growth in their city-region, and so cannot become Ideopolises. They can, however, use the Ideopolis framework to become Secondary Ideopolises' or 'Knowledge Cities' that link closely with an Ideopolis. This means that both the smaller and larger cities benefit from each other's different strengths, rather than setting up an unhelpful competition.



- Internationally, Ideopolises include Boston and Munich.
- In the UK, London and Edinburgh are currently Ideopolises. Bristol and Manchester are fast moving towards becoming an Ideopolis, with Newcastle and Glasgow not far behind.
- There is a 'tipping point' at which knowledge intensive businesses generate benefits for the city above and beyond any other sector. This tipping point is increasing year by year. Based on the OECD definition of knowledge intensive businesses, 17 per cent of a city's businesses need to be knowledge intensive for there to be a significant impact on economic success. Based on The Work Foundation definition, 25 per cent of a city's businesses need to be knowledge intensive.
- There is also a 'tipping point' at which knowledge intensive occupations make a real difference: cities where more than 14 per cent of the working population are senior managers are more successful.
- Cities that have more than 19 per cent of their workers with degree level qualifications see a significant increase in their economic success, and this increases further when more than 29 per cent of the working population have a degree.
- An Ideopolis needs to be supported by powers and funding at a city-region level.
- Those cities that want to become an Ideopolis should:
  1. Conduct an 'Ideopolis audit': where is the city now in terms of knowledge intensity, industry mix and demographics? What are the city's main strengths and weaknesses?
  2. Review whether the city could become an Ideopolis or a Secondary Ideopolis and plan accordingly
  3. Focus on building on the city's strengths, for example working with the university to identify research strengths, working with businesses to understand their needs in a location, or looking at the industrial legacy of a city and striving to make a particular sector more 'high value'
  4. Invest in local skills at all levels – tomorrow's knowledge workers already live in the city
  5. Concentrate on what makes the city distinctive as a way of attracting

knowledge intensive businesses and investment

6. Ensure that any strategy to increase knowledge intensity and economic success has a complementary strategy that allows benefits to be experienced by the whole community, rather than by-passing those in deprived communities or with lower skills.

- The Ideopolis vision offers cities and their regions a framework to help them increase their knowledge intensity and in turn this will drive economic growth and an improved quality of life. It offers national policymakers an insight into how the knowledge economy works at a regional and sub-regional level, and into the policy levers that facilitate knowledge-based cities and knowledge-based growth.

# 1 Context

It is a truism that the UK's economic success and future prosperity depends on the ability of business and government to bring together two critical factors that generate sustainable economic growth: knowledge, which is said to be the key to innovation and higher productivity, and cities, the 'principal foundations of economic prosperity'<sup>1</sup> and drivers of the global economy.<sup>2</sup>

It is also right to say that, too often, debates about the knowledge economy ignore geography altogether, despite the research demonstrating the importance of place to global financial markets<sup>3</sup>, knowledge transfer<sup>4</sup> and mobile knowledge organisations<sup>5</sup>. Equally, urban policymakers are too frequently unclear about what the 'knowledge economy' looks like, how it might benefit them or what to do to become a successful 'knowledge city'.<sup>6</sup>

Yet beyond these confusions lie some deeper problems that bedevil the story about the knowledge economy. What for example, do we mean by knowledge? Why is it important for economic success? Is the labour market going through a process of transformation so profound that everybody will either have to be a knowledge worker in the future or run the risk of perpetual social exclusion? What precisely is the relationship between knowledge intensity, geographical concentration and economic success? Can we begin to tease out some useful answers to all these questions that can shape both public policy and business strategy? Most importantly is it possible to overcome the conceptual confusions of the current debates and the misuse of some fundamental principles of economics?

Our purpose in this report has been to explore these questions at the city, or more precisely the city-region level. We began with the notion of an 'Ideopolis', principally because we needed some frame of reference for our investigations, because we had developed the notion ourselves and because policy makers had become increasingly interested in the 'knowledge city' – exemplified most recently by Gordon Brown's announcement of four 'Science Cities' in the 2005 Budget.

1 Begg, I. (ed) (2002) *Urban Competitiveness: Policies for dynamic cities*: Policy Press: Bristol

2 ESRC Cities Project

3 See Sassen, S. (1999) *The Global City: London for a discussion of the need for 'expanded central control and management' and 'global cities'*

4 Porter, M.E. (1998) 'Location, clusters and the 'new' microeconomics of competition' in *Business Economics*, 33 (1), 7-17

5 Krugman, P. (1991) *Geography and Trade*, Cambridge, MA: MIT Press and Fujita, M., Krugman, P. & Venables, A. (2000) *The Spatial Economy: Cities regions and international trade*: Cambridge, MA: MIT Press

6 Ideopolis interviews

Building initially on the definition adopted by Judis and Texeira in the USA, but also drawing on insights from UK literature, we have defined an Ideopolis as follows:

**An Ideopolis is a sustainable knowledge city that drives economic success in the wider city-region.** It has:

- high levels of economic success
- high levels of knowledge intensity based on The Work Foundation's definition of knowledge intensity (see Box D on page 28)
- a diverse industry base including distinctive specialist niches
- a university that has a mutually beneficial relationship with the city, leading to industries built upon research strengths, transfer of knowledge to businesses and the retention of graduates
- strong communications infrastructure and good transport links within the city and to other cities, including air, rail and road
- distinctive long-term 'knowledge city' offer to investors and individuals alike, created by public and private sector leaders
- strategies to ensure that deprived communities also benefit from the economic success associated with knowledge.

Working closely with our sponsors<sup>7</sup>, we have sought to investigate whether such cities really exist or whether they remain the pipe dreams of visionary policy makers? If they do exist then how have they made the transition from an industrial economy, via a post-industrial economy to a 'knowledge economy'? What are the lessons for policy makers at national, regional and city level?

This chapter therefore begins by explaining why cities matter. We also make some effort to give some content to the notion of the knowledge economy before exploring the Ideopolis framework in more detail to consider whether it is a useful way of thinking about the economic development of UK cities.

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### 1.1 Why do cities matter?

It is self evident that cities are the places where the bulk of the UK population live and work. Equally, some of the country's most profound social problems and the highest incidence of poverty are located in the inner city. For example, urban areas account for 90 per cent of the population, 91 per cent of economic outputs and 89 per cent of jobs<sup>8</sup> – as well as containing the most deprived wards in the country.

<sup>7</sup> The Arts Council, BT, Manchester City Council, ONE North East, Scottish Enterprise, Transport for London and the University of Bristol

<sup>8</sup> *Towards an Urban Renaissance: report of the Urban Task Force*

Cities may well be powerhouses of creativity and innovation, just as they may offer access to arts and culture, 'buzz' and the possibility of niche lifestyles. Yet at the same time cities are characterised as rather depressing places with dirty streets, high levels of crime, income inequality and social deprivation. A swift visit to some of the UK's less prosperous urban areas would confirm the impression that little progress has been made in moving beyond J K Galbraith's 'private affluence and public squalor'.<sup>9</sup>

It is welcome therefore, that UK policymakers, and in particular HM Treasury, have begun to take seriously the economic performance of cities outside London.<sup>10</sup>

Of course, some commentators have suggested that 'globalisation' has led to the 'death of distance' so that geography becomes almost irrelevant in a world economy with low tariff barriers and more intensive trade between developed countries.<sup>11</sup> We might also observe however that the argument so far has been won by those who contend that global competition combined with the growing importance of knowledge and innovation enhance the significance of place<sup>12</sup> – regional economic distinctiveness is now a major source of comparative advantage.<sup>13</sup>

Proponents of the importance of place to the knowledge economy argue that cities are the spatial manifestation of economic and social 'hubs'. Alfred Marshall's famous 1890 analysis<sup>14</sup> of 'agglomeration economies' forms the basis, over a century later, of the argument that cities are the main drivers of the knowledge economy.

First, Marshall argues that organisations locate in cities because they offer 'wide and deep labour markets for specialised skills'. This remains a vital advantage of cities in the knowledge economy. Many highly trained workers continue to flock to cities for the balance of economic, social and cultural

9 Galbraith, J.K. (1958) *The Affluent Society*: Houghton, Mifflin Company, Boston, MA

10 Policies including the creation of Regional Development Agencies, the Northern Way and Science Cities are all examples of this recent emphasis on cities and regions

11 Cairncross, F. (1997) *The Death of Distance*: London: Orion Business Books and Gray, J. (1998) *False Dawn: The Delusions of Global Capitalism*: Granta Books, London

12 The OECD, the World Bank and national governments including the UK, France, Germany, the Netherlands, Portugal and New Zealand are all engaged in debates about clusters – see Martin, R. & Sunley, P. (2003) 'Deconstructing clusters: chaotic concept or policy panacea?' in *Journal of Economic Geography* 3, pp 5-35

13 Coyle, D. (1997) *The Weightless World: Strategies for managing the digital economy*: London: Capstone and Krugman, P. (1997) *Pop Internationalism*: MIT Press: Cambridge, MA

14 Marshall, A. (1890) *Principles of Economics*

opportunities that is offered<sup>15</sup>, giving organisations access to a diverse, well-qualified labour force with considerable potential to contribute to innovation and hence productivity gains<sup>16</sup>.

Second, Marshall argued that cities offer close links with customers and suppliers. In the 21st century this remains true: cities offer larger markets<sup>17</sup>, proximity to a diverse range of businesses and suppliers who also benefit from locating in the city, and greater connectedness (communications and transport) to other cities and markets.

Third, Marshall states that cities enable the exchange of information with nearby firms or 'knowledge spillovers'. This analysis is at the heart of Michael Porter's arguments about clusters and the knowledge economy.<sup>18</sup> Innovation is said to be fostered through opportunities to exchange ideas with complementary firms, resulting in productivity growth. At the heart of the cluster story lies the notion of the network – whether formal institutions for information exchange and technology transfer or informal arrangements between businesses. The same argument applies to the importance of linkages between business and universities. Having strong relationships with research institutions and a range of other instruments in place (access to venture capital, business angels etc) are all important in accelerating the pace of innovation. Many of the cities we describe below place a strong emphasis on effective collaboration driven by geographical proximity.

The relevance of the knowledge economy to cities and city success is also bolstered by Michael Parkinson's work. His initial research on European cities<sup>19</sup> found that the most successful regions also had the most successful cities, and that there were no examples of successful regions with unsuccessful cities at their core. His more recent *State of the English Cities* report argues that human capital – people and their skills – is vital to the success of cities and that knowledge intensive industries are important drivers of growth and prosperity.<sup>20</sup>

If all this is self-evident one might reasonably wonder why many major cities have yet to reinvent themselves as knowledge intensive sources of

15 Judis, J. & Teixeira, R. (2002), *The Emerging Democratic Majority*: Scribner, New York

16 Glaeser, E., Kolko, J. & Saiz, A., *Consumer City*, NBER Working Paper 7790, (July 2000)

17 Scott, A. (ed.) (2001) *Global City-Regions, Trends, Theory, Policy*: Oxford

18 Porter, M. 'Location, Competition and Economic Development: Local Clusters in a Global Economy' in *Economic Development Quarterly* 14, No. 1, February 2000: 15-34.

19 Parkinson, M. *Competitive European Cities: Where do the Core Cities Stand?* Office of the Deputy Prime Minister, Para 6.1

20 Parkinson, M. et al (2006) *State of the English Cities*: Office of the Deputy Prime Minister

innovation-driven growth. The straightforward answer of course is that 'it's not so simple'. Many cities still face historic problems generated by the disappearance of traditional industries. Social exclusion and high unemployment persist in the areas of the highest deprivation and the city may have an 'image' that makes it hard to attract knowledge workers and innovative businesses.

Beyond these practical challenges there remains a high degree of conceptual confusion, which makes it difficult for policymakers to identify the steps that they should take to grow the knowledge economy. In particular, far too much of the 'popular' knowledge economy story focuses only on the ICT or biotechnology sectors, or the importance of the so-called 'creative class' (Florida), rather than on how skills and technology advances can be deployed in order to increase productivity in a 'knowledge economy'. Perhaps a more constructive approach would be to make an empirical assessment of what works and does not work in different cities. We might also usefully consider how the 'knowledge economy' affects those with relatively low skill levels who may find it hard to establish a secure place in flexible, dynamic, knowledge-driven, high performance organisations.

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## 1.2 Why does knowledge matter?

To inject a sense of space and place into debates about the knowledge economy requires greater clarity in definitions. The discussion remains plagued by the hangover from the dot-com bubble and the breathless futurism that characterised much of the rhetoric of that time, such as the 'death of distance' and the 'weightless economy'.

This rhetoric makes it difficult to have a clear discussion about what does and does not matter in the knowledge economy. Digging beneath it, what we find is a rather compelling (although not entirely new) story about the importance of knowledge and innovation as an engine of growth in an open market economy. It becomes clear too that there is a sound theoretical basis for the argument that innovation and skills are vital to increasing UK productivity and closing the productivity gap with other major developed economies.<sup>21</sup>

Elsewhere we have already outlined the three different primary narratives currently in use to justify the assertion that knowledge matters.<sup>22</sup> In brief, they are:

<sup>21</sup> The USA, France and Germany are around 20 per cent ahead of the UK on the measure of GDP per hour worked according to DTI Competitiveness Indicators

<sup>22</sup> See *Ideopolis-Knowledge Cities Working Paper 1*, Coats, D. (2005) *What is the Knowledge Economy?*: The Work Foundation

- The **'globalisation'** story, which suggests that the prosperity of the developed world is threatened by the rise of India and China and that only a shift to 'high value' or 'knowledge intensive' activities can secure the prosperity of the developed world.
- The **'endogenous growth theory'** story, which suggests that businesses grow not simply in response to competitive pressure and rising demand at the macro level but through investment in their own capacities to innovate and in the skills of the workforce.
- The **'national competitiveness'** story advanced by commentators like Lester Thurow and Robert Reich in the early 1990s. The suggestion here is that developed nations are in a battle with each other for their share of global prosperity and the best route to success is through investment in 'high value added', 'knowledge intensive' industries.

Our analysis is that both the 'globalisation' and 'national competitiveness' stories are partial. Concerns about the relocation of production to the developing world need to be separated from an analysis of how the exploitation of knowledge can generate economic growth.

Whilst low wage competition from developing countries does affect the UK economy, most of the competitive pressures faced by businesses in the developed world are generated by trade between developed countries. Nor is the notion of 'national competitiveness' useful: it assumes a fixed quantity of employment and prosperity for which countries must compete<sup>23</sup> and misappropriates a term intended to describe competition between firms rather than countries<sup>24</sup>. Instead, the most compelling argument for the importance of knowledge as a source of competitive advantage is endogenous growth theory.

Endogenous growth theory argues that continued economic growth and our prosperity as a nation depend on the level of innovation, built on skills development and skills utilisation, across the economy.<sup>25</sup> This is where we find the new products and services that create new markets and where we find the source of productivity growth which drives non-inflationary wage growth and rising national income. It is an analysis that would apply even if Europe were a closed economy and there was no international trade. In other words,

<sup>23</sup> Krugman, P. (1996) *Pop Internationalism*: MIT Press, Cambridge, MA

<sup>24</sup> For a discussion see Turok, I. 'Cities, Regions and Competitiveness' in *Regional Studies*, Vol. 38.9 pp 1069-1083, December 2004

<sup>25</sup> Crafts, N. (1996) 'Post-Neoclassical Endogenous Growth Theory: What are its policy implications?' in *Oxford Review of Economic Policy*



regardless of the size of the market in which the UK is operating, the equation is: innovation + skills = productivity growth = rising prosperity.

This argument for the importance of the knowledge economy is not, then, entirely novel or a result only of advances in ICT. It is part of a much older story about how firms in 'leader' nations remain efficient and effective in a world of open trade and global capital markets. What has changed, however, is the speed at which change is taking place: intensifying competition is accelerating the pace of transformation and ICT means that knowledge and information can be exchanged instantaneously. ICT can increase productivity when deployed effectively, and is cited as one of the main reasons for higher US productivity.<sup>26</sup> International economic integration, including the emergence of China and India, mean there are more innovative national actors, and the pace of change is faster.<sup>27</sup>

We might offer a further clarification by being more precise about our definition of 'knowledge'. Too often, the 'knowledge economy' is regarded as being restricted to exciting new sectors such as biotechnology. Yet this entirely ignores the theoretical basis for knowledge's beneficial impact on prosperity: the argument that skilled people can innovate and improve productivity in any sector.

This means that an assessment of the knowledge economy needs to include analysis not only of the sectors most likely to be knowledge intensive, but also of 'knowledge intensive occupations'. After all, biotech firms employ people to do standard administrative work, whilst highly skilled professionals manage complex logistics systems in retail.

With this analysis in mind, we have reviewed current measures of the knowledge economy and found that they do not emphasise either occupations sufficiently, or some of the key 'knowledge economy' sectors. As a result, we have identified three occupational classifications as 'knowledge intensive' – managers and senior officials, professionals, and associate professionals and technical workers (see Appendix A for our expanded definition). The OECD definition of knowledge intensive industries has also been reviewed and found to exclude education, healthcare and some cultural and creative industries, and this is reflected in our slightly broader definition.

26 Bloom, N., Sadun, R. & Van Reenen, J. (2006) 'It ain't what you do it's the way that you do I.T. – Testing explanations of productivity growth using US affiliates': Centre for Economic Performance, London School of Economics

27 HM Treasury (2005) *Globalisation in the UK: Strength and opportunity to meet the economic challenge*, London: HMSO

Furthermore, we need to be clear that not everybody will be (or can be) a knowledge worker in a more knowledge intensive economy. Routine, poor quality jobs in private services are likely to be with us for some considerable time – supermarket shelves will still need to be stacked, toilets cleaned and dustbins emptied.

Equally, some of the productivity gains generated by the application of ICT or skills may be as much about the more effective organisation of routine jobs as they are about high skill knowledge work. For example, the development of software that manages complex logistics for a supermarket is highly knowledge intensive. Yet the productivity gains are realised when the software is used to sort data more efficiently, and this in turn can provide information, for example about the kind of fruit and vegetables that particular shoppers prefer and what stock is needed where. The gains are realised at the level of warehouse staff, shelf stackers and sales assistants because the right stock is in the right place, but it demands no higher skills or knowledge intensity from them.

All of this helps to explain why we have witnessed the emergence of an 'hourglass' shaped labour market over the last twenty years, with more high-skill, high quality jobs (Apple 'MacJobs') in the knowledge economy, more low pay, low productivity, low skill jobs ('McJobs') at the bottom of the labour market and fewer 'middling' jobs.<sup>28</sup>

The consequences in the UK are clear – a widening gap between rich and poor and declining social mobility. Indeed, this is not simply a British phenomenon. Wage inequality has increased almost everywhere in the developed world – even in a country like Sweden with a relatively narrow distribution of earnings.<sup>29</sup> Projections for the composition of the labour force over the next six years suggest that this process of polarisation is set to continue.<sup>30</sup> No discussion of the knowledge economy can ignore the challenges facing those people who may find it difficult to find a secure place in a high skill, high productivity, high performance workforce: governments at all levels need to recognise the need to ensure all jobs offer a living wage, fulfilment and opportunities for progression.

28 Goos, M. and Manning, A., McJobs and MacJobs in Dickens, R. et al (ed) (2003) *The Labour Market Under New Labour*: Palgrave

29 Esping-Anderson, G. 'Inequality of Incomes and Opportunities' in Giddens, A. and Diamond, P. (eds) (2005) *The New Egalitarianism*: Polity

30 *Working Futures* (2004): Sector Skills Development Agency

Defining the knowledge economy more precisely in this way helps to delineate the challenges facing the UK. Our analysis suggests that there is a need for policymakers to ensure that there are places (i.e. cities) with an economic climate and culture conducive to innovation, organisations that know how to use knowledge effectively, people who have high skills, and jobs that all offer opportunities for people to progress and develop. And this analysis cuts with the grain of the government's assessment of some of the UK's most persistent economic problems. The Treasury have identified five drivers of productivity that relate directly to endogenous growth theory: skills; investment, innovation; enterprise; and competition. The UK's weaknesses in all of these areas are identified as being because of:

- lower levels of investment and capital stock
- difficulty in applying and reaping the benefits of best practice
- a poor record on innovation and investment in R&D – with some notable exceptions like aerospace and pharmaceuticals
- problems with workforce skills – in particular intermediate skills, although policy over the last eight years has begun to fill some of the gaps.<sup>31</sup>

For the UK to respond to these challenges there is a need to pay as much attention to micro-economic policy as to macro policy. Endogenous growth theory places a premium on investment in research and development (with fiscal incentives provided by the state), effective linkages between research universities and business, a ready supply of venture capital and effective business networks (both national and international) to facilitate technology transfer. The theory also emphasises the importance of a more innovative and productive workforce, which requires higher levels of investment in training and skills. Most of these activities still tend to happen in particular places – and those places tend to be cities.

### 1.3 Research questions and methodologies

Based on the analysis outlined above, this project has sought to investigate how UK cities can become drivers of the knowledge economy and what the implications of becoming a 'knowledge city' might be. We have built on our earlier work in 2003 that discussed the concept of an Ideopolis: Knowledge City. At that time, the Ideopolis was defined as being distinguished 'first by a set of key physical and economic features; second, by a particular social and demographic mix; and third, by a specific cultural climate and set of commonly-held values'.<sup>32</sup> This analysis, however, does not allow cities to navigate the path towards becoming an Ideopolis because it leaves three important gaps:

<sup>31</sup> *Productivity in the UK: The evidence and the government's approach* (2001) HM Treasury

<sup>32</sup> Cannon, T., Nathan, M. & Westwood, A. (2003) *Welcome to the Ideopolis*: The Work Foundation, London

### 1. Lack of clarity about what 'knowledge' means

As discussed in section 1.2, a lack of clarity about what 'knowledge' means, why it is important and how 'knowledge intensity' should be measured leaves many cities either struggling to translate theory into practice, or focusing inappropriately on building clusters on very weak foundations.

### 2. Lack of clarity about how to define 'city'

It is widely acknowledged that the administrative boundaries of a city do not always reflect the economic realities of that city.<sup>33</sup> Yet the early Ideopolis concept and debates about knowledge cities do not reflect the debate about city-regions and their potential role in driving economic growth.

### 3. Lack of clarity about the drivers of an Ideopolis

Our earlier work described the features of an Ideopolis, but did little to explain how these characteristics combine to create a 'successful' Ideopolis. Similarly, we did little to explore the factors that enable a city to become an Ideopolis and said little about the relative importance of these factors. What is needed is a conceptual framework that goes beyond a 'one size fits all' 'Ideopolis checklist' and offers clearer guidance about assessing weaknesses/strengths so that cities can understand their own situation and respond with a high degree of sophistication.

The project has drawn on a range of methodologies, including:

#### Box A: Methodology

##### 1. Literature reviews

Recognising the importance of building on existing research, rather than duplicating it, we conducted an extensive literature review and commissioned papers on the following issues (all available on our website [www.theworkfoundation.com](http://www.theworkfoundation.com)):

- The knowledge economy – Review of the evidence about the knowledge economy, untangling the different narratives and more precisely defining what drives it and what 'knowledge' means<sup>34</sup>
- Spatial competitiveness – Review of the concept of competitiveness in relation to cities<sup>35</sup>
- Quality of life – Review of existing measures of quality of life and how these relate to cities<sup>36</sup>

33 Parkinson, M. *Competitive European Cities: Where do the Core Cities Stand?*: Office of the Deputy Prime Minister

34 See Ideopolis Knowledge-Cities Working Paper 1, Coats, D. (2005) *What is the Knowledge Economy?*: The Work Foundation

35 Greene, F. (2005) *A Review of Spatial Competitiveness*: The Work Foundation

36 Lee, N. (2005) *A Review of Quality of Life Measures*: The Work Foundation

- Polarisation – Review of polarisation in knowledge cities<sup>37</sup>
- Distinctiveness – Review of what ‘distinctiveness’ means in the context of cities and the knowledge economy.

## 2. Data model

We used data for 94 UK urban areas, nine city-regions (the Core Cities<sup>38</sup>, Edinburgh and Glasgow) and NUTS 3<sup>39</sup> areas, drawing on a variety of government sources but mainly the Office for National Statistics. The measures used include the following:

- **Measures of knowledge intensity:** different measures of knowledge intensity were considered by looking at occupations and industries, using both the OECD definitions and The Work Foundation’s definitions in Appendix A
- **Economic output:** economic performance was assessed by looking at Gross Value Added (GVA). Following the methodology from the UK Competitiveness Index<sup>40</sup>, we constructed time series GVA data at a more local level by using worker productivity in the NUTS 3 area to calculate GVA per worker
- **Quality of life:** as well as the 2004 index of multiple deprivation, we constructed a quality of life index based on the results of our survey of what influences perceptions of quality of life, and whether knowledge workers have different views.

Our analysis explored the relationships between cities’ economic performance, quality of life and socio-economic characteristics, using a range of multivariate statistical modelling techniques. Primarily, the results given below are for local authorities, although there are issues with administrative boundaries for many authorities, which is why we also collated a dataset at city-region level (see Appendix B for definitions). Where possible the analysis looked at changes over time. Whilst some data was available for the period between 1991 and 2005, very little was available for this length of time over comparable spatial scales. Some of the challenges we needed to manage included:

- inadequate measures – i.e. data not measuring what we need it to measure, thus reliance on proxy measures
- devolved data collection – i.e. not all data is comparable across regions or nations within the UK
- incompatible spatial scales
- the limits of Standard Industrial Classification (SIC) and Standard Occupational Classification (SOC) measures.

37 Williams, L. (forthcoming 2006) *A Review of Polarisation in UK Knowledge Cities*: The Work Foundation

38 The Core Cities group, formed in 1995, consists of Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle, Nottingham and Sheffield

39 NUTS 3 stands for Nomenclature des Units Territoriales Statistiques and is a measure at a particular spatial level

40 Robert Huggins Associates (2005) *UK Competitiveness Index*

### 3. Quality of life survey

Building on previous research, we conducted a literature review of previous quality of life studies, both in general and city-specific.<sup>41</sup> Building on these findings, we then commissioned ORC International to conduct a telephone survey of 1,000 people living in urban areas across the UK. The survey was based on two previous studies conducted by Glasgow University in 1989<sup>42</sup> and 1997<sup>43</sup>, enabling us also to make some comparisons over time about general views on quality of life. It focused on: what makes somewhere a good place to live; the quality of life factors lacking in the current place they live; and the extent to which people thought there was a ‘fairness’ in the quality of life offering. One of the main purposes of the survey was to analyse the extent to which ‘knowledge workers’ and ‘non-knowledge workers’ had different perceptions of the factors contributing to quality of life, addressing questions raised by previous research about attracting knowledge workers to cities.

### 4. UK case studies

We conducted case studies in ten UK cities:

- Birmingham
- Bristol
- Edinburgh
- Manchester
- Sheffield
- Brighton
- Cambridge
- Glasgow
- Newcastle
- Watford

These case studies were selected to include cities at various points on the ‘Ideopolis trajectory’ and reflect diverse social and economic circumstances, based on literature reviews and data analysis. Each case study looks at the development of the city, current strengths and weaknesses, knowledge intensity and lessons that can be learned for other cities. The analysis was based on literature reviews and several in-depth semi-structured interviews with key players in each city, including representatives from local government, regional development agencies, large and small businesses, higher education institutions, the voluntary sector and cultural industries. Each case study has been written up and published separately on our website ([www.theworkfoundation.com](http://www.theworkfoundation.com)). Summaries of each are provided in section six of this report.

#### London

The decision was taken early on in the project to exclude London from our UK case studies. This is despite the fact that London is certainly an Ideopolis: GVA is 40 per cent above the

41 Lee, N. (2005) *Ideopolis: Knowledge Cities – A Review of Quality of Life Measures*: The Work Foundation

42 Rogerson, R.J., Morris, A.S., Finlay A.M. and Paddison, R. (1989) *Britain's Intermediate Cities: A comparative study of the quality of life, Glasgow Quality of Life Group*: Department of Geography, University of Glasgow

43 Rogerson, R. (1997) *Quality of Life in Britain, Glasgow*: University of Strathclyde

national average, it has the highest proportion of working age population with degrees<sup>44</sup>, a high proportion of employees in knowledge intensive businesses and is the powerhouse of wealth creation across the South East and the UK as a whole. However, we sought to select comparable cities for the case studies, and in the UK there is no city comparable to London in terms of size, economic output or labour market. Since London is a global city, our view was that it requires a standalone project and would not provide as easily transferable lessons as the other cities we have selected.

#### **5. International case studies**

Recognising that cities around the world have been affected by the knowledge economy, we sought to learn lessons from cities abroad about how they have coped with economic change and which factors help or hinder the success of cities in the knowledge economy. Case studies were commissioned of Boston, Dublin, Lisbon and Munich, selected because Boston and Munich are highly successful 'knowledge' cities, and Dublin and Lisbon are becoming more successful and have actively chosen to adopt a 'knowledge' strategy in order to become more successful.

<sup>44</sup> Parkinson, M. et al (2006) *State of the English Cities* ibid

## 2 What is an Ideopolis?

### 2.1 Define Ideopolis

Our notion of the Ideopolis is essentially a vision of a successful knowledge city, which is sufficiently strong to generate sustainable economic growth for the whole of the surrounding region. This may be an easy notion to articulate in principle, but is much harder to apply in practice. How, for example, should a city seek to become an Ideopolis? Is this an option for all cities – and if not what are the other options? Is it possible to use this framework to generate useful policy insights at national, regional and local level?

We first sought to ensure that our approach was useful for our sponsors and stakeholders. As a concept it has already been through numerous iterations, starting with Judis and Teixeira's work on soft technology sectors.<sup>45</sup> The Work Foundation also conducted some work on the Ideopolis in 2003.<sup>46</sup> Before finalising our definition, we consulted with a range of stakeholders about what kind of concept would be most useful. This consultation highlighted the following issues:

- The 'Ideopolis' is most useful as an aspiration and vision that encapsulates the idea of cities as wealth creators in the knowledge economy
- The 'Ideopolis' needs to consider knowledge issues in relation to economic growth, long-term success and quality of life issues
- The 'Ideopolis' needs to recognise the relationships between different spatial scales, such as the city and city-region
- If cities are to become Ideopolises, they need a more detailed framework of drivers that can help them get there.

With these considerations in mind and having reviewed the available evidence about what successful knowledge cities look like, we have adopted the following working definition of the Ideopolis:

<sup>45</sup> Judis, J. & Teixeira, R. (2002) *The Emerging Democratic Majority*: New York, Scribner

<sup>46</sup> Cannon, T, Nathan, M. & Westwood, A. (2004) *Welcome to the Ideopolis* ibid and Westwood, A. & Nathan, M. *Manchester: Ideopolis? Developing a knowledge capital*: The Work Foundation



**Box B: Working definition of Ideopolis**

**An Ideopolis is a sustainable knowledge city that drives growth in the wider city-region**

An Ideopolis has:

- high levels of economic success
- high levels of knowledge intensity based on The Work Foundation’s definition of knowledge intensity (which includes occupations and a broader definition of knowledge sectors including health and education, see Box D)
- a diverse industry base including distinctive specialist niches
- a university that has a mutually beneficial relationship with the city, leading to building industries based on research strengths, transferring knowledge to businesses and the retention of graduates
- strong communications infrastructure and good transport links within the city and to other cities, including air, rail and road
- distinctive long-term ‘knowledge city’ offer to investors and individuals alike, created by public and private sector leaders
- strategies to ensure that deprived communities also benefit from the economic success associated with knowledge.

This vision deliberately includes knowledge intensity, economic success, sustainability and the ‘city-region’ for reasons explained below.

**2.1.1 An Ideopolis that lasts...**

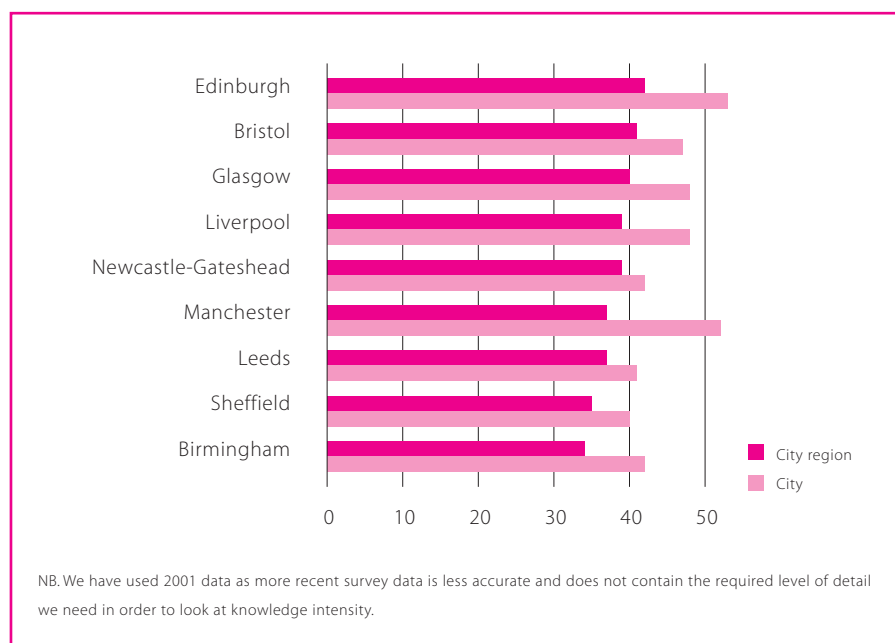
Becoming an Ideopolis is not just about economic success. All our interviewees argued that the Ideopolis is a vision that has to focus on longer-term objectives as well as short-term needs and challenges. The successful Ideopolis will rely on educating the future workforce, on managing the tensions between economic growth and the demands of the environment and will need to ensure that the fruits of growth are distributed fairly. Sustainability is a critical part of the Ideopolis vision to focus both on economic success and on quality of life because cities have to manage the longer-term consequences of knowledge-driven growth and ensure that everyone in the city benefits.

**2.1.2 An Ideopolis Knowledge City-Region or a Secondary Ideopolis Knowledge City?**

Our vision also emphasises the role of the Ideopolis in driving economic growth based on knowledge in the wider city-region, and in doing so consciously seeks to differentiate between larger and smaller cities. Larger cities, such as Manchester, Bristol and Leeds, can benefit the city-region as a whole, where ‘city-region’ is defined as ‘the enlarged territories from which core urban areas draw people for work and services such as shopping,

education, health, leisure and entertainment'.<sup>47</sup> Our analysis demonstrates that the central local authority in each city-region tends to have considerably higher levels of knowledge intensive industries than their hinterlands.

**Figure 1: Percentage working in knowledge intensive industries, 2001 (workplace based)**



This means that the vision of the Ideopolis is different for those cities that can be the primary drivers of growth in their city-region, because they need to take steps to ensure that the city-region as a whole can benefit from the success of the core urban area. This kind of city, we argue, should aspire to be an Ideopolis: City Region – or Ideopolis for short.

However, smaller cities can still aspire to be ‘Secondary Ideopolises’ or ‘Knowledge Cities’. They can reap benefits from innovation, knowledge intensive occupations and knowledge intensive industries and still use the framework outlined in this report, but they cannot drive growth in the wider city-region. They may also be more likely than Ideopolis: City-Regions to have a reputation based on specialisms, for example creative and cultural industries make Brighton well known as a ‘Cultural City’. The crucial difference between an Ideopolis City-Region and a Secondary

47 A Framework for City-Regions, Urban Research Summary No.20, 2006, Office of the Deputy Prime Minister

Ideopolis is that Secondary Ideopolises tend to be linked with an Ideopolis: City-Region – Cambridge may be a very successful ‘Secondary Ideopolis’ but it is unavoidably part of the Greater London city-region, as is Brighton (see box below).

### Box C: Secondary Ideopolis

**Brighton and London: a Secondary Ideopolis benefiting from an Ideopolis** Brighton is a knowledge intensive city that operates firmly within the ‘city-region’ of London. Brighton benefits enormously from its links with London, through tourism and offering a high quality of life for many workers who commute to London – but it has its own strategy for doing so and for becoming a ‘Secondary Ideopolis’. Brighton and Hove is just far enough away from London to make all the difference, and just close enough to be a very special part of the largest international market for creative ideas, services, products and people.<sup>48</sup>

This distinction between the Ideopolis and the Secondary Ideopolis avoids a ‘one size concept fits all’ approach and means that cities can use **appropriate spatial scales** when using our model. It also means that the Ideopolis concept offers a framework that a whole region can use, working with the different needs of different cities to increase knowledge intensity.

48. Brighton and Hove Creative Industries Report: Summary

**2.2 Which cities are Ideopolises?**

Looking only at our case study cities and London, our data analysis, interviews and literature reviews suggests the following taxonomy of cities.

**Table 1: Taxonomy of cities**

Type of city	Examples of cities	Why?
Ideopolis: city-region	London, Edinburgh	These cities are highly knowledge intensive, have significant niche sectors and a highly educated workforce. They drive growth in a wider city-region. However, Edinburgh lacks the city-region institutional framework that would help sustain growth and quality of life.
Almost Ideopolis	Bristol, Manchester	Bristol and Manchester are slightly lower on knowledge intensity. Bristol does best when viewed at the city-region level. Manchester needs to develop more knowledge intensive industries and increase the number of highly skilled workers. Both have challenges around polarisation.
Early stages Ideopolis	Newcastle, Glasgow	These cities have made significant strides towards becoming Ideopolises, with a great deal of positive change. They are still emerging from post-industrial decline and dealing with the associated challenges.
Potential Ideopolis	Birmingham, Sheffield	They have some successful niche industries but currently have relatively low levels of knowledge intensity.
Secondary Ideopolis	Cambridge, Brighton	Both cities are highly knowledge intensive but lack the critical mass to drive growth in a wider city-region. Both are reliant on an Ideopolis – London – for growth.

The table below illustrates this further:

**Table 2: Knowledge intensity in large local authorities (350,000+)**

	A % employed in knowledge occupations (residence based, 2001)	B % employed in knowledge occupations in knowledge industries (residence based, 2001)	C % of businesses that are knowledge based (workplace based, 2001)	D % of employment in businesses that are knowledge based (workplace based, 2001)
Edinburgh	49	36	38	53
Bristol	41	28	40	47
Leeds	38	24	31	41
Glasgow	38	25	31	48
Manchester	38	26	37	52
Sheffield	37	24	28	40
Birmingham	36	23	30	42
Newcastle- Gateshead*	35 (39)	23 (27)	31 (33)	45 (50)
Bradford	35	21	25	37
Liverpool	35	24	32	48

\* Figures for Newcastle alone in brackets

### Box D: How do you measure knowledge intensity in an Ideopolis?

Measuring knowledge intensity remains challenging. Our analysis of the drivers of the knowledge economy highlights the importance of knowledge intensive occupations – i.e. high skill occupations (professional, technical and associate professional or technical) that add value through innovation – and knowledge intensive industries, which are industries such as biotech and professional services that are more likely to contain high levels of knowledge intensive occupations. Appendix A sets out our detailed assessment of which occupations and industries these are. To reflect the complexity of understanding the knowledge economy, however, we argue that cities should assess their level of knowledge intensity on four counts:

1. Proportion of labour force working in 'knowledge intensive occupations' across all businesses
2. Proportion of total businesses that are in knowledge intensive sectors
3. Proportion of labour force employed in 'knowledge intensive sectors'
4. Proportion of the labour force working in 'knowledge intensive occupations' in knowledge intensive industries.

It is important to use these four measures because our theory of the knowledge economy suggests that:

- knowledge increases productivity in any sector, so having a higher number of knowledge intensive occupations should benefit a city's economy (measure one)
- a high number of businesses in knowledge intensive sectors (measure two) should increase economic growth in the city, but if many of the businesses are small, there would be lower levels of growth. This means it is important to know what proportion of total employment knowledge intensive businesses account for (measure three)
- a city could have a high number of knowledge businesses but most people employed in them could be working in lower skilled occupations, making it less likely this sector would add value to the local economy (measure four).

## 3 Why aspire to be an Ideopolis?

We wanted to test the hypothesis that by becoming an Ideopolis – a more knowledge intensive city – a city would benefit in terms of economic success and quality of life. To test whether this was true, we used data analysis and case studies to review the impact of increased knowledge intensity on economic performance and on quality of life outcomes over time. We found compelling evidence that there is a relationship between knowledge, growth and quality of life – but cities need to be strategic about how they become more knowledge intensive to ensure that the benefits flow to the whole local population. This section explains our key findings about these relationships.

### 3.1 Knowledge intensity and economic success

There is compelling evidence supporting the hypothesis that knowledge intensity and growth are related. From Parkinson's State of the Cities report, identifying human capital as an important source of economic success<sup>49</sup>, to Glaeser's argument that cities such as Boston have succeeded because of their investment in human capital (i.e. people and their skills)<sup>50</sup>, there is a wealth of research suggesting that knowledge intensive businesses and/or occupations can lead to higher productivity and prosperity. High levels of skills make the workforce (and therefore the city's economy) more flexible and adaptable, and therefore more resilient in the face of change.<sup>51</sup>

Building on this research and on our unpicking of the knowledge economy narrative, we built a data model (see section 1.3) to test the impact of different types of knowledge intensity upon economic success over time, at the level of the local authority and city-region (see Appendix B for detailed definitions). Our findings, set out below, are unambiguously positive about the benefits of knowledge intensive industries and occupations for economic success – but also reinforced our arguments about the complexity of the knowledge economy story.

#### 3.1.1 Knowledge intensity increases economic success

First, we found that having a higher proportion of knowledge intensive businesses and/or having a higher number of knowledge intensive occupations increases economic success over time, at both local authority level and at city-region level.

When we investigated in detail the different factors that affected economic success between 1997 and 2002, we found that two thirds of the variation in GVA per worker between different urban areas (as defined by local authority

49 Parkinson, M. et al (2006) *State of the English Cities* ibid

50 Glaeser, E, 'Smart Growth: Education, Skilled Workers and the Future of Cold Weather Cities' in *Rapaport Insitute Policy Briefs*, April 2005, p.1

51 Glaeser, E. and Saiz, A, (2003) 'The Rise of the Skilled City', *NBER Working Paper No. W10191*

areas) could be attributed to different levels of pay, qualifications and knowledge intensive businesses. Put another way, urban areas with higher pay (a proxy for high quality jobs), higher skills and more knowledge intensive businesses do better over time: becoming more knowledge intensive is economically beneficial.

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### 3.1.2 Success depends on where you start from...

Second, we found that the absolute success of cities as measured by GVA does depend on where they start from – high levels of knowledge intensity cannot immediately make up for other poorly performing industries. For example, Table 3 opposite is a snapshot of large authorities on measures of knowledge intensity and shows that Leicester performs better in terms of GVA per capita overall than Liverpool, despite having lower scores on all measures of knowledge intensity.



**Table 3: Table of large authorities (over 250,000 population) on measures of knowledge intensity (see section 2 for details on measures)**

	Gross Value Added per capita, 2002	Pop. 2001	A % employed in knowledge occupations (residence based, 2001)	B % employed in knowledge industries (residence based, 2001)	C % of businesses that are knowledge based (workplace based, 2001)	D % of employment in businesses that are knowledge based (workplace based, 2001)
Edinburgh	24,016	420,000	49 (1)	36 (1)	38 (2)	53 (1)
Manchester	22,928	390,000	38 (7=)	26 (6)	37 (3)	52 (2)
Bristol	21,513	380,000	41 (4)	28 (3)	40 (1)	47 (6=)
Glasgow	20,575	600,000	38 (7=)	25 (7=)	31 (8)	48 (4=)
Nottingham	20,113	270,000	35 (13=)	22 (13)	31 (8=)	47 (6=)
Cardiff	19,904	310,000	45 (2)	29 (2)	34 (4)	47 (6=)
Newcastle	19,640	260,000	39 (5=)	27 (4=)	33 (5=)	50 (3)
Leeds	18,305	720,000	38 (7=)	24 (9=)	31 (8=)	41 (12)
Leicester	16,921	280,000	30 (19=)	18 (17=)	26 (16)	44 (9)
Birmingham	16,466	980,000	36 (11=)	23 (12)	30 (12)	42 (10=)
Coventry	15,606	300,000	34 (16)	20 (15=)	31 (8=)	42 (10=)
Sheffield	13,835	510,000	37 (10)	24 (9=)	28 (14)	40 (13)
Liverpool	13,776	440,000	35 (13=)	24 (9=)	32 (7)	48 (4)
Stockport	13,395	280,000	43 (3)	27 (4=)	33 (5=)	38 (14)
Wakefield	12,848	320,000	32 (17=)	18 (17=)	25 (17)	30 (20=)
Bradford	12,832	470,000	35 (13=)	21 (14)	25 (18=)	37 (15)
Walsall	12,630	250,000	30 (19=)	16 (22)	21 (22)	27 (22)
Sunderland	12,530	280,000	29 (22)	17 (20=)	27 (15)	33 (18)
Bolton	12,043	260,000	36 (11=)	20 (15=)	25 (18=)	32 (19)
Doncaster	10,466	290,000	30 (19=)	17 (20=)	22 (21)	34 (17)
Wigan	9,785	300,000	32 (17=)	18 (17=)	24 (20)	30 (20=)
Wirral	9,232	310,000	39 (5=)	25 (7=)	29 (13)	36 (16)

Source: UK Competitiveness Index, 2001 Census, Annual Business Enquiry

This does not mean that knowledge intensity has no impact, however – there is always a need to take into consideration cities' starting points. For example, Liverpool has a history of heavy industry decline and so its knowledge intensive occupations and industries could be thriving, but the overall GVA lower because of the poor performance of other industries. Average GVA per capita can easily mask polarisation between highly productive areas of the labour market and sectors with low levels of productivity. Other issues that need to be considered when reviewing how much knowledge intensity has impacted upon GVA are the employment and inactivity rates in the city, as well as how the city has changed and performed over time. Measures used as 'snapshots' do not cast much light on how the knowledge economy affects a city's economic performance.

Our analysis over time did show, however, that knowledge intensity is associated with higher growth regardless of the starting point. In other words, an authority starting from a low level of GVA could benefit significantly from increasing knowledge intensity, even if it does not immediately put that local authority at the top of an economic success league table.

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### 3.1.3 'Critical mass' is important if cities are to reap the benefits of knowledge intensity

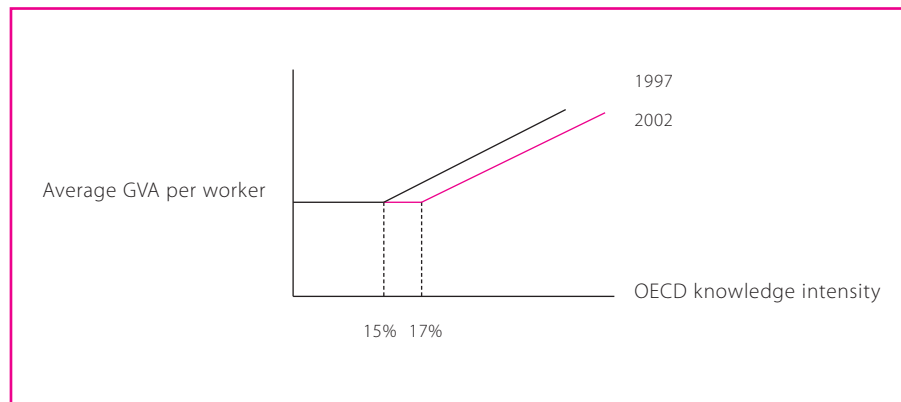
Our third key finding is derived from an exploration of whether a 'threshold' level must be reached before a city begins to experience the economic benefits of an increase in knowledge intensity. The analysis revealed that the 'threshold' hypothesis is correct, which suggests of course, that some cities may have to make significant investments before an increase in GVA begins to materialise.

One might draw two conclusions here. The first is that such cities could focus on developing non-knowledge intensive businesses or occupations since there is no benefit to GVA in knowledge intensive activity below the threshold level. In our view this would be a mistake. A second and better conclusion is that all cities ought to be aiming to reach the 'threshold', otherwise they will always struggle to raise their GVA in an economy where knowledge is the principal source of comparative advantage – but they may need to recognise that returns will occur in the medium and long term rather than the short-term.

Using the OECD definition of knowledge intensive businesses (which excludes education, healthcare and some creative and cultural sectors), we found that in 1997 a local authority required a minimum level of 15 per cent

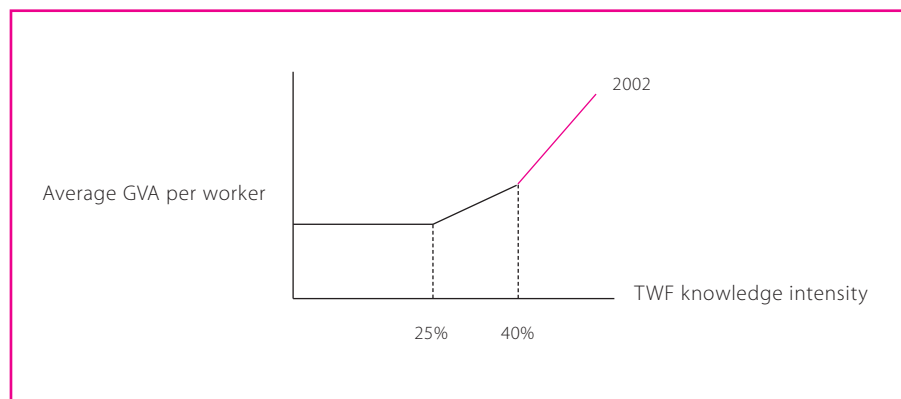
of knowledge intensive businesses before this caused GVA per worker to increase. Above 15 per cent, knowledge intensity had a linear relationship to GVA. Significantly, this 'tipping point' is increasing year by year: it increased to 17 per cent by 2002.

**Figure 2: OECD knowledge intensive businesses: tipping point**



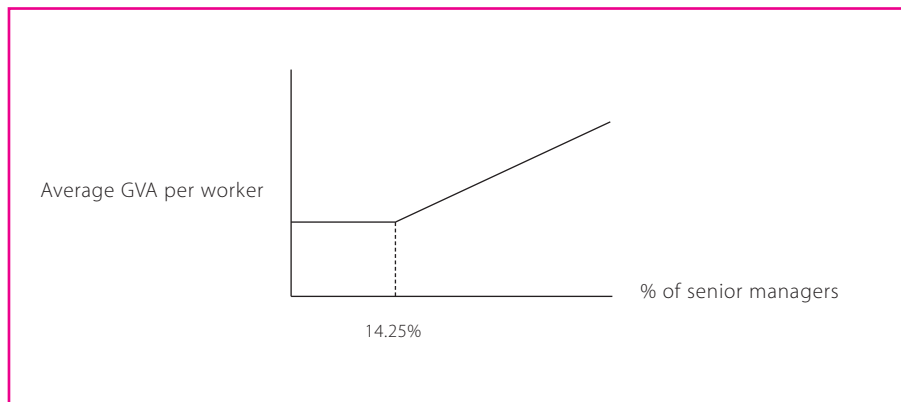
When we used The Work Foundation definition of knowledge intensive businesses – one which includes a wider range of creative, educational and health sectors – there was an even higher tipping point: a local authority needed to have 25 per cent of its businesses as knowledge businesses before there was a demonstrable impact upon GVA. Interestingly, returns to the city are considerably higher once a city has more than 40 per cent of its businesses as knowledge businesses.

**Figure 3: The Work Foundation knowledge intensive businesses: tipping point**



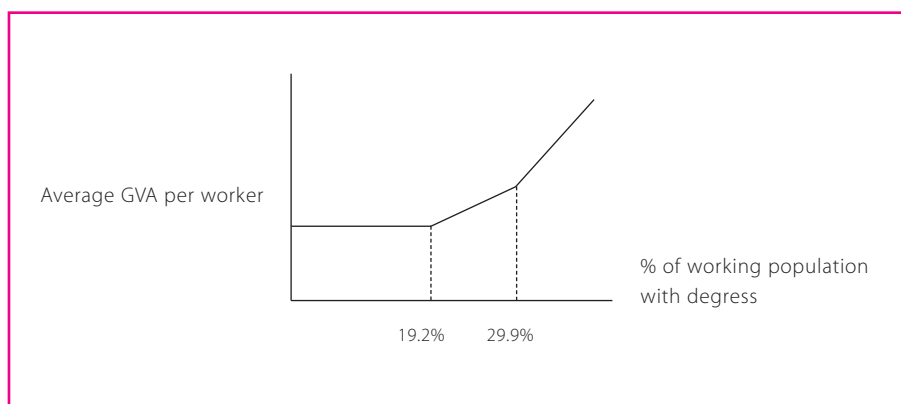
We also looked at the returns to ‘knowledge occupations’ and the level of people with high qualifications. When we did so, we found that when local authorities have more than 14.25 per cent of their occupations classified as ‘senior managers’, average GVA per worker increases.

**Figure 4: Knowledge intensity by senior managers: tipping point**



Local authorities that have more than 19.12 per cent of workers with a degree level qualification or higher increase their GVA per worker – and when they have more than 29.09 per cent of workers with a degree or higher, the impact on GVA is even greater.

**Figure 5: Knowledge intensity by qualifications: tipping point**



What these findings suggest is that as more cities become knowledge intensive, in terms of businesses and skills levels, there will only be returns to knowledge intensity if relatively more people in the labour market have high

level skills and relatively more businesses become knowledge intensive – hence the rising tipping point.

Once again, this is not necessarily a new insight – for example, as the population became literate over the course of the 19th century simply having a literate workforce ceased to become a source of significant comparative advantage. Similarly, the first factory with a steam powered loom had a significant advantage over handloom weavers – but eventually all manufacturers had steam powered looms, and so it was no longer a source of comparative advantage. Yet it does demonstrate that skills and knowledge intensive businesses have a significant impact.

A further conclusion one might draw is that skills utilisation (or work organisation, job design and the effectiveness of management) may be just as important for sustainable growth in GVA as the fact that a large percentage of the working population have skills at NVQ level 3 or 4, or that there are a high number of knowledge businesses. In other words a time will come soon when 'knowledge intensity' as we have defined it is not enough to drive significant GVA growth. The source of advantage in the future will come from the more effective deployment of ubiquitous productive assets.

Having said all this we still need to exercise some care in not overestimating the transformative potential of the knowledge economy. Arguing that the more knowledge intensive businesses a city has, the better it does, does not mean that the most successful Ideopolis has only knowledge intensive businesses. Knowledge workers cannot live on knowledge alone. Indeed it has already been observed that an increase in the number of affluent knowledge workers is associated with an increase in employment in high quality services – good restaurants, expensive gyms etc – and that if knowledge workers are more exposed to the chill winds of the international economy, the services they consume can only be produced domestically – nobody is going to travel to Bangalore for an evening's game of squash.<sup>52</sup>

This is not a new phenomenon as one Brighton interviewee perceptively commented:

‘Brighton has always been the repository for middle class income [for people from London]’.

<sup>52</sup> See Turner, A., (2001) *Just Capital*, p.35

### Box E: Manchester and Wigan

#### Manchester Ideopolis: City-region working with Wigan

38 per cent of Manchester's businesses are knowledge intensive, meaning they are driving growth in the city. In contrast, 25 per cent of Wigan's businesses are knowledge intensive (the 'tipping point'). Manchester is the city that clearly has the potential to drive growth in the Greater Manchester region – but Wigan could build on other assets such as access to countryside, that appeals to knowledge workers. Both cities would benefit from working together to develop different specialisms, rather than competing for investment and knowledge workers.

Nor is knowledge intensity the only route to economic success. Even in a knowledge economy some 'non-knowledge' occupations will continue to make a valuable contribution to GVA. As discussed in section one, some sectors rely on the innovations of a highly skilled few and then on a majority of less highly skilled workers to implement these innovations and reap the benefits. Supermarkets and fashion outlets can add substantially to the GVA of a city without contributing to their scores in terms of knowledge intensity.

In addition, the back office functions of many knowledge businesses can be located outside the Ideopolis: City-Region, providing employment and contributing to GVA for those with a lower level of skills than knowledge workers. For example, in addition to being the location of much knowledge work, Glasgow provides many of the back office functions (such as call centres) for the financial services businesses that have their headquarters in Edinburgh.

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#### 3.1.4 Core cities are more knowledge intensive than their regions

Finally, and linked to the previous point, the spatial distribution of knowledge industries varies within the city-region, with it being strongly situated in the 'core' local authority. The graph below compares city-regions and their core urban areas on knowledge intensive industries, demonstrating clearly that a city tends to have a much higher proportion of the businesses than its region

**Figure 6: Workplace based knowledge intensity in city-regions and core cities**



However, when knowledge intensity is looked at in relation to occupations and on the basis of where people live, it becomes clear that many knowledge workers live in the area around the core city, and may travel into the city for work.

**Figure 7: Residence based knowledge intensity in city-regions and core cities**



This suggests that there are some towns that could capitalise on this, setting themselves up as ‘quality of life’ towns that offer services to the knowledge workers who live there and commute to the knowledge intensive cities nearby. As we have seen, Marshall famously proposed that ‘knowledge spillovers’ cause people to locate close to each other. Michael Storper has argued that this would be more important for industries which rely on information which is rapidly changing, not easily codified and imperfect: knowledge industries. Our results for city-regions suggest that clustering is more important for knowledge industries – and cities are therefore important for clusters.



Overall, whilst it is clear that knowledge intensity is beneficial over time for many cities' economic performance; it is also evident that the story is not a simple one. Yes, knowledge intensity drives GVA and yes, there is a tipping point. But it would be wrong to deny the importance of low knowledge intensity services in the overall mix, or deny that some places may make a virtue of their 'quality of life' features as essentially dormitory towns for the core cities in the city-region. Most cities cannot be a true Ideopolis – they simply lack the scale – and not all cities can be secondary Ideopolises either. For policymakers the lesson is to have a keen understanding of the realities of the local economy and then make a sound judgment about strengths, weaknesses and the likely trajectory of economic development. As we shall see, the direction that a city takes is path dependent – cities cannot ignore their history or try and escape from the features that actually make them distinctive.

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### 3.2 Knowledge intensity and quality of life

Our findings are very clear and show that a knowledge intensive core city in a city-region can generate high levels of GVA growth. On the other hand, the evidence is decidedly mixed that knowledge intensity will necessarily improve quality of life either in an Ideopolis or a secondary Ideopolis. Our review of available literature on quality of life, both general and city-specific studies, demonstrated the lack of clarity about what 'quality of life' means and whether it differs for different groups, particularly those working in knowledge intensive occupations compared to other groups.<sup>53</sup> There is also a lack of evidence about the impact of becoming an Ideopolis on quality of life for all city residents.

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#### 3.2.1 Define quality of life?

To better understand the impact of becoming an Ideopolis on quality of life, we first conducted a literature review and a survey to investigate what 'quality of life' means. The survey investigated whether those working in knowledge intensive occupations have different conceptions about what 'quality of life' means to those who do not work in knowledge intensive occupations. We also sought to understand how this might influence different individuals' choices about where to live and work. Our methodology is outlined in section 1.3.

Supporting other work in this area<sup>54</sup>, our survey found that the most important factors affecting perceptions of quality of life in a place are

<sup>53</sup> Lee, N. (2005) *Ideopolis: Knowledge Cities – A Review of Quality of Life Measures* ibid

<sup>54</sup> See for example Nathan, M. 'The Wrong Stuff: Creative class theory, diversity and city performance' in the Centre for Cities discussion paper series, Paper 1, ippr

employment and ‘hygiene factors.’<sup>55</sup> That is, for all survey participants (with little difference between knowledge workers and others), the factors making somewhere a good place to live and work are: employment prospects, low crime levels, good public service provision, clean streets and affordable housing. The table below shows the top 15 priorities for all survey respondents.

**Table 4: Quality of life priorities for all respondents**

Priorities for local quality of life	
1	Quality of local healthcare facilities
2	Quality of local education provision
3	Clean streets
4	Level of violent crime
5	Employment prospects
6	Housing quality
7	Pollution levels
8	Housing costs
9	Quality of policing
10	Green spaces, such as parks
11	Cost of living
12	Level of non-violent crime
13	Wage levels
14	Shopping facilities
15	Scenic quality of the area

‘Buzz’, the cultural offering, shopping and leisure activities were viewed as important components of a good place to live. However, there was a clear message from the survey that unless the ‘fundamentals’ are in place, no amount of retail regeneration, investment in cultural services or focus on being a 24-hour city would attract or retain workers – contrary to Richard Florida’s argument that the ‘creative class’ are more attracted by ‘buzz’ and bohemianism than clean streets and good public services.

Our research also found that the main difference between knowledge workers and others is their mobility. Knowledge workers are more likely to have a choice about where to live, and so to be the people differentiating between different places on the basis of employment prospects, ‘hygiene’ factors or quality of life.

**3.2.2 Impact of becoming an Ideopolis on quality of life**

Knowledge intensity clearly has some benefits in terms of quality of life because it generates economic success, which in turn improves people’s quality of life. The growth of the service sector in many cities – and the available amenities that come with that – is often attributed to the increasing

55 Williams, L. and Lee, N. (2006) *Quality of Life in Cities*: The Work Foundation, forthcoming

affluence of local inhabitants.<sup>56</sup> Investment in public art, creative and cultural industries can also improve quality of life for local residents by promoting greater pride in their city as well as access to new facilities.

### Box F: Newcastle

#### **Newcastle's knowledge intensive creative industries have improved quality of life**

The thriving cultural and creative industries in Newcastle have created a host of quality of life benefits for the local population. The investment in the Angel of the North is widely credited with giving local residents a renewed sense of pride in their city, whilst the investment in the BALTIC and Sage Centre has regenerated the city centre and transformed the local and national view of the city. Local residents have access to a wide range of cultural facilities and tend to be proud of the changes in their city – although questions remain about how many local residents use these facilities and the extent to which creative and cultural industries, often SMEs or sole-traders, create jobs.

Yet there is a real concern that becoming a knowledge intensive city improves quality of life for the few: those who can afford to access the amenities or have an interest. There are three challenges in particular that cities seeking to increase their knowledge intensity, or with a high level of knowledge intensity already, need to consider.

The first challenge is around the labour market. As argued in section one, the most significant trend in the labour market of the past two decades is polarisation: the growing number of higher and lower level jobs available, with far fewer jobs in the middle.<sup>57</sup> Whilst the highly skilled may have a better quality of life because of the good quality jobs available, the lower and even medium skilled may struggle to find good quality jobs that are fulfilling and offer opportunities for development. The impact that poor quality jobs can have on health is well-documented<sup>58</sup>: there is a real danger that without organisations taking the 'high road' to productivity and offering as a minimum jobs that offer opportunities to progress, many lower skilled individuals may see their life chances blighted. Growing income inequality is likely to make it much harder to achieve social cohesion in an Ideopolis.

<sup>56</sup> See Alan Manning (2004) 'We Can Work It Out: The impact of technological change on the demand for low skilled workers', CEP Discussion Paper No. 640 for a discussion of why there will be growth in demand for well-paid skilled jobs and low-paid personal service jobs

<sup>57</sup> Moynagh and Worsley (2005) *Working in the Twenty-First Century*, pp 19-25

<sup>58</sup> For example see Marmot, M. (2004) *The Status Syndrome: How social standing affects our health and longevity*; Times Books

The second challenge to quality of life is a consequence of economic success. Rapid growth can put real pressure on a city's resources. Our analysis suggests that smaller and larger cities tend to have a higher average quality of life than medium-sized cities. Interviewees in our case study cities have suggested that this may be because smaller cities offer a 'village feel' whereas large cities offer scale and excitement. Medium-sized cities may be stuck in the middle, offering neither village intimacy nor metropolis dynamism.

Another explanation might be located in the dynamic process of city growth. High quality of life can make a small city very attractive to knowledge workers, especially when combined with a high level of entrepreneurship and links to a world-class university. This, in summary, is the Cambridge experience of the last fifteen years. But rapid growth has also led to an overburdened transport system, high levels of congestion, very high house prices and pressure on public services. One might anticipate a lagged effect here with rapid growth (partly inspired by quality of life location decisions) followed by a decline in quality of life which leads in turn to a focus on the importance of public infrastructure and the public realm more generally.

Once again this is not a new phenomenon. It was precisely the course of development followed by many great Victorian cities. Small towns rapidly grew into huge urban centres and experienced the most awful environmental and public health problems. Urban squalor was the well-spring of civic activism that led to the radical initiatives and regulatory interventions from which we still benefit today. It would be surprising if a similar course were not followed in growing 'Secondary Ideopolises' that are under pressure.

The final challenge for Ideopolises is that knowledge intensity may have the most adverse impact on those already experiencing multiple deprivation. Our case studies suggest that it is the deprived communities surrounded by affluent suburbs – the hole in the centre of the 'doughnut' – who will remain excluded from the prosperity and quality of life enhancements that knowledge intensity can bring. In one city an interviewee talked about regeneration bypassing central deprived communities: 'radial routes are sprouting cranes around a community that remains unaffected'. Even in the most knowledge intensive, economically successful cities, polarisation and exclusion of certain communities was a real problem. In other words, there is little evidence of an automatic 'trickle-down' effect. Deprived communities are likely to need active and targeted interventions if they are to benefit from the improved quality of life that knowledge intensity could, in theory, offer them.

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### 3.3 The benefits of becoming an Ideopolis

Overall, our findings suggest that an Ideopolis City-Region can create both sustainable economic success and a high quality of life. Equally, there are similar benefits in becoming a 'Secondary Ideopolis'. Nevertheless, this cannot be an option for everyone (not least because of reasons of scale), and there are real challenges that accompany a shift to becoming an Ideopolis.

Our findings are also very clear in showing that for a city to become an Ideopolis City-Region demands a holistic approach that embraces the promotion of economic growth and the protection of quality of life. One might say that this constitutes an Ideopolis 'balanced score-card', not just because our analysis suggests that economic success and quality of life are interdependent (although an increase in one does not necessarily mean an increase in the other).<sup>59</sup> Our case studies suggest that focusing on just one objective makes it more difficult to achieve the other – knowledge workers are hardly likely to want to live in a polluted city with a poor environmental record, or a city where quality of life is falling rapidly, no matter what job opportunities may be available.

A city striving to be an Ideopolis City-Region that focuses only on economic success will be subject to greater labour market polarisation. We have found no evidence to show that 'trickle-down' occurs without some form of intervention. And a focus only on economic success is likely to exacerbate quality of life problems, particularly for deprived communities.

<sup>59</sup> This was demonstrated using the Breusch-Pagan test of interdependence, see technical appendix for details

# 4 Drivers of an Ideopolis

Becoming an Ideopolis can generate economic and quality of life benefits for a city, although the previous section demonstrates the need both to understand the complexity of the knowledge economy narrative and its potential consequences for a city. Are there particular drivers that help to create an Ideopolis? Is it an accident of history, the product of policy interventions or a combination of the two?

There is already an enormous amount of research on the factors that contribute to more successful cities, however that is judged, and much of it highlights similar factors. For example see Table 5 below, comparing the critical success factors for cities identified by Michael Parkinson and Michael Porter.

**Table 5: Comparison of critical success factors identified by Porter and Parkinson**

<b>Porter:<sup>60</sup></b>	<b>Parkinson:<sup>61</sup></b>
<b>Key competitiveness weaknesses of UK</b>	<b>Critical success factors for cities</b>
1 Low levels of R&D in commercialisation	1 Innovation
2 Skills deficit in labour force	2 Skilled human capital
3 Large regional differences in quality of business environment and economic performance	3 Diverse industries within city, creating a vibrant mixed economy
4 Weak and deteriorating physical infrastructure	4 Connectivity within city and to other cities
5 Limited presence or effectiveness of institutions encouraging regional or local collaboration	5 Strategic decision-making capacity of political bodies
	6 Quality of life

However, most of the work conducted to date focuses on general success factors, whilst rather more analysis is needed to understand the most important drivers of greater knowledge intensity in a city that is striving to be economically successful and sustainable. Building on our literature review, data model, four international case studies and ten UK case studies, we have identified the following nine drivers of an Ideopolis: a knowledge intensive city, driving economic growth in the city-region that is both economically successful and sustainable:

<sup>60</sup> Porter, M. & Ketels, C. (2003) *ibid*

<sup>61</sup> Parkinson, M., *Competitive European Cities: Where do the Core Cities stand?*

**Box G: Drivers of an Ideopolis**

1. Creating the physical knowledge city
2. Building on what's there – path dependency
3. 'Diverse specialisation'
4. High skill organisations
5. Vibrant education sector embedded in community and economy
6. Distinctive 'knowledge city' offer
7. Leveraging strong connectivity within and outside city-region
8. Strong leadership around knowledge city vision, supported by networks and partnerships
9. Investing in communities

This section discusses each driver in more detail, whilst the following section goes on to illustrate how different cities, from different starting points (demographics, industry mix, connectivity etc) and with different strengths and weaknesses, can use these drivers to become more knowledge intensive and therefore more prosperous.

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#### **4.1 Physical knowledge intensive city**

For many of our case studies, a turning point in the regeneration of a city and its identification as a 'knowledge city' rather than a 'post-industrial' city was when the physical city changed. Cleaning city buildings, investing in infrastructure, regenerating existing spaces as well as creating new ones, rejuvenating old homes as well as building new homes and offices: time and again case study cities identified this investment as a turning point in the way that residents, investors and businesses regarded the city as starting to become more contemporary and prosperous. Crucially, this is about reinventing cities based on existing assets and future potential rather than inventing a 'new vision' from scratch.

##### **Manchester and Brighton: building the physical knowledge city**

The IRA bomb and the city centre regeneration that followed have changed the feel of the city for workers, residents and visitors. Like other post-industrial cities, Manchester has built on its historical past, making the most of disused warehouses to create attractive spaces for people to live and work. In contrast Brighton, constrained by the sea and the Downs and without empty industrial buildings, has had to use a different approach to alter the physical city.

The cities that best used their regeneration to drive knowledge intensity were those that invested in physical accommodation for the knowledge intensive businesses and workers they wanted most to attract, responding to a range of different needs. In terms of office space, the more successful strategies combined bespoke city centre office space for those who wanted proximity to other firms and access to leisure activities (e.g. professional services space in Edinburgh) and out-of-town business parks for those who might want more space to grow (e.g. technology companies such as Sage in Newcastle).

**Cambridge: high quality, flexible office space**

A technology firm who moved to Cambridge said that a major factor in their decision to move to the city had been being able to work with a landlord who was aware of the needs of knowledge businesses, had flexible contracts, and was willing to work with businesses to create the environment in which they wanted to work.

A number of cities suggested that they had lost businesses because they failed to provide accommodation for small businesses to grow or failed to provide distinctive and appropriate accommodation for larger businesses, for example with enough space or near the university or science parks, meaning that the business simply moved elsewhere. The conclusion drawn by our respondents was clear – proximity generates business networking, networking promotes innovation and appropriate accommodation in the right location must therefore be a priority.

**Glasgow: responding to business needs**

In Glasgow a leading financial services company moved into the city centre as the physical environment changed and was regenerated. This reflected the needs of staff who preferred to be in the centre of the city rather than in a science park out of town. Other financial services followed suit.

Housing policy as it relates to knowledge workers should consider the different needs of different demographic groups: in particular young professionals, those with young families, and older affluent workers who want easy access to good restaurants and arts venues. City centre living may be on the increase, but cities must not adopt the simplistic view that everybody appreciates the 'buzz' of the city centre. As Nathan and Urwin have argued, many young families will want to live outside the city centre, where they have



easier access to good public services, open spaces for children to play and 'liveable' neighbourhoods.<sup>62</sup>

**Edinburgh: mixed use development near the centre**

Edinburgh has a historical tradition of building spacious tenement blocks near the city centre. Most of these provide attractive housing across the age groups and many families live in them. Their high density allows them to support a range of retail development underneath and maintain a vibrant community, although rising prices can make it difficult for young families and first time buyers.

There is a danger, however, with investment in the 'physical knowledge city' that deprived communities could fail to share the fruits of economic growth, as is often the case today. The phenomenon of the 'doughnut city' – investment in the centre, with surrounding neighbourhoods remaining deprived and then the outer suburbs being affluent – is a growing challenge for cities and one that an increase in knowledge intensity could exacerbate.

To avoid these adverse consequences demands that planning takes place at an appropriate level, reflecting economic rather than administrative boundaries. In many of the larger cities, this means planning at city-region level, enabling cities to plan for city centre and suburban housing, central offices and business parks. Without the powers (and funding) to co-ordinate at a strategic level, many cities such as Manchester are resorting to voluntary arrangements. However, this makes it more difficult to prioritise within a city-region, as local authorities may have different ideas about what priorities there should be.

**4.2 Build on what's there – path dependency**

Cities that have successfully built up knowledge intensive businesses and occupations have all succeeded through building on their history, ie on the assets they already have. For some successful cities, such as Cambridge, there are very obvious historic assets that are impossible to replicate elsewhere, such as a centuries-old university that is a magnet for international talent. For other cities, such as Manchester, the problem has been the decline of more obvious historic assets – cotton and other manufacturing industries – so that the city has had to identify other sources of advantage, such as the university, the entrepreneurial spirit of and pride in the city or its position as a 'gateway' to other parts of the UK and Europe. Whatever their starting points, what distinguishes the most successful cities is that they understand their history,

62 Nathan, M. & Urwin, C. (2006) *City People: City centre living in the UK*: ippr Centre for Cities

use it to their advantage and when they can, build on their recognised strengths.

**Boston: building on academic strength**

Boston has eight research universities in the area, including MIT and Harvard. These attract talent, employ thousands and provide local investment. The resulting research base and highly qualified population were factors in the decision by the pharmaceutical giant Novartis to locate its \$255m US global research headquarters in the city.

Having said this however, there is also some evidence to suggest the continued importance of ‘first-mover’ advantage. Paul Krugman<sup>63</sup> has argued that in industries where proximity to others matters, the first place to develop a critical mass is likely to keep it. Knowledge industries, as was outlined above, are more likely to locate in cities so as to achieve these advantages. Gaining an early lead in these industries is important, so building on what you have is important.

But it is not a counsel of despair for those cities without obvious historic advantages, nor an argument that every city stays on the same path – Peter Hall’s work clearly demonstrates that even the most successful cities have different ‘golden ages.’<sup>64</sup> First-mover cities do not always retain their advantage: Krugman later argues that being a first-mover is a disadvantage if cities do not keep up with the market and adapt.<sup>65</sup> Our research demonstrates that cities have the opportunity to shape their own ‘knowledge intensive’ destinies. Yet to do so successfully, they need to recognise where they are now, where they have come from, and where they wish to go.

For some cities this may mean winning public investment from national governments or bodies such as the EU, and then using this investment to build up knowledge intensive assets: investing in research strengths or connectivity. For other cities it may mean developing an understanding of the likely trajectory of structural change and working with business to manage the consequences. For example, some industries/occupations might have disappeared completely in ten years time or alternatively an industry might be thriving with a much more highly skilled (and much smaller) workforce.

63 Krugman, P. (1998) ‘What’s New about the New Economic Geography’, *Oxford Review of Economic Policy*

64 Hall, P. (1998) *Cities in Civilisation*: Pantheon

65 Krugman, P. (2001) *The Economics of QWERTY*: Palgrave

Manufacturing is an example of an industry which some cities, such as Sheffield, are striving to move to the latter scenario by developing the existing expertise of its workers and looking to attract high value manufacturing businesses to the area. Thinking through the possibilities are important considerations for policy makers confronted with difficult processes of structural change.

**Sheffield: building on historical strength in manufacturing**

Sheffield was a historical centre for the production of cutlery and steel. These industries declined in the second half of the twentieth century and the city entered recession. However, more recently the city has been building on its historic strengths - it now produces more than half the world's surgical blades<sup>66</sup> and is the home of the Advanced Manufacturing Research Centre, a collaborative venture between Boeing and the University of Sheffield.

As is suggested by the term 'path dependency', the route depends on the city: Box H highlights some of the different examples we have seen.

**Box H: Case study examples of path dependency**

Examples of cities successfully increasing their knowledge intensity through building on their strengths and their weaknesses include:

- Manchester – investing in the higher education institutions to attract research money, create spin-off businesses and increase the knowledge intensity of both people and industries
- Dublin – building on the skills of the local population and using EU funds effectively to invest in building strengths in professional and financial services.

**4.3 Diverse specialisation**

Diverse specialisation is the term we have used to describe a city that has strengths across different sectors (i.e. relies on several rather than one or two industries) and also has significant specialist clusters that drive prosperity.

Diversity matters because successful Ideopolises need to manage the risk of over-reliance on one or two industries. A diverse economic base is a risk management strategy to protect against the consequences of economic decline in specific industries. The experience of northern post-industrial cities demonstrates the challenges that can follow if there is a down-turn in those

<sup>66</sup> Sheffield City Council, 'Facts and Figures', [www.sheffield.gov.uk](http://www.sheffield.gov.uk)

industries. Recent research by Parkinson and the SSDA and Local Futures reinforces the importance of diversity, finding that successful cities and regions have strengths in more than one high-performing sector.<sup>67</sup> Bristol is a good example of a city which has always had a diverse economic base that has helped the city's 'resilience in weathering economic change'.<sup>68</sup>

### **Bristol's diverse specialisations**

Many of those interviewed in Bristol believe that the city's strength – and its future potential – relies on a diverse economic base that is sufficiently specialised to have the niche in some markets. The city economy is dominated by the finance, business and property sectors, making up around 35 per cent of all firms and 29 per cent of the workforce. Within the wider city-region around Bristol, there are specialist industries in aerospace/ defence, computer services, financial and business services, media and creative industries, tourism and higher education. Networks for specialised industries are well developed, encouraging businesses to remain in the city and providing established support for those making decisions to invest there.

Yet having an industrial mix that includes a range of industries is not incompatible with developing specialist 'niches' in priority industries. Indeed, our data analysis found that the most economically successful cities were those that specialised in some industries. Managing risk does not mean that a city needs to be all things to all industries: successful Ideopolises also need to develop distinctive (and appropriate) specialisms. These centres of excellence make it easier for cities to attract related knowledge industries, keen to make use of the expertise, and knowledge workers who will follow the opportunities for interesting jobs.

### **Cambridge: specialised in a variety of niche high-tech industries**

Cambridge has a cluster of high-tech firms across a wide economic spectrum. These include software, pharmaceuticals and biotechnology. This gives it the economic success of niche production, but prevents dependence on one industry and the potential consequences of decline in any sector.

What diverse specialisation does not mean is that cities should identify a 'fashionable' knowledge intensive sector they would like to have – such as nano-technology – and then try to create it as a specialism from thin air. One

<sup>67</sup> Parkinson, M. (2004) *Competitive European Cities*

<sup>68</sup> Interviewee comment

of the most troubling findings from the case studies was the tendency for Regional Economic Strategies (RESs) to focus on ‘fashionable’ sectors rather than strive to make use of them (e.g. use nano-technology to support the development of other sectors and think innovatively about how to use ICT to support other sectors). Many of our interviewees also argued that RESs have too many priorities.

Instead, long-term knowledge intensity requires building on what’s there – working with businesses and universities. Successful specialisation tends to be path dependent in our case study cities: for example, aerospace technologies have thrived in Bristol because they are well-established in the city-region, meaning that the labour market has the specialist skills and the business community has the crucial networks and connections. The most successful case study cities built on their strengths and weaknesses, looking at demographics, industry mix, connectivity etc, and used these to create new opportunities. The experience of larger cities such as Boston, Munich, Manchester and Bristol also suggests that building on strengths at a city-region rather than local authority level is likely to generate greater returns.

Maintaining a balance between a sufficiently diverse economic base to manage risk and sufficient ‘niches’ to attract knowledge workers and businesses is no easy trick, nor can it (or should it) be managed by the public sector alone – but it is an important characteristic of the successful cities we looked at.

**4.4 High skill organisations**

Another key driver of knowledge intensity is the presence of a high number of high skill knowledge organisations. This means that successful knowledge intensive cities are not just those with high numbers of knowledge intensive businesses – although this is clearly important – but also those that are knowledge intensive because the local population is employed in ‘high value’ jobs that make use of their skills.

**Munich: global headquarters**

Despite not being the capital of Germany, Munich holds a position as the headquarter location of many German businesses. These include Allianz, BMW, EPCOS, Infineon, MAN, Munich Re, Siemens, Microsoft Germany, Oracle Germany and ProSiebenSat.1 Media. They are attracted by the high skill level of the population and the city’s quality of life.

The importance of high skill organisations is reflected in all our case studies. Cities that have more headquarters can benefit from higher numbers of high skill organisations, as they are more likely to have high skilled workers, as well as generate demand for high skilled workers such as lawyers and accountants. It also fits with our arguments in section one that success in the knowledge economy is not just about the skills of the population, but about how these skills are used in occupations and how businesses manage their workforce.

The UK's reliance on a 'low skills equilibrium'<sup>69</sup> – businesses employing low skilled workers to do routine tasks and who do not seek to innovate to improve their productivity – is therefore a serious barrier to the UK increasing its productivity. Yet the UK faces many hurdles in moving to a high-skills economy. There is a legacy of low levels of basic skills for many workers, moderate educational achievement, and an incoherent and insufficiently valued skills training and skills development system. Whilst evidence suggests that skill levels are rising, meaning that the quality of labour entering the labour market has improved, much remains to be done for those already at work. Significant challenges include:

- stimulating demand – and funding where appropriate – from individuals and employers
- ensuring that learning and skills provision is fit for purpose in the short and longer term and of high quality
- providing information and guidance for both individuals and employers.

With this in mind, the Government's work to improve the 'demand' side and incentivise organisations to pursue high skill strategies is to be commended. Sector Skills Councils have been created to improve employer engagement, develop new and more straightforward qualifications, promote a learning culture and raise employer demand for skills – and will need resources and high quality staff to make this happen. Work by some RDAs to engage more effectively with businesses by putting skills in the context of their business strategy is also an innovative way to encourage businesses to invest in skills and see the business benefits.<sup>70</sup>

Yet challenges remain. For example, 25 per cent of British workers are employed in jobs below their accredited skills level.<sup>71</sup> Whilst government is

<sup>69</sup> See Finegold, D. and Soskice, D. (1988) 'The Failure of Training in Britain: Analysis and prescription': *Oxford Review of Economic Policy*, 4, 3, 21-53

<sup>70</sup> See for example *East of England Future Workforce Initiative* (2003), conducted by The Work Foundation and the Akenham Partnership for the East of England Development Agency

<sup>71</sup> Taylor, R. (2003) *Skills and Innovation in Modern Workplaces*: ESRC

investing in skills at level 2, the real returns to productivity come at level 3 – and not every employer sees the case for making the investment. Continued work at national, regional and local level on encouraging formal and informal business networks where businesses can learn from each other about better management and the benefits of skills, as well as encouraging engagement with the SSCs and other relevant bodies, is vital if cities are to benefit from knowledge intensity.

#### 4.5 Vibrant education sector embedded in community and economy

The interaction between the ‘supply side’ and ‘demand side’ of skills is critical to knowledge intensity: a vibrant education sector, from schools to further and higher education, that is embedded in the community and the economy is a key driver of an Ideopolis.

Our case study and data modelling findings showed that the most successful cities were those that increased their skills levels over time. Whilst basic skills and level 2 skills are highly important for individuals, and the government has rightly invested in skills at level 2 for all individuals, it is at level 3 (equivalent of A-Level) that these skills start to make a real difference to productivity.<sup>72</sup> The local authorities with a higher proportion of level 3 skills and level 4 skills were more successful. This means that cities need to invest in the skills of their local population through good schools and further and higher education in order to increase their knowledge intensity more rapidly.

Whilst the whole education sector matters to knowledge intensity and sustainability, it is very clear from our case studies that universities and higher education institutions are particularly important for knowledge intensive cities. All of the successful cities we looked at have universities that either already have, or are growing, an international reputation and have close relationships with businesses based on the particular specialisms of the university.

##### **Boston: research universities**

Boston's research universities are massively important to the city, and spin-off companies contribute an estimated 37,000 jobs to the economy. The Massachusetts Institute of Technology is particularly adept at this, with the computing firm Lotus being perhaps the most famous of its many spin-offs.

Nonetheless, just having a university or strong higher education sector does not drive growth in a city. Certain conditions need to be met on both the supply side and the demand side.

72. *In Demand: Adult skills in the 21st century* (2001) Performance and Innovation Unit, Cabinet Office

On the supply side, those cities which are successfully driving knowledge intensity through their education sector ensure that the education sector is linked closely with the community and the local economy – and this means a partnership that is mutually beneficial. Universities, for example, usually aim to increase their international profile in research and cities need to recognise this. At the same time, cities and universities may have common objectives about developing strong links between research and businesses and improving knowledge transfer within the city itself. Universities also have a role in the social inclusion agenda in the cities in which they are located: for some this means working with the education sector in the city to provide opportunities for lifelong learning for working and non-working residents; for others it is about knowledge transfer to the public, private and voluntary sectors in areas related to tackling deprivation and worklessness.

Too many cities are failing to capitalise on their university as a driver of knowledge intensity because they do not strive to create a mutually beneficial partnership. This may take the form of involving the university too late in conversations about the Regional Economic Strategy and priority sectors for the region, or demanding a great deal of time from the university in multiple partnerships that do not necessarily draw on the university's expertise or help the university achieve its own objectives. There are also universities whose focus is almost exclusively on links with other universities and research and hardly at all on their locality, meaning that cities do not benefit greatly from the work the university is doing. Successful Ideopolises are those that have partnerships between the university, businesses and local authorities that start early, are mutually beneficial and have shared goals, even if not all of their work is pulling in the same direction.

Sector Skills Councils have a key role to play in articulating the needs of business to HEIs and in supporting individual businesses to work with HEIs. The Lambert Review (2003) also sought to address some of these issues, making a number of important recommendations for easier interaction between universities and businesses, and we welcome these recommendations. It highlights that the most effective form of knowledge transfer involves human interaction. Whilst there is no easy, linear path from university-led R&D to its commercial exploitation in every case, the Review makes clear that there are central roles for institutions such as RDAs in facilitating university/industry relationships and meeting a central challenge of knowledge transfer: raising the demand from business for research.



Our case studies also suggest, however, that the role of universities in regeneration could be better supported from the centre. After all, universities are not constrained by administrative boundaries and work across a range of government departments. Setting up some funding for which universities could bid that recognised the different needs of different places, and supported universities working with cities, other HEIs and businesses, would help to encourage universities to focus on the locality in areas that need this most. This is no easy solution and would need to be tested but could provide a way of supporting capacity development at a regional, local and university level.

Improving the quality of skills supply and demand also seems to require more working at a regional and local level to not only respond to current demand but predict future demand. Based on demographics (for example, is the population ageing in particular sectors?) and current sector growth, plus economic strategies, Learning and Skills Councils, RDAs, FE colleges and local authorities should be able to work together at a city-region level to help plan the current and emerging needs of the city-region. This gives an area large enough to reflect the economic realities, small enough to have an influence.

**Glasgow: case study**

Glasgow has a large student population with three universities, which take on different roles within the city. Glasgow University was the first UK university to establish a research and enterprise unit, recognising the need to encourage working between the university, public authorities and local businesses. One of the strengths of having several universities relates to the different functions that each has. For example, Glasgow University has a strong medical school, and Glasgow Caledonian complements this by training ancillary medical professionals that work across the West of Scotland and Scotland in general. The university also trains 40 per cent of teachers in Scotland.

There is also another type of demand in relation to education. Those cities driving knowledge intensity and economic success through their education sector are recognising the opportunity created by the students and their consumption demands. Manchester's four universities have a total student body of 88,000: these are young people who not only change the culture and feel of the city, but also create new markets for services (restaurants, bars and clubs). Successful Ideopolises are those that are planning how to respond to this demand, managing any difficult consequences (such as housing

problems) but also building on the opportunities. As several cities identified, students who enjoy their time in a particular city are also much more likely either to stay there or to return there if jobs are available in future. The evidence from our quality of life survey underlines this point: it is employment and some of the 'liveability' factors that are important for quality of life in a city.

### 4.6 Distinctive 'knowledge city' offer

We found too that distinctiveness matters to Ideopolises: a city with a recognised culture and personality can use these qualities as a source of economic advantage. This is not simply a matter of marketing and promotion but a clearly articulated sense of what makes one place different from another – apart from the brute facts of geography, why Manchester is not Leeds for example. The notion of distinctiveness can be reinforced by a clear sense that the city is changing at the same time as it builds on its strengths. This can be either tangible, like physical improvements to the city centre, or intangible, such as developing a reputation as a good place to do business.

#### Cambridge: the university as city brand

Cambridge has a world-class university, and local firms felt they benefited from its reputation. This was a major factor in helping them stand out, giving them distinctiveness.

The benefits of 'distinctive' cities that offer amenities to those who live there are well documented. Glaeser et al's research on the 'consumer city' idea, for example, found that what he calls 'high amenity' cities – cities with a rich variety of services and consumer goods, aesthetics and physical setting, good public services and speed of transport – have grown faster than low amenity cities.<sup>73</sup> Richard Florida's well-known work *The Creative Class* suggests that diverse creative cities attract knowledge workers, and policy makers who are keen to attract these workers and industries should strive to make the city, metropolitan, diverse and 'buzzy'.

#### Lisbon: quality of life and business parks

The Taguspark Science and Technology Park in Lisbon is one of the major locations for knowledge businesses in the Lisbon region. But it hasn't neglected quality of life, and contains, in addition to the businesses, a golf course and several shopping and entertainment areas. It also has a high quality residential area for knowledge workers.

73 Glaser, E.L., Kolko, J. & Saiz, A. 'Consumer City' in *Journal of Economic Geography* 1 (2001) pp.27-50

Our research – both survey and case study based – suggests, however, that cities cannot rely on distinctiveness alone to increase knowledge intensity. When deciding where to live, all individuals consider the basics first, principally whether there is a job available. Then ‘hygiene’ factors such as good public services, crime and liveability will be considered, followed by ‘distinctive’ factors, such as shopping, leisure facilities, proximity to open spaces and the city’s ‘cultural offer’. A city striving to become an Ideopolis that offers distinctiveness without this being grounded in knowledge intensive businesses or jobs will struggle to attract knowledge workers and knowledge-related investment. ‘Buzz’ is no substitute for having a strong city-region economy built on durable foundations.

We should note too that knowledge workers will want different things from a city at different points in their life-cycle. Lively city centres with lots of entertainment and cultural facilities may be attractive to young professionals. But, as our quality of life survey has revealed, knowledge workers with young families are more concerned with the quality of education, other public services and community safety. It is too often assumed that the renaissance of our cities will be secured if only enough young, affluent and ‘trendy’ people are attracted to the urban core. This is a bad principle for policy makers to follow – it is only part of the strategy, not the strategy itself.

Cities must reflect on who they are trying to attract and how they express their ‘offer’. For example, some of the so-called ‘party cities’ like Manchester and Newcastle are concerned that they are not attracting families because they have an image too focused on young people’s preferences.<sup>74</sup>

Despite these cautionary words, we remain committed to the view that distinctiveness can get a city noticed, offering a compelling set of features around which stakeholders can rally. For example, Brighton benefits economically from its distinctive shopping offer; Edinburgh benefits economically from its distinctive cultural festivals because they are self-sustaining.

We know too that ‘knowledge workers’ are more likely to be geographically mobile than other workers.<sup>75</sup> One might reasonably hypothesise that ‘buzz’ or other distinctiveness factors can make a difference, at least at the margin, to knowledge workers’ location decisions – as Nathan has pointed out, these

<sup>74</sup> Ideopolis interviews

<sup>75</sup> For example, see Luque, A. & Miranda, J. (2000) ‘Technology Use and Worker Outcomes: Direct evidence from Linked Employee-Employer Data’ in *US Census Economic Studies* series

factors tend to be ‘icing on the top’.<sup>76</sup> Our research has produced similar findings. We found no evidence during our case study interviews or survey work that businesses or those working in knowledge intensive occupations re-located primarily because of ‘distinctiveness’ factors. On the other hand, the evidence suggested that ‘distinctiveness’ could be an important factor if a worker had several job offers located in different cities. ‘Distinctiveness’ could exercise significant influence over the final location decision.

Distinctiveness is increasingly important for those cities with an international reputation. Cambridge, for example, benefits from the international recognition provided by its university – there is nowhere else quite like it in the world. Since the university is so good, it is assumed that the city must be as well. This is a significant source of comparative advantage.

For some cities, this distinctiveness is grounded in history: Boston as a university city, Edinburgh as the capital of Scotland. For others, however, there are clear turning points that helped them rediscover their sense of distinctiveness: the Commonwealth Games in Manchester, the Angel of the North in Newcastle. A clear sense of identity for both those living and working there, and for external audiences, is critical in shaping perceptions of the city, whether it is seen as a ‘knowledge city’, a ‘declining city’ or a ‘services city’. These perceptions help to inform the ‘knowledge city’ strategies that are developed and implemented – and can serve either to reinforce determination, or to undermine it.

### Turning points in Glasgow and Manchester

Glasgow winning ‘City of Culture’ in 1990 changed how some residents saw the city, as well as altering the way it was perceived externally. It has helped the city develop its creative and cultural industries into a key source of knowledge intensive income for the city.

Similarly, Manchester soared up the ‘desirable city’ rankings in 2003 after the Commonwealth Games in 2002 had demonstrated to an international audience that Manchester was a trendy, busy city that was a good place for businesses to locate.

Finally, there is a need to ensure that ‘distinctiveness’ really is distinctive and builds on a city’s historic and contemporary assets. As the New Economics Foundation has argued, there is a danger that too many cities are becoming ‘clone cities’. The history of a city, its unique communities, shops and culture,

<sup>76</sup> Nathan, M. (2005) ‘The Wrong Stuff: Creative class theory, diversity and city performance’ *ibid*

are part of its attraction. Losing that could potentially impact detrimentally on the attractiveness of an area for entrepreneurs, investors or residents. The development of 'copycat' attractions, which merely parody the original attractions offered by other cities rather than offering something distinctive are an unimaginative waste of money.

**Case study: Manchester's independent businesses**

Manchester's Canal Street was a booming success in the 90s, with thriving businesses creating a reputation for Manchester as gay-friendly. When the Slug and Lettuce chain moved in, the area declined in popularity as it no longer felt distinctive. When the chain moved out, independent businesses moved back in and the area is again thriving.

**4.7 Leveraging strong connectivity within and outside city-region**

Another critical driver of an Ideopolis and associated economic success is 'connectivity', meaning communications and transport. Case study analysis suggests that this is a critical driver for success – and one of the most obvious barriers to a city's ability to increase knowledge intensity and realise a trickle-down effect.

**Leveraging connectivity in Bristol**

Connecting the poorer areas in South Bristol with the jobs in North Bristol, or attracting businesses to South Bristol, which is also where the airport is located, to ensure the new jobs are linked to the people who need them.

On the communications side, connectivity is not regarded as a driver of success so much as a minimum standard. This demonstrates the way that telephone connections, mobile phone networks and even broadband internet<sup>77</sup> have become like electricity – vital but unnoticed until something goes wrong. Nevertheless, the Dublin case study demonstrates how important ICT and broadband is to developing knowledge-intensive businesses. Being able to share ideas with other businesses, universities and individuals at the click of a few buttons is a critical part of innovation in a fast-moving knowledge economy.

On the transport side, connectivity is regarded as a potential driver and a significant barrier – probably because the quality of transport links is much less uniformly good. The most successful knowledge cities are those that have good links within the city and to other cities by air, rail and road. It is the

77 BT's ADSL broadband is now available to over 99.6 per cent of the UK population

ability of knowledge workers and businesses to go to other places quickly that matters, whether it is to get to work or to exchange ideas with colleagues from another city or country.

### **Manchester: airport's contribution**

In Manchester the vibrancy of the cultural industries is partly attributed to the success of the airport, enabling international visitors to easily get directly to the city. The linking of the city with the Bank of New York is also partly attributed to the success of the airport as a transport hub.

Of course, you cannot 'create' an Ideopolis just by building an airport or a new railway station – otherwise all capital cities in the developing world would be well down the road to Ideopolis status. The point is a rather straightforward one – sustainable economic growth depends on investment in transport infrastructure. Access to an international airport is an essential element in the policy mix for a genuine Ideopolis, acting as an engine of growth in the city-region and connected to the complex web of the international economy.

A further conclusion is that strategic transport planning must take place at the appropriate level. If we really believe that the Ideopolis city-region notion is the best frame of reference for understanding the dynamics of economic growth then planning should happen at this level too. This means that appropriate judgements can be made about airport capacity and investment in road or rail infrastructure. Obviously there needs to be a national policy framework to prevent inter-regional competition and a waste of resources, but the relationship between the centre and the regions could be articulated more clearly and more planning powers could be devolved to regional level.

### **Edinburgh and Glasgow Airports**

Questions were raised in some of our interviews about whether there is a need for separate international airports for Edinburgh and Glasgow. With future oil prices likely to impact on the upward trend in air travel, the huge investment in two large airports in southern Scotland needs to be questioned.

**4.8 Strong leadership around long-term knowledge city vision, supported by networks and partnerships**

The other important driver of knowledge intensity, economic success and sustainability that our case studies have highlighted is strong leadership around a clear vision of what the knowledge intensive city looks like, supported by meaningful networks and partnerships.

As with all the drivers of an Ideopolis (as will be discussed in the next section), the approach to leadership required for a city depends on its current strengths and weaknesses: those cities with higher levels of historic assets are likely to depend on leadership much less than, for example, northern cities that have suffered post-industrial decline.

The role of leadership also varies according to how economically successful and knowledge intensive a city is. For example, Cambridge is a highly successful knowledge intensive city that has benefited from university and business leadership, but is now struggling with the consequences of its economic success – congestion and pressure on public services – and has a growing need for more leadership from the public sector. In contrast, the strong public sector leadership in Sheffield is helping the city to find its feet after the substantial decline of its core industries – but there is a growing need for more business leadership there.

**Examples of leadership benefiting cities**

**Cambridge:** Leadership from the university or business community created a strong vision of Cambridge as a leading technological city that is driven by the creation of innovative networks to attract investment.

**Manchester:** Without fail, interviewees identified Sir Howard Bernstein, Chief Executive of Manchester City Council, as critical to the ongoing development of Manchester as a knowledge city. He set out a clear vision and made key decisions about the airport, regeneration, housing etc. that helped to set in place the building blocks of knowledge intensity in the city. The way that the city has made use of catalysts such as the IRA bomb and the Commonwealth Games is also attributed to strong council-led leadership.

Despite the variation in the kind of leadership required, it is an important feature that has emerged in all of our case studies. Leadership matters because:

- it creates a clear vision of the city that acts as a framework for decision-

- making and helps to attract knowledge intensive businesses and workers
- it brings together different stakeholders – local authorities, local community bodies, businesses and the university – in strong networks that have a clear purpose and can enable ideas to be shared
- it improves clarity for businesses about where decisions are made and who makes them
- it helps to engage key stakeholders by being clear about the benefits of engaging in discussions about how the city should develop.

Our case studies suggest that the main challenges to leadership are around capacity and having appropriate powers to affect the city's destiny.

Capacity continues to be an issue raised every time there is a discussion of leadership at a local level, with concerns raised about the calibre of leadership at local authority and regional level. Our case studies also suggested that multi-national firms taking over locally owned organisations may have a detrimental impact on capacity, as CEOs and senior managers may be based elsewhere and potentially be less engaged in the city (although this was by no means the experience of every city). 'Partnership fatigue' of the 'best people' is also a regular criticism of the way cities are currently led, with concerns that there are too many networks involving too few people in too many meetings.

In many case studies, the quality of local political and public leadership is an issue. Is it attractive for ambitious or experienced political and public sector leaders to operate at local or regional level or is the power, prestige and reputation attached to roles in Whitehall or Westminster or the Scottish Parliament more compelling? At a local authority level, the number of councillors across one city-region can be large, making it more difficult to address local concerns and the needs of the city-region.

Yet many local authorities do have access to a pool of highly talented and committed individuals, even if they are not to be found in the formal political institutions. The challenge of course is to find an instrument that unleashes these capabilities. Perhaps a wider problem is that Whitehall and Westminster are reluctant to offer greater freedoms to local authorities because they have doubts about the quality of local governance. But standards of governance are unlikely to improve if power remains concentrated at the centre so that local government is more a matter of 'local administration'.



This ‘chicken and egg’ issue has bedevilled the debate about local government reform for more than twenty years, but our conclusion is that the potential of the UK’s city-regions will not be fulfilled unless we learn that devolved powers can have a significant impact on the pace of economic development.

International examples reinforce the suggestion that successful cities, both in terms of knowledge intensity and other sectors, are those that are able to exercise powers at the level of the city-region, where this is defined as ‘the enlarged territories from which core urban areas draw people for work and services such as shopping, education, health, leisure and entertainment’.<sup>78</sup> If cities are to plan for the needs of a knowledge intensive economy – transport, housing, office accommodation, education, and business support – then it makes more sense to plan it according to economic boundaries rather than administrative boundaries.

**Stuttgart: case study**

Stuttgart was facing commercial melt-down in the early 1990s and, faced with this impending disaster, the 179 local authorities voted to transfer resources to a central association with control over planning, transport, marketing and major construction projects to catalyse the economy. The result has been a dramatic improvement in the city’s economic health.<sup>79</sup>

Our central finding therefore is that cities striving to become more knowledge intensive need to have leadership powers at **an appropriate spatial scale**. For some issues the appropriate spatial scale is at community and neighbourhood level, as outlined in ‘double devolution’.<sup>80</sup> For others, such as planning, transport, skills and housing, it is likely to be a city-region level: (e.g. via elected mayors or city cabinets). Without devolving appropriate powers to different levels, including the city-region, it is highly unlikely that the potential of leadership to drive knowledge intensity in cities will be fully realised.

The appropriate spatial scale also applies to funding arrangements. People from outside areas use the facilities in a city, but some of these services are funded by council taxes which are paid only by those in the central city. This

<sup>78</sup> *A Framework for City-Regions*, ibid

<sup>79</sup> *Seeing the Light? Next steps for City Regions*: New Local Government Network

<sup>80</sup> Speech by David Miliband MP, Minister for Communities and Local Government, to National Council of Voluntary Organisations, 21 February 2006

means that there is in effect a subsidy on the urban area, leading to under-provision of some services.

### 4.9 Investing in communities

We have already noted that labour market polarisation – with growing income inequality – has been a feature of most developed countries over the last twenty years. Our case study cities are no exception and have pockets of genuine deprivation cheek by jowl with growing affluence. What we also know is that inequality is bad for social cohesion and that deprivation is associated with higher levels of crime and poorer health. If we believe that life chances should not depend simply on an individual's initial social position and if we believe in careers open to talents then we should be concerned about the level of inequality in the Ideopolis: City-Region.

Of course, some of these problems do not lend themselves to regional or local solutions. Only national government can take the critical decisions on those tax and benefit policies that are most likely to improve the relative position of the poor. Nevertheless, there are still some steps that can be taken at the city-region level to ameliorate the worst effects of the 'hourglass' labour market.

An obvious conclusion is that regional and sub-regional economic development strategies ought to include measures to improve the prospects of the poorest communities. In part this is about encouraging business to locate in depressed parts of the city, but it is also about skills development, the promotion of local employment and the development of transport infrastructure – if a council estate is poorly served by public transport then it is hardly surprising that people find it hard to get back into secure employment if all the jobs are on the other side of the city. In some cities, deprived communities are next door to jobs that are filled by people commuting from the suburbs.

#### **Manchester: rising to the challenge of deprivation**

Manchester recognises the challenge it has of ensuring that those, for example, living in the community in which the university is based are able to benefit economically and in terms of quality of life from the university's success, and is striving to work more closely with the local community.

Our case studies suggest that so far wealth has failed to ‘trickle-down’ from the rich to the poor. Relying simply on the market will leave many deprived communities adrift and at risk of further marginalisation as labour market polarisation continues.

No city is without deprived communities facing significant challenges; no city has got the magic solution to the problem. But some cities are doing more than others to link their economic strategies to ‘sustainability’ strategies. London’s bid for the Olympics, for example, involved working at the level of the Greater London Authority and means that richer local authorities such as Richmond are subsidising investment in the deprived East End.

Investing in communities means not only enabling ‘double devolution’ – devolution of some powers to local communities – but also linking economic strategies to social inclusion strategies and investing in public services. Good schools are critical in a knowledge intensive city that relies on the skills of its local population: good healthcare and improved local transport connections are also vital to enabling all communities to participate in the benefits of a knowledge intensive city.

# 5 How can cities use the Ideopolis concept?

## 5.1 Becoming an Ideopolis

Being an Ideopolis has immense benefits for cities, both economically and in terms of quality of life – but there is a need for cities to assess what kind of Ideopolis they might be.

As argued earlier, an Ideopolis drives growth in the city-region – and not every city is able to do this, even if they have high levels of knowledge intensity. These smaller cities are better defined as ‘Secondary Ideopolises’, successful based on knowledge intensity but needing to link to the larger Ideopolis: City-Region in order to maximise opportunities for success.

Other cities may have relatively low levels of knowledge intensity in the local economy. Many of their (probably affluent) residents may commute to the nearest Ideopolis and much local employment may be focused on delivering services to the immediate population. A city of this kind needs to consider how it can raise productivity in all sectors, as well as how it can increase knowledge intensity. It may wish to specialise in being a ‘quality of life’ city – but our analysis suggests that they will need to do so based on knowledge intensive quality of life sectors and ones that are economically sustainable. Above all, these cities need to recognise that they will need to link closely with the nearest Ideopolis: City-Region or Secondary Ideopolis, and that a strategy to increase knowledge intensity will have results in the medium and long term, rather than the short term.

Cities considering whether they are an Ideopolis: City-Region or a Secondary Ideopolis should consider the following:

- a) **Levels of knowledge intensity** – If a city does not already have a critical mass of knowledge intensive industries (25 per cent for The Work Foundation definition), or is not close to having a critical mass, it should recognise the importance of improving productivity in all sectors and that knowledge intensity will deliver benefits in the medium and long term rather than in the short term
- b) **Niche strengths in different industries** – The city should have existing or potential ‘niche’ strengths in more than one industry, and should be aiming to ensure that the industry is either knowledge intensive or has a high number of knowledge intensive occupations
- c) **Skilled workers** – A city hoping to be an Ideopolis should be working towards having 20 per cent of its workforce with level 4 qualifications and 15 per cent of its occupations as ‘senior managers’. This should mean

investing in local education as a city cannot hope to successfully 'poach' all its knowledge workers from elsewhere

- d) Vibrant university** – Successful knowledge intensive cities need to have at least one university. To realise the potential of this institution, there is then a need to build on any strong specialisms of that university(s) and to embed it in the community
- e) Connectivity** – Cities should have good ICT links and either already have good transport links to an airport, railway station and nearby motorways, or have the potential to enhance these links. This does not mean that any aspiring Ideopolis should build an airport – there needs to be demand for it to be successful, but quick connections to an airport can make a significant difference to the city's success
- f) Distinctive knowledge city offer** – The city should have something distinctive it is able to offer or to develop that is enticing to investors and knowledge workers alike
- g) Centre of a city-region** – The city should be at the centre of an identifiable city-region (based on travel to work and leisure patterns) and should have the potential to drive growth in that city-region. If not, the city will benefit from being a Secondary Ideopolis, if all the other criteria are fulfilled.

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### 5.2 Different drivers matter to different cities

Having assessed their position against the Ideopolis drivers, the next step for cities is to develop an understanding of strengths, weaknesses and priorities. The nature of the interventions required is entirely path dependent –these factors have different weights for cities in different places along the Ideopolis continuum.<sup>81</sup> Different cities may need to adopt different strategies to reach similar goals.

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#### 5.2.1 Potential Ideopolis

Cities that are striving to become Ideopolises but do not currently have high levels of knowledge intensive businesses or occupations or obviously strong sectors in which these can be developed, should focus on the following:

##### 1. Leadership around a clear vision, primarily driven by the public sector

In those cities that do not already have a high number of knowledge occupations or businesses, public sector leadership appears to be key to focusing policy interventions and funding around a clear vision of a 'knowledge city'. In those cities that lack this leadership, it is more difficult to start making the transition to a 'knowledge city'.

81 Bevan, S., Cowling, M. & Horner, L. (2004) *Workplace Trends Survey 2004: Summary Report*: The Work Foundation

### 2. Making use of – and creating – catalysts

Cities that have turned themselves around have tended to make use of catalysts – even negative ones – to do so. This may be an event, some public funding or some physical redevelopment of the city; it can be planned or unplanned. Regardless of what the catalyst is, the key is to ensure that it forms the beginning of work to redevelop the city and its knowledge businesses.

### 3. Building on existing qualities

Cities need to build on what they have, for example, existing research strengths or local expertise such as manufacturing that can be made 'high value'. Even qualities that are negative can be linked to efforts to transform the city. For example, lessons can be learned from Glasgow. Many in Glasgow's most deprived communities face low life expectancy and severe health problems. The strength of the university's medical research, however, has helped the city to attract medical specialists who conduct their research there and enable the city to better address the challenges of these communities – and this has helped increase the city's knowledge intensity. This is not a suggestion that cities should seek this kind of 'asset' or even advertise it – but an affirmation that cities can and should work with what they are.

### 4. Investing in physical assets

It takes years to transform the physical look and feel of a city, so investing early in infrastructure and planning around connectivity, transport, offices and housing is vital.

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#### 5.2.2 Early stages and almost Ideopolis

Cities that are well on their way to becoming Ideopolises should focus on the following to improve their economic performance and address sustainability challenges:

#### 1. Working with the private sector

Successful cities have ensured that the private sector are fully engaged in shaping the direction of the city and its growth, even if early leadership started with the public sector. This is the only way to ensure that the city is responding to business needs. This is not to say that the public sector – including universities, community groups etc – should be excluded, but successful cities have all ensured that the private sector has a strong voice.

### 2. Building capacity in diverse specialisms

At a certain level of economic success, cities should be building capacity in potential areas of specialism. Decisions about where to invest in capacity building should consider the strengths of neighbouring cities and city-regions and seek to build on what is there already, e.g. university research strengths, strong local population of entrepreneurs etc. This should be done in consultation with the university – not imposed on them.

### 3. Maintaining distinctiveness

Economic success brings with it choices about distinctiveness – for example, should cities welcome all retailers because of the high revenue and popularity amongst shoppers, or try to reserve some space for independents to keep the place feeling distinctive? Our research suggests that distinctiveness remains important. This means not simply following a checklist – opera house, concert hall etc. – but considering what would work best in the area and how well it complements nearby facilities in other cities.

### 4. Focus on inequalities

Inequalities are a problem for all cities but as cities grow and become more successful, this tends to increase. Not addressing issues around education, health and crime will affect the current and future skill mix, demands on public services and overall quality of life – making it less likely that that city is sustainable.

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#### 5.2.3 Ideopolis: City-Region

These cities are economically successful and have a high quality of life for most of their inhabitants, as well as impacting positively on growth in their city-region (defined as appropriate for that city). Key issues for them are:

#### 1. Ensuring there is strong public sector leadership

One of the challenges of economic success is its consequences for quality of life – congestion, pressure on public services etc. Those cities that are most successful often lack strong public sector leadership that can help them deal with these challenges. Without this their quality of life, as well as future growth, may suffer.

#### 2. Planning at the city-region level

Successful cities driving growth in the city-region need to work with

other local authorities and the RDA to manage the consequences for the city-region and to sustain growth. Many of these cities will be 'fed' by workers from neighbouring suburbs and cities who live elsewhere for quality of life reasons. Without planning at a sub-regional but above local authority level, the administrative boundaries will get in the way of sustaining growth and improving quality of life.

### 3. Invest in public services

To sustain the growth of knowledge businesses there needs to be a local supply of well educated workers – requiring good education services.

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#### 5.2.4 Secondary Ideopolis

Not every city is at the heart of a city-region, but those cities with the potential to use knowledge intensity as a route to economic success and sustainability that are not at the heart of a city-region can aspire to become a Secondary Ideopolis or 'Knowledge City', benefiting from their proximity to the nearest Ideopolis: City-Region. This relationship can and should be constructed in a mutually beneficial way if the two different approaches – Ideopolis and Secondary Ideopolis – are differentiated and it is made clear they are complementary rather than competing.

#### Case study of Secondary Ideopolises

Brighton is doing well on all measures of knowledge intensity, but is doing so in a way that complements London, the engine of growth for the South-East of England.

Secondary Ideopolises can be identified as having similar stages to Ideopolises – potential, aspirational and genuine 'Secondary Ideopolis'. Many of the drivers identified remain relevant: but the Secondary Ideopolis is dependent on the success of the Ideopolis: City-Region for its own success – when London sneezes Brighton catches a cold. Secondary Ideopolises grow by investing in infrastructure, specialising in particular sectors and using both universities and the education sector more widely to generate growth. However, leadership and planning may need to happen not just at the city level but in conjunction with the Ideopolis. There is a high degree of inter-dependency here that policy makers need to understand.



# 6 Conclusions and policy recommendations

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**6.1 Conclusions** Knowledge intensity is clearly associated with levels of innovation and productivity growth. It is increasingly important as a source of comparative advantage and is likely to remain so as the integration of global markets continues apace. A central finding of our work is that the knowledge economy embraces more than just science and technology: it is about highly skilled individuals adding value in all industries, and about the industries that are more likely to employ highly skilled workers.

Cities matter in the knowledge economy: they are the places that offer organisations access to highly skilled workers, affluent consumers and the opportunity to innovate and exchange ideas.

The Ideopolis is the vision of a sustainable knowledge intensive city that drives growth in the wider city-region. It gives cities a framework for developing knowledge-intensive industries that will be economically successful and improve quality of life. Cities benefit enormously from using the Ideopolis framework to increase their knowledge intensity. Cities with more knowledge intensive industries and occupations are more economically successful and can improve quality of life for many local people.

The Ideopolis vision also offers national policymakers an insight into how the knowledge economy works at a regional and sub-regional level, and into the policy levers that facilitate knowledge-based cities and knowledge-based growth. The next section sets out the policy recommendations that have emerged from our research.

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**6.2 Policy recommendations** The overarching principle is that policymakers at all levels should adopt an holistic approach by developing strategies that link economic development, distributive justice and quality of life. Beyond this, we would suggest that the preceding discussion produces the following recommendations, relevant to national, regional and local policymakers:

**a) The Knowledge Economy is not just about science and technology**

The Knowledge Economy is not just about science and technology: it is about realising the benefits of innovation generated through knowledge in all sectors of the UK economy. This means that:

National policymakers should:

- Adopt The Work Foundation definition of 'knowledge intensive industries';

which includes education, health and some cultural and creative industries, and as such is a better reflection of the sectors most likely to be knowledge intensive than the OECD definition

- Stop incentivising cities to focus solely on science and technology: some cities may benefit from other aspects of the knowledge economy, for example growing the skills of creative and cultural industries or more traditional industries such as manufacturing
- Collect and disseminate evidence on the different industries which are knowledge intensive to support better-policy making in this area. A clearer narrative from Government will support a more focused direction at the regional level
- Work with industry to identify where there is potential to make more effective use of ICT across a range of sectors, learning lessons from other countries such as the United States.

Regional policymakers should:

- Use The Work Foundation's four measures of knowledge intensity to assess how knowledge intensive particular cities and regions are
- Assess the diversity and strength of specialisms within different areas of the city-region and develop Regional Economic Strategies that build on existing strengths – working out how that fits with the knowledge intensity of the region as a whole.

Local policymakers should:

- Work with other cities and within the region to audit their own position within the Ideopolis framework for cities: what needs to be done to raise GVA by making the economy more knowledge intensive?

### **b) Knowledge intensive cities require effective investment and prioritising of knowledge intensity**

National policymakers should:

- Review existing business support in relation to knowledge intensive industries – is it sufficiently focused to provide support? Does it respond to the needs of regions and city-regions?
- Incentivise regions and cities to work together to become more knowledge intensive – the Northern Way is a good example of this.

Regional policymakers should:

- Work with cities to create a long-term regional vision, with clear ideas

about different areas' specialisms in the Ideopolis framework

- Prioritise more effectively to focus funding on the most deprived areas and on the areas that are most likely to grow based on knowledge intensity. This will require an end to 'jam-spreading' funding equally amongst all local authorities and structures to ensure all local authorities benefit
- Work to prevent neighbouring authorities trying to bid for similar pots of money or attract mobile businesses, instead incentivising them to work together to prevent inefficiencies
- Review how effectively they are supporting and developing priority industries that are either knowledge intensive or have high numbers of knowledge intensive occupations and work with stakeholders to improve tailored provision
- Ensure that inward investment strategies and strategies to work with existing employers have a focus on the quality of working life.

Local policymakers should:

- Seek to maximise the benefits of working with other local authorities using the Ideopolis framework at a city-region level
- Recognise that knowledge intensity may have adverse local consequences for deprived communities or those with lower skills, and actively work to link economic strategies with social policies.

### **c) Knowledge intensive cities require planning powers over transport, skills and housing at city-region level**

‘Local government needs to get used to realising that they are better off if they play together in a bigger pond.’

City-regions already exist in economic terms, but these realities of economic geography are not reflected in current political and administrative boundaries. Simply put, a lack of coordination between cities and city-regions is hindering the growth of Ideopolises.

National policymakers should:

- Encourage local authorities to work together in 'city-regions' and give these city-regions the powers and funding required to plan transport, skills and housing for the Ideopolis: City-Region, whilst setting up light-touch accountability structures. This is likely to involve pooling a range

of different funding sources and enabling local and regional areas to work closely with the LSC and LEA to ensure that skills provision relates to future priority sectors

- Ensure the Skills Strategy has a spatial element and works in cities to encourage organisations to operate on ‘high value’ strategies and to ensure people can progress and develop
- Ensure that Sector Skills Councils have the resources they need to engage with businesses, HEIs and skills institutions around anticipating structural change, adapting qualifications and raising demand from businesses
- Continue to work with businesses to raise the demand side and encourage a ‘high road’ approach to productivity, rather than a ‘low road, low skills’ approach.

Regional policymakers should:

- Work with cities to help set up real city-regions. They should also help manage the inevitable tensions that are found within city-regions, for example debates about who gets more funding, fears the larger local authority will have everything its own way and the sometimes out of proportion influence that very small authorities have on regional transport policy
- Help to ensure that transport, skills and housing respond strategically to the region’s knowledge economy needs by working with key stakeholders (the LSC, SSDA, SSCs, education institutions, businesses and local authorities) to recognise existing need, seek to embed existing businesses in the region and anticipate future structural change.

Local policymakers should:

- Work with other local policymakers at a city-region level to fund cultural and other facilities of regional importance – for example, entertainment and leisure can be subsidised by a central local authority, when most of its users may live in peripheral authorities
- Use public procurement and planning regulations to reward innovation from contractors and developers (for example, around social inclusion, increasing skills, paying a living wage)
- Work to develop people’s skills to respond to the needs of a knowledge intensive economy, for example developing ICT skills.

### **d) Universities should be key partners in any regional development strategy for knowledge intensity**

Universities are vital components of the knowledge intensive city and need to be incentivised to work with cities so that there is mutual benefit.

National policymakers should:

- Review how universities can be rewarded and incentivised for the quality of their research and for excelling in knowledge transfer, using the findings of the Lambert Review (2003)
- Investigate the potential to set up a central fund that universities can bid for that would support capacity development and close working with the city-region to improve knowledge transfer.

Regional policymakers should:

- Work more closely with universities, engaging them early on in discussions about the Regional Economic Strategy without overloading them, and aiming to ensure there is mutual benefit from the partnership
- Encourage cross-local authority and city partnerships between universities to encourage greater innovation across the region
- Support universities and cities in setting up innovative initiatives such as office space on a university campus.

Local policymakers should:

- Engage with universities when seeking to attract and retain local businesses, ensuring that they also recognise that universities have other roles and responsibilities as well.

### **e) Leadership needs to be empowered and developed at regional and local level**

Leadership is critical, particularly for those cities in more challenging circumstances. Acting on the recommendations above is a key part of leadership in this area: sorting out infrastructure and public services, raising demand for skills, facilitating business networking and business/university links. There is also a need to recognise that civic and political leadership cannot replace the role that businesses need to play in the knowledge city – but public sector leadership can help create the right kind of environment for successful knowledge cities.

National policymakers should:

- Give city-regions, local authorities and neighbourhoods more power, building on the double devolution agenda
- Remove some of the barriers to regions and city-regions developing

## CONCLUSIONS AND POLICY RECOMMENDATIONS

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strategies that link economic development, distributive justice and quality of life

- Identify, disseminate and apply best practice for knowledge cities, learning lessons from the case studies in this report and their own work and putting them in the context of the knowledge economy.

Regional policymakers should:

- Identify potential leaders early and seek to develop them through involvement in regional strategies
- Help manage the tensions that will exist at city-region level as a result of the differing priorities of different local authorities and other agencies.

Local policymakers should:

- Seek to engage local residents in debates about how to transform the city and community – which should also help develop future leaders and revitalise local politics
- Work with business leaders to better understand and respond to their needs e.g. around accommodation.

# Birmingham: executive summary

'Birmingham has undergone an amazing urban renaissance which has transformed the city'

Nick Raynsford, former Local Government Minister

Birmingham is increasingly a 'professional services' city, with high-skill jobs in financial and business services. However the city and the wider region are struggling to retain its high-value manufacturing base. Birmingham has seen massive investment in the city centre, changing the reputation of the city (particularly within the UK). The city – and the West Midlands region – suffers from social and economic inequalities and these threaten to constrain future growth.

## **Strengths, challenges and opportunities**

- Physical knowledge city: In the past twenty years, £9 billion has been spent on regenerating the city, particularly the city centre which has been transformed.
- Building on what's there: The first four-wheeled petrol driven car was built in Birmingham. However, with the closure of Longbridge last year, there are concerns that Birmingham will no longer be able to rely on the motor manufacturing industry as it has done in the past.
- Diverse specialisation: Birmingham's dominant sectors are financial and business services, the public sector and manufacturing. There are specialisms within manufacturing (although this sector is in decline) and in creative and cultural industries.
- High skill organisations: Birmingham's working age population has lower skill levels than the UK average, but the city does have an average proportion of high-skill occupations. Wages are lower in Birmingham than the rest of the UK, however 'in Birmingham you can live on low wages'.
- Vibrant education sector: Birmingham has a strong research intensive university sector. Like other cities it suffers from stark polarisation in educational outcomes from different communities – and this is a major challenge.
- Distinctive knowledge city offer: Birmingham's distinctive economic offer (motor manufacturing) is threatened and the city 'hasn't got the cool factor that emerged in Manchester'.
- Leveraging strong connectivity: Birmingham has strong national and international connections; however 'inadequate' connectivity within the city is seen as exacerbating inequalities.
- Leadership around a knowledge city vision: Birmingham City Council is the

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largest (by population) in Europe. The city is a leader in the integration of decision-making at city-region level.

- Investing in communities: The number of people who aren't 'included' is 'shocking'.

#### **Policy recommendations**

- Need an **integrated vision** of what a good and distinctive city looks like in its region: how to ensure that growth in Birmingham won't mean decline in the Black Country.
- Invest in **diverse** economic base.

#### **Lessons for other cities**

- **Using development to upskill:** the Bullring development specified that 50 per cent of employees had to be from 'hard-to-reach' groups, with the objective of putting a stop on future exclusion.



# Brighton: executive summary

'Brighton has become sexy again'

Anthony Seldon, *Observer*, May 2003

'Brighton brings the quirky into the mainstream'

Ideopolis interviewee

Brighton punches above its weight in the knowledge economy, with the city's renaissance being aided by an abundance of creativity. Like other cities, the key challenges that Brighton faces relate to labour market polarisation, coping with the 'overheating' consequences of success (congestion and house prices), and political tensions that inhibit leadership around a knowledge city vision.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Brighton is landlocked by the sea to the south and the downs to the north. Creating the physical knowledge city demands boldness in building on what is there.
- Diverse specialisation: Brighton has a diverse economic base with some niche specialisms, particularly within the creative and cultural industries. A potential weakness is the over reliance on small businesses, with only a handful of large private sector employers.
- High skill organisations: Brighton has a skilled labour market, but there is a concern about the lack of graduate jobs to retain talent in the city and also the low-wage element to the economy.
- Vibrant education sector: Brighton has two universities and there is scope to improve the link between the universities and business.
- Distinctive knowledge city offer: Brighton has a distinctive 'quirky' offer, most notably in the substantial arts and cultural offering (especially Brighton Festival, the largest arts festival in England). Any future planning decisions need to be mindful of retaining Brighton's distinctive identity.
- Leveraging strong connectivity: The city is well connected and uses proximity to London to its advantage. The main challenge is related to planning for and managing growth.
- Leadership around a knowledge city vision: Brighton needs better political cooperation to back the strong vision for the city.
- Investing in communities: Like other cities, Brighton has not seen the 'trickle down' effect of increased prosperity improving the quality of life for all residents.

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**Policy recommendations**

- Addressing over-skilling and creating 'good work' at the bottom end of the labour market.
- Making strong links between social and economic policy for the city.

**Lessons for other cities**

- Developing strong creative and cultural industries, and a distinctive arts and cultural offering.
- Using proximity to London to own advantage.

# Bristol: executive summary

‘The most beautiful, interesting and distinguished city in England’

John Betjeman, former poet laureate

Bristol's economy is knowledge intensive, with significant niches in aerospace, and this knowledge base is growing at an above average rate. Bristol and the wider city-region have a competitive offering for business investment and for quality of life, with the newly formed West of England Partnership being the potential mechanism to ensure continued growth.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Bristol and the wider region have a competitive quality of life offering and the city centre has an attractive built environment, which has benefited considerably from regeneration in recent years.
- Building on what's there: Bristol has a well-established knowledge economy (for example, aerospace companies have been based in the city since the early 20th century), with the economic structure reflecting earlier historical decisions.
- Diverse specialisation: This is one of Bristol's key strengths, and one that has equipped the city to be 'resilient in weathering economic change'.
- High skill organisations: Bristol has a highly skilled labour force; however there is also a significant group without skills. With the labour market expected to 'tighten' in coming years, skill shortages will potentially constrain economic growth and this is a key challenge for Bristol.
- Vibrant education sector: Bristol's higher education sector is strong. A significant challenge for the city is the difference in educational attainment between state and independent school pupils.
- Distinctive knowledge city offer: Whilst those living in Bristol have a distinct impression of the city's strengths, there was a concern amongst interviewees that the city does not market itself well enough.
- Leadership around a knowledge city vision: Partnership working between the key players in the city (including Business West, the City Council, HEIs and the RDA) and the recent formation of the West of England Partnership demonstrate leadership around the future vision for the city and wider region. There is an urgent need for Government to support the West of England to work at a city-region level.
- Investing in communities: The divide between Bristol's rich and poor communities, although a feature of all UK cities, is concerning.

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**Policy recommendations**

- Strengthening of the West of England Partnership to drive growth and address challenges at a city-region level, particularly around major infrastructural issues.
- Investment in state education sector.

**Lessons for other cities**

- Driving forward partnership working across different local authorities.
- Distinctiveness: Bristol has significant strengths in a limited number of growing sectors, creating a diverse economic base that is resilient in the face of change.
- Higher education sector embedded in the city and wider region, for example the Universities of Bath, Bristol and the West of England setting up a Science Park with 6,000 jobs expected.

# Cambridge: executive summary

‘A low risk place to do a high risk thing’

Andy Richards, ‘serial’ biotech entrepreneur, and Cambridge investor

Cambridge is a city with a considerable proportion of knowledge businesses and a highly educated population doing highly skilled jobs. It has developed a style of networking and consultancy that has allowed it to take advantage of the research base provided by the university. However, the city’s future success depends on how it manages the consequences of success: high house prices, traffic congestion and business relocations present challenges to the city.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Cambridge has a number of high quality science parks on the city outskirts that have accommodated business growth and attracted new firms. However, the historic city centre constrains development, and house prices are high.
- Building on what’s there: Cambridge has used its traditional academic strength to compete in the knowledge economy. Cambridge has seen considerable spin-off activity within a range of high-tech firms.
- Diverse specialisation: The driver of growth in Cambridge has been specialisation in a variety of niche, high-tech industries.
- High skill organisations: Cambridge produces jobs for scientists and personal service staff. However, it is less good at providing jobs in the middle, leading to concerns about a polarised labour market.
- Vibrant education sector: Cambridge University makes a huge contribution to, and plays a significant role in, the city.
- Distinctive knowledge city offer: Cambridge has an international reputation, and a distinctive business offering. A challenge here is the rise of companies that are seen to ‘piggy-back’ off the reputation of the university.
- Leveraging strong connectivity: The city is well linked to London and internationally. Economic success is leading to congestion in the centre though, and there are concerns that the governance structures do not serve the city’s connectivity well.
- Leadership around a knowledge city vision: The city knows where it is going, although it lacks the institutions to deal effectively with economic growth.
- Investing in communities: Cambridge has good public services and an affluent population, but it needs to find ways to spread the wealth.

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**Policy recommendations**

- Provide soft infrastructure in the new growth areas.
- Local authorities need to work better together: for example, to reduce traffic congestion by investment in public transport.

**Lessons for other cities**

- Growth is a social phenomenon. Cambridge has developed, in large part, because of the networks between groups of consultants, entrepreneurs and scientists. Realising it was in their interest to collaborate they did so, without state intervention.
- Build on what's there. Cambridge has a high-quality research university, and it has built on this to create economic success.

# Edinburgh: executive summary

'This profusion of eccentricities, this dream in masonry and living rock is not a drop scene in a theatre, but a city in the world of reality'

Robert Louis Stevenson

Edinburgh is an Ideopolis. It is highly knowledge intensive, has a highly skilled population and a range of economic strengths. Quality of life for most in the city is outstanding. To sustain its position as an Ideopolis, however, it needs to increase innovation and address the concentrated pockets of deprivation that remain.

## **Strengths, challenges and opportunities**

- **Physical knowledge city:** The city has some good office accommodation, including the financial services district and business parks. Questions remain about whether it is possible for the city to accommodate further growth.
- **Building on what's there:** The city has taken advantage of its historical position as capital and administrative centre of Scotland.
- **Diverse specialisation:** Whilst Edinburgh's economy is diverse, there is a concern about reliance on the public sector, with any future cutbacks jeopardising growth.
- **High skill organisations:** The city's population is largely professional, and takes advantage of a range of reasonably well paid, high skilled jobs.
- **Vibrant education sector:** There are five HEIs in the city: they offer a high educational standard and are reasonably well linked to local businesses.
- **Distinctive knowledge city offer:** Edinburgh has a distinctive offer, helped by its attractive built and natural environment and strong cultural offering, such as the festival.
- **Leveraging strong connectivity:** International connectivity is strong, but connectivity within the city-region is threatened by current governance structures.
- **Leadership around a knowledge city vision:** Like others, the city lacks coordinated governance across the city-region level. This presents a current challenge (dealing with the consequences of success) as well as a future challenge (potential to constrain further growth).
- **Investing in communities:** The city is working to address the pockets of concentrated deprivation. A key challenge for social cohesion and social mobility is the high level of schooling in the independent school sector.

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**Policy recommendations**

- Using governance at a city-region level to address the problems of coordination, which inhibit growth in the city-region. A city-region approach will also enable the benefits of growth to be spread more widely.
- Focus on graduates: work with universities to keep graduates in the city and to manage the potential consequences of an ageing population.

**Lessons for other cities**

- Invest in high quality public realm: Edinburgh did this 200 years ago and is still benefiting now.



# Glasgow: executive summary

'Glasgow is still on an upward trajectory that started before it became European City of Culture'

Ideopolis Interviewee

Glasgow scores well on measures of knowledge intensity and has developed a strong service economy. Culturally led regeneration (building on the 1990 European City of Culture) has had a significant impact in the city. Despite many successes, Glasgow suffers from labour market polarisation, prompting one interviewee to describe it as a 'city of extremes'. Glasgow's future success relies on a long-term vision around social and economic inclusion, and the strengthening of Edinburgh-Glasgow collaboration.

## Strengths, challenges and opportunities

- Physical knowledge city: the 1990 City of Culture and 1999 City of Architecture have enabled Glasgow to create the physical knowledge city.
- Diverse specialisation: Glasgow has a diverse economy, with the top five industries being banking and insurance, business services, health, public administration and communications. Glasgow offers specialisms within the creative and cultural industries (broadcasting, TV and film production) not found elsewhere in Scotland.
- High skill organisations: Glasgow has many highly skilled workers doing high value jobs, but also many workers and non-workers with no skills. For future success Glasgow needs to tap the under-utilised sections of its population.
- Vibrant education sector: Glasgow is the largest agglomeration of higher and further education in Britain after London and Oxbridge.
- Distinctive knowledge city offer: Glasgow has a distinctive identity and external image, though within the UK this image is often about unemployment and poverty.
- Leveraging strong connectivity: Glasgow is well located within Scotland but is on the periphery of Europe. Glasgow would benefit from investment in high-speed rail connections to Edinburgh and other cities within the UK.
- Leadership around a knowledge city vision: there are three key players in Glasgow: the city council, Scottish Enterprise and the HEIs. Glasgow has the opportunity to use the 2014 Commonwealth Games bid to strengthen existing leadership, and could learn lessons from Manchester's approach.
- Investing in communities: Investing in Glasgow's communities represents the biggest challenge and also the biggest opportunity for the city.

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**Policy recommendations**

- 'There is still work to do in the poorer parts of the city to ensure that the vision for Glasgow is shared'.
- Attracting 'quality' as well as 'quantity' in new jobs.
- If 2014 Commonwealth Games bid is successful; learn from Manchester's approach.

**Lessons for other cities**

- Culture-led regeneration.
- Developing a strong service economy which includes 'high value' jobs.

# Manchester: executive summary

'What differentiates Manchester is the airport, civic leadership, vision, dynamism and a skill base that wishes to engage and remain'

Ideopolis Interviewee

Manchester has been one of the most forward-thinking cities in the UK when it comes to the knowledge economy and is on its way to becoming an Ideopolis.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Manchester has dramatically redeveloped its city centre offering residential and office accommodation – although some interviewees have concerns this may be bypassing central deprived communities.
- Diverse specialisation: Manchester has diverse industries driven by private and public investment, and building on existing strengths including research, health and media. Independent businesses add distinctive value. However, innovation levels need to increase and the level of business failures remains too high.
- High skill organisations: Manchester has a number of job opportunities for highly skilled people but not as many as some other cities. More demand from businesses for knowledge occupations would increase its knowledge intensity and its productivity.
- Vibrant education sector: Manchester has used its higher education institutions to great advantage to provide research, help to generate local employment and secure public sector investment and work with the business community. Nearly 90,000 students also create high demand for services. Associated challenges the city is dealing with include managing the impact of students on local communities and improving the quality of local schools.
- Distinctive 'knowledge city' offer: A strong sense of identity and pride has supported the city in making a 'distinctive' offer to investors and residents, including strong leisure, cultural and creative sectors. The city needs to ensure it nurtures its independent businesses and continues to retain its distinctiveness.
- Leveraging strong connectivity: Manchester Airport has been used very successfully to leverage local growth as well as incentivise more tourism. However, there remain acknowledged challenges around creating a more integrated transport system and addressing congestion.
- Leadership around a knowledge city vision: Manchester's strong leadership

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goes across the public, private and voluntary sectors and has enabled the city to use catalysts to maximise opportunities for growth. There is an urgent need for Government to support Manchester being able to work at a city-region level.

- Investing in communities: The city is working hard to address the challenges facing inner city communities, although some interviewees expressed concern about too much focus on economic growth and not enough on deprived areas.

#### **Policy recommendations**

- Make the concept of the city-region more meaningful through funding and more powers around transport, skills and planning.
- Explicitly link strategies for economic growth and social inclusion.

#### **Lessons for other cities**

- Leadership and partnerships can help drive a vision of the knowledge city.
- Events can be used to raise the city's profile and to catalyse economic growth.
- Vibrant education sector: Knowledge intensive businesses and workers can be generated through universities.

# Newcastle: executive summary

‘Have you ever been to Newcastle? What a thriving, vibrant place it is at the moment’

John Prescott

Newcastle and Gateshead are increasingly working together to create a ‘knowledge city-region’. Strong engagement from universities in developing the Science City strategy, together with the potential for a highly distinctive ‘knowledge city’ offer for workers and investors, means that Newcastle is on its way to becoming a knowledge city. However, the city-region needs to ensure it develops strong expertise in more than one industry area to build on the ‘diverse specialisation’ of the economic base.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Newcastle-Gateshead has a strong quality of life offering and has benefited immensely from physical regeneration, especially the ‘iconic’ Angel of the North, Sage Gateshead and the BALTIC.
- Building on what’s there: Following the decline of traditional industry, Newcastle has had successes in building on other assets, including the public sector and higher education. The challenge is to ensure that the city is proactive in using its assets to attract funding and inward investment.
- Diverse specialisation: The city retains a strong manufacturing base, and there is continuing reliance on ‘individual sectors’, but diversity is beginning to increase.
- High skill organisations: Skill levels in Newcastle are above the national average, however the wider region is lagging behind. Newcastle-Gateshead needs to focus on attracting high-skill organisations to retain talent.
- Vibrant education sector: The education sector in Newcastle is critical to the city’s development and future economic success. The city needs a ‘better infrastructure to exploit university knowledge into jobs and companies’.
- Distinctive knowledge city offer: Newcastle-Gateshead is being transformed, with creative and cultural industries at the heart of regeneration. Whilst the self-image of the city remains strong, external perceptions of city-region need to be updated.
- Leveraging strong connectivity: Newcastle has a good airport but, like many other cities, suffers from a rail network in need of upgrading to meet the needs of the city. Internally, transport links are strong, and the city is thinking ahead about the infrastructural consequences of further growth.
- Leadership around a knowledge city vision: Partnership working between

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Newcastle and Gateshead is working well, but there is a need for stronger governance at a city-region level.

- Investing in communities: communities in Newcastle-Gateshead are polarised: 'social regeneration is the slowest at the moment', this represents a significant challenge to future growth.

#### **Policy recommendations**

- Encourage private sector investment.
- Integration at city-region level: there is an urgent need for Government to support Newcastle-Gateshead to work at a city-region level.

#### **Lessons for other cities**

- Culture-led regeneration.
- Recognition that local authorities need to join forces for future success
- Leveraging a strong higher education sector.

# Sheffield: executive summary

'Sheffield is at an interesting time'

Ideopolis Interviewee

Following post-industrial decline, Sheffield is now seeing signs of economic recovery. It has low levels of knowledge intensity but this is growing relatively fast. It offers a high quality of life, with excellent public services and some exciting cultural facilities. But its weakness is employment, as it lacks the critical mass of knowledge industries to attract and retain graduates and knowledge workers.

## Strengths, challenges and opportunities

- **Physical knowledge city:** The built environment, particularly in the centre, has improved hugely over the last ten years. There are some attractive and high quality Victorian suburbs relatively close to the city centre. Concerns remain about the availability of office accommodation.
- **Building on what's there:** Sheffield has moved up the value chain in some areas of steel and manufacturing production, but has also lost large numbers of manufacturing jobs, creating complex social and economic challenges.
- **Diverse specialisation:** The city's industrial base is not historically diverse and it needs to invest in diversification as a risk management strategy.
- **High skill organisations:** Sheffield lacks a critical mass of high skill, high wage organisations which would keep knowledge workers and graduates in the city.
- **Vibrant education sector:** Sheffield has two good, locally engaged universities.
- **Distinctive knowledge city offer:** Sheffield needs to develop a distinctive identity. Whilst many of its assets are locally recognised, it needs to publicise them more.
- **Leveraging strong connectivity:** The Northern Way may isolate Sheffield from the main transport links: a framework is needed to connect more effectively with Manchester and the surrounding city-region to ensure it is not bypassed.
- **Leadership around a knowledge city vision:** The city-region may provide Sheffield with the critical mass to succeed, but there are concerns that local authorities are fighting for the same money. Greater recognition of where each town stands in the city-region is needed.
- **Investing in communities:** Like other cities, Sheffield suffers from polarisation. However, public services are generally good.

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### **Policy recommendations**

- Build links between government departments and the local economy:  
Subcontracting may allow local firms to develop.
- Work with developers to build better quality office space.
- Decide what it wants to be, and build a vision around it – distinct from other northern cities, and based on its assets.

### **Lessons for other cities**

- Diverse specialisation: Sheffield's economic decline was closely linked to the city's industrial structure being based on a vertically integrated model around a few industries.
- University spin-offs: A few specialised departments have been highly successful in developing further growth.



# Watford: executive summary

'In terms of the infrastructure they've got it about right. Plenty of places to park, and a good shopping centre...lots of car parks around the town centre, and out of town shopping centres as well. And what is on offer is very attractive to some people. Cambridge just doesn't have that'

Ideopolis Interviewee

Watford gets the basics right. It has some good facilities for its size, excellent transport links and, largely, good public services. These assets mean it is a popular location for businesses, and there has been some economic growth. However, Watford is very much part of the London city-region. What it lacks is distinctiveness, and it has lost firms to other places because it does not have a university. The future for Watford relies on the city being able to manage the consequences of growth, while maintaining strengths that are under threat from congestion, rising house prices and no distinctive identity.

## Strengths, challenges and opportunities

- Physical knowledge city: There are some good business parks in the town and housing is relatively good.
- Building on what's there: In some areas Watford has moved up the value chain. The traditional publishing industry has diversified into multimedia sectors. But it is still reliant on corporate headquarters which are not particularly embedded in the town.
- High skill organisations: Watford residents can work in London, and this increases opportunities enormously.
- Distinctive knowledge city offer: Watford is not distinct from other similar towns and this is a weakness.
- Leveraging strong connectivity: Watford is very well connected, but its ongoing growth may lead to congestion, threatening this strength.
- Leadership around a knowledge city vision: Watford has an elected mayor, but lacks the geographical coverage or economic weight to coordinate growth properly.

## Policy recommendations

- Build distinctiveness.
- Better coordination of growth so quality of life is not threatened.
- Improve and encourage public transport to maintain connectivity which is an important asset for the town.

## Lessons for other cities

- The basics matter: Watford has good parking and shopping and relatively cheap housing – this has been behind its economic success.

# Munich: executive summary

'The once-staid Bavarian capital is currently rivalling big brother Berlin as Germany's most cutting-edge city'

Ian McCurrach, *Guardian*

Munich is an Ideopolis. It is economically successful, with a diverse range of specialised industries, including ICT, finance and insurance, high value-added manufacturing and publishing. It also maintains a high quality of life, with relatively high levels of social cohesion and an attractive and clean natural environment. It has an excellent record in research and development, including the research centres of Siemens and BMW.

## Strengths, challenges and opportunities

- Physical knowledge city: A number of projects have sought to provide appropriate accelerator spaces for new industries, such as biotechnology. But expensive rents for businesses remain a challenge for the city.
- Building on what's there: Munich has built on its historical position as the capital of Bavaria, and attracted some functions from Berlin after the partition of Germany.
- Diverse specialisation: Munich has a highly export-oriented manufacturing sector, and is strong in a range of sectors. As the centre for research for firms such as Siemens and BMW the city is highly innovative.
- High skill organisations: The new industries require high skills and high wages. However, these have led to a high cost of living, making it difficult for unemployed and low-wage workers to afford to live in the city.
- Vibrant education sector: The city is strong in human capital and research, but the unemployed are disproportionately those without formal training or a degree.
- Distinctive knowledge city offer: As the historical capital of Bavaria, the city has wider recognition, despite not being the capital of Germany.
- Leveraging strong connectivity: The excellent transport infrastructure has been an important driver of growth. Internal, regional and international links are good, with this being an important reason for firms to locate in the city.
- Leadership around a knowledge city vision: The State of Bavaria has taken some responsibility for innovation policy and there is also leadership from the private sector and the city government. However, the city lacks an institution covering its economic area, leading to problems of coordination.
- Investing in communities: Social cohesion in the city is reasonable, with some urban segregation but relatively little tension. This is in part due to

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relatively low unemployment, although poverty rates have increased recently.

**Lessons for other cities**

- Exploit devolution: Munich was a regional capital, but took on many national functions after World War Two. Being the location of many strategic functions helped it cope with economic restructuring.
- Invest in universities: The high quality of Munich's universities has attracted the research and development that has led to the economic success of the city.

# Lisbon: executive summary

‘Things just don’t work properly’

Luis Centeno & Ana Pereira, CEEETA

Lisbon has been the focus of knowledge-based growth in Portugal. It has most of the country’s research and development and a range of knowledge intensive industries, including finance, business consultancies and ICT. It is the most knowledge intensive city in Portugal. But it has many problems, and these prevent it from succeeding internationally. Not least is that, while the city is known externally as having a high quality of life, for many residents it remains a difficult place to live.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Lisbon has some good business parks. Notably, these often include good services to improve the quality of life of people working there.
- Diverse specialisation: As a capital city, the state sector is important, but Lisbon also has concentrations of knowledge industries, including an emerging ICT cluster.
- High skill organisations: Relative to the rest of Portugal, Lisbon provides some good work. However, many of the jobs are low skilled, low paid jobs, despite being in knowledge industries.
- Vibrant education sector: Many high tech companies are engaged with universities, but there are still concerns that the academic system rewards patronage rather than innovation.
- Distinctive knowledge city offer: Lisbon is seen as internationally distinct, in part due to its role as the capital and also because of events such as the European Capital of Culture, 1994. Its reputation for a high quality of life is not matched by the experiences of much of the population.
- Leveraging strong connectivity: Transport internationally is good, but developments in the expanding city-region tend to be haphazard and respond to urban growth, rather than predicting it. Consequently, congestion is a real threat to quality of life.
- Leadership around a knowledge city vision: Lisbon is seen as lacking strategic leadership.
- Investing in communities: The city has some problems with social exclusion and the rich have a considerably higher quality of life in the city.

## **Lessons for other cities**

- Get the basics right: Problems in the wider socio-economic functioning of Lisbon have prevented it being more successful.

# Boston: executive summary

‘Boston looks like the future not the past’

Ed Glaeser, Harvard

Boston is an Ideopolis. It has a high level of knowledge intensity, offers and good quality of life. Its economy is specialised in a diverse range of sectors, most of which are highly knowledge intensive. Its three main industries, education, financial services and technology, each feed the success of the other and build (and rely on) high levels of human capital. However, Boston suffers from a housing crisis, has difficulties in retaining people and has a high cost of living. It has recently lost some corporate headquarters and concerns remain about private sector leadership in the city-region.

## **Strengths, challenges and opportunities**

- Physical knowledge city: Some new businesses are innovatively placed actually on university campuses. However, there is a significant housing crisis, and high prices deter people from moving into the area.
- Building on what’s there: Boston has built on its historical strengths in education to succeed in the knowledge economy. Universities such as MIT have had some highly successful spin-off firms.
- Diverse specialisation: The diverse industrial base helped it weather the dot-com bubble. The financial services sector provides venture capital for new firms.
- High skill organisations: Wages in Boston are 20 per cent higher than the national average, and the city has a diverse range of skilled employment.
- Vibrant education sector: Boston’s strength in universities are crucial for the development of the city.
- Distinctive knowledge city offer: Boston has an international reputation, connected, in many ways, to the success of the universities.
- Leadership around a knowledge city vision: The city has a mayor, and public leadership is generally good, although there are concerns that the city lacks private sector leadership.
- Investing in communities: The city is losing population, in part due to the high house prices and cost of living: local families move out, while childless couples can afford to stay.

## **Lessons for other cities**

- Do the basics, and do them well. Boston’s government has concentrated on basic services that matter to people, including infrastructure, reasonable taxation and education.

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- Invest in skills: One of the major reasons for the success of Boston is the high levels of human capital in the population.
  - Diversity is important; over-reliance is negative. Boston was able to bounce back from the dotcom bust because its industrial base was diverse.
  - Understand that all universities are not equal. Boston has invested in world-class universities such as MIT, and used their research and spin-offs to develop.

# Dublin: executive summary

'The Irish model is as much sociological as it is an economic or political phenomenon'

House & McGrath, 2004

Dublin has been at the vanguard of the Irish economic miracle. The industrial structure is knowledge intensive and includes sectors such as pharmaceuticals, financial services and education. Comprising around one third of the Irish population and producing around 40 per cent of GDP, the Dublin city-region is crucial for national growth.<sup>82</sup> But because of this dominance, Dublin's problems, such as transport congestion and inequality, have consequences for the country as a whole.

## **Strengths, challenges and opportunities**

- Physical knowledge city: House prices have increased exponentially, although the rate of new building is relatively high.
- Building on what's there: Dublin has used its highly skilled population to attract mobile businesses, a significant factor in its growth.
- Diverse specialisation: The city has a range of specialisms, including pharmaceuticals and software. It has few large indigenous firms, and so is reliant on foreign businesses.
- High skill organisations: The Irish phenomenon has been, in part, about attracting companies which want to take advantage of its human capital. These jobs tend to be relatively high skill and high wage.
- Vibrant education sector: Dublin has three good universities, which are taking an increasingly entrepreneurial stance towards exploiting their intellectual property.
- Distinctive knowledge city offer: Dublin has benefited from the strong expatriate Irish community in the US, which has given Ireland an overseas identity.
- Leveraging strong connectivity: Transport remains a constraint to growth in the city with traffic congestion in Dublin a significant problem.
- Leadership around a knowledge city vision: Ireland has a consensual style of governance, and there is an increasing recognition of the transition to the 'knowledge based' economy.
- Investing in communities: Inequality in Dublin is high, a problem exacerbated by the rising cost of living.

<sup>82</sup> The *Economist*, 'Why Worry?', 14 October 2004

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### **Lessons for other cities**

- **The institutions need to be in place to manage growth.** Lack of coordination around infrastructure improvements in the Dublin city-region threatens future growth.
- **Invest in skills.** One of the major reasons for the success of Dublin in attracting foreign firms is the high skill level of the population.



# Appendix A Measuring knowledge

The Work Foundation has used the following definitions of knowledge intensive occupations:

## Box I: Knowledge intensive occupations

From the Standard Occupational Classification we can identify three broadly knowledge intensive occupations:

- **Managers and Senior Officials** (including: Corporate Managers; Managers and Proprietors in Agriculture and Services)
- **Professional Occupations** (Science and Technology Professionals; Health Professionals; Teaching and Research Professionals; Business and Public Service Professionals)
- **Associate Professional and Technical Occupations** (Science and Technology Associate Professionals; Health and Social Welfare Associate Professionals; Protective Service Occupations; Culture, Media and Sports Occupations; Business and Public Service Associate Professionals)

We used two definitions for knowledge intensive industries. The OECD definition is technologically focussed. It has been noted before that this does not include several sectors such as education and healthcare<sup>83</sup> that are important to the knowledge economy. Our definition of knowledge-intensive industries is below at the level of SIC 3 digit groups (where this goes beyond the OECD definition, the sector is marked \*):

Additionally, for the variable 'Knowledge occupations in knowledge industries', the knowledge occupations were unavailable cross referenced by sector at the more detailed three digit SIC. Instead, this variable refers to those in the top three occupational classifications in Financial Services, Real Estate, Renting and Business Activities, Public Administration and Defence, Education, Transport and Communications, Education and Health.

83 Boddy, M.(2005) *The Knowledge-Driven Economy, Regional Economic Strategy and the Regional Spatial Strategy in the South West of England*, Final Report to the South West of England Regional Development Agency

### **Box J: The Work Foundation's definition of knowledge intensive industries**

- 221 : Publishing\*
- 642 : Telecommunications
- 651 : Monetary intermediation
- 652 : Other financial intermediation
- 660 : Insurance and pension funding, except compulsory social security
- 671 : Activities auxiliary to financial intermediation, except insurance and pension funding
- 672 : Activities auxiliary to insurance and pension funding
- 721 : Hardware consultancy
- 722 : Software consultancy and supply
- 723 : Data processing
- 724 : Database activities
- 726 : Other computer related activities
- 731 : Research and experimental development on natural sciences and engineering
- 732 : Research and experimental development on social sciences and humanities
- 741 : Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings
- 742 : Architectural and engineering activities and related technical consultancy
- 743 : Technical testing and analysis
- 744 : Advertising
- 745 : Labour recruitment and provision of personnel
- 748 : Miscellaneous business activities not elsewhere classified
- 751 : Administration of the State and the economic and social policy of the community\*
- 752 : Provision of services to the community as a whole\*
- 801 : Primary education\*
- 802 : Secondary Education\*
- 803 : Higher education\*
- 804 : Adult and other education\*
- 851 : Human health activities\*
- 852 : Veterinary activities\*
- 921 : Motion picture and video activities
- 922 : Radio and television activities
- 923 : Other entertainment activities\*
- 924 : News agency activities\*
- 925 : Library, archives, museums and other cultural activities\*
- 927 : Other recreational activities\*

## Appendix B Defining the city-region

An authoritative attempt to define the city-region of a core city was produced by CURDS at the University of Newcastle in 1999.<sup>84</sup> They make two important contributions. First, they note that the techniques for measuring the city-region around each city **generally come to very similar conclusions**. They also attempt to identify the core city for the nine city-regions, as shown in Figure 8.

The second source is by BAK Basel Economics<sup>85</sup>, which defines the Glasgow and Edinburgh metropolitan areas. While the methodology is not stated, given that each method is similar, and in the absence of any better methodology, this was used:

**Figure 8: The city-regions**

Core city	Other local authorities in the city-region (district and unitary)	Source
Birmingham	Solihull, North Warwickshire, Tamworth, Lichfield, Cannock Chase, South Staffordshire, Wyre Forest, Redditch, Bromsgrove, Dudley, Wolverhampton, Walsall, Sandwell	CURDS 1999
Bristol	South Gloucestershire, Bath & North East Somerset, North Somerset, Mendip	CURDS 1999
Leeds	Wakefield, Kirklees, Calderdale, Bradford, Harrogate, Selby, York	CURDS 1999
Liverpool	Wirral, Sefton, Knowsley, St. Helens, West Lancashire, Halton	CURDS 1999
Manchester	Trafford, Salford, Wigan, Bolton, Bury, Rochdale, Oldham, Tameside, Stockport, Macclesfield, High Peak, Rossendale	CURDS 1999
Newcastle	Gateshead, North Tyneside, South Tyneside, Sunderland, Chester-le-Street, Durham, Derwentside, Tynedale, Castle Morpeth, Blyth Valley, Wansbeck, Alnwick	CURDS 1999
Sheffield	Rotherham, Barnsley, Doncaster, Bassetlaw, Bolsover, North East Derbyshire, Chesterfield	CURDS 1999
Glasgow	Glasgow City, East Dunbartonshire, West Dunbartonshire, Inverclyde, East Renfrewshire, Renfrewshire, North Lanarkshire, South Lanarkshire	BTZ Basel 2005
Edinburgh	Clackmannanshire, Fife, East Lothian, Midlothian, Scottish Borders, City of Edinburgh, Falkirk, West Lothian	BTZ Basel 2005

84 CURDS (1999) *Core Cities: Key centres for regeneration*, available from [www.corecities.com](http://www.corecities.com)

85 BAK Basel Economics (2005) *Glasgow Economic Analysis and Benchmarking Report*, available from [www.glasgoweconomicfacts.com](http://www.glasgoweconomicfacts.com)

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