

# **The East Midlands in 2006 – Evidence Base for the East Midlands Regional Economic Strategy 2006-2020: Economy and Productivity**

**A report prepared by *emda***

2006

This work, with the exception of logos, photographs and images and any other content marked with a separate copyright notice, is licensed under a [Creative Commons Attribution 2.0 UK: England & Wales License](#)

The use of logos in the work is licensed for use only on non-derivative copies. Under this licence you are free to copy this work and to make derivative works as long as you give the original author credit.

The copyright is owned by Nottingham Trent University.



This document forms part of the *emda* Knowledge Bank

# Two

## Economy and productivity

# Economy and productivity

## 1. Introduction

This chapter assesses economic conditions in the East Midlands, recognising that the region is part of a global economy and that global conditions impact on regional performance. The chapter begins with a brief examination of UK macroeconomic performance before looking at the state of the East Midlands economy in some detail. It considers the performance of the region against the Government's drivers of productivity. This is followed by an assessment of the industrial structure and key sectors in the East Midlands economy. Finally, we present a number of economic scenarios for the region. We present a 'baseline' or 'business as usual' scenario alongside a number of specially commissioned scenarios based on upside and downside macroeconomic risks and what we have termed 'RES policy on' scenarios. At the outset it should be noted that these are scenarios and not statements of fact about the future performance of the East Midlands economy. They are an independently produced assessment of prospects and do not represent *emda's* aspirations for the region. The 'policy on' projection is a broad attempt to capture the impact of achieving the key policy objective of closing the productivity gap that exists between the East Midlands and the UK. Less emphasis should be placed on the numbers and more on the direction of travel and the general magnitude of change. Throughout, comparisons are made with other English regions and the UK and, where the data allows, with the EU.

## 2. Output and productivity in the UK

This section sets out the current position of the UK in relation to its key competitors: the USA, Japan, Germany and France. Although there is much current interest in the emerging economies of China and India, a distinction

needs to be made between the very impressive levels of growth in those countries (which does present opportunities and threats to the East Midlands economy) and the very low levels of output that they are starting from. While there may be one or two hotspots that exhibit characteristics of developed economies (such as Shanghai in China), these countries are relatively under-developed so comparisons with the major industrialised nations are not appropriate. Recent research by Goldman Sachs<sup>1</sup> suggests that by 2050 China will be the world's largest economy and India the world's third largest. However, they also suggest that living standards, as measured by output per capita, will still lag those of the current G6 economies by some distance. They suggest that output per capita in China will still only be around 40% of the US average and in India even less, at around 20% of the US average.

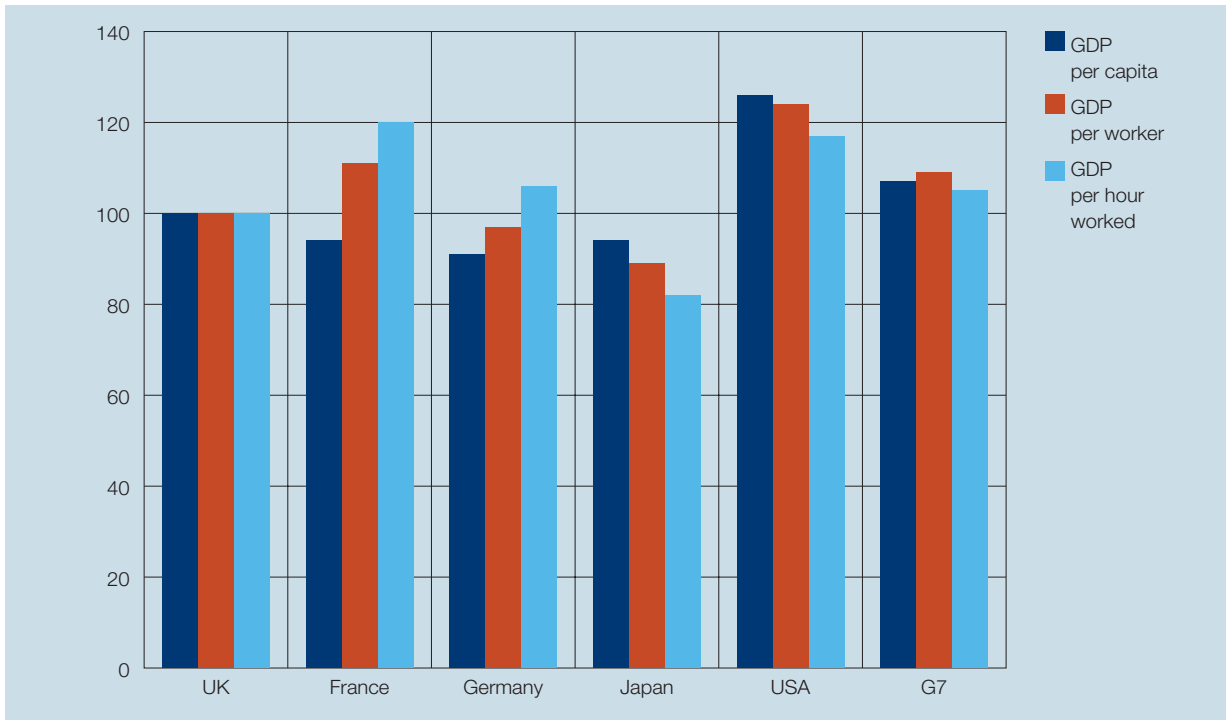
Chart 1 shows three measures of productivity. The most commonly quoted measure, which is the least precise and is more appropriately viewed as a measure of output, is Gross Domestic Product (GDP) per capita. The chart shows that:

- GDP per capita in the UK in 2004 was higher than in France and Germany, where it was 94% and 91%, respectively, of the UK level. Although not shown in the chart GDP per capita is now above the EU average. This turnaround is the result of a number of years where economic growth in the UK has comfortably outstripped that of continental Europe;
- However GDP per capita in the UK still falls some way short of that in the USA. GDP per capita in the USA is around 26% higher than in the UK.

<sup>1</sup>*Dreaming With BRICs: The Path to 2050*, Goldman Sachs Economics Paper 99, October 2003.

## CHART 1

### International comparisons of output and productivity 2004 (UK=100)



Source: Office for National Statistics, 2005; OECD, 2005

GDP per capita is not the best measure of productivity available. Employment rates differ markedly between the UK and its competitors – they are generally higher in the UK and the USA than they are in the major continental economies. Looking at GDP per worker takes this into account. On this measure the chart shows that in 2004:

- The UK is well ahead of Japan where GDP per worker was just 89% of the UK level;
- There is a marked difference on this measure when comparing performance with the large European economies. GDP per worker is only slightly below the UK average in Germany (97%) and is above the UK average in France (111%). There has been a significant degree of convergence between the UK and France and Germany since the early 1990s when GDP per worker in France and Germany was almost one third and one fifth higher than in the UK;

- On this measure the USA remains well ahead of the UK and the large euro-zone economies with GDP per worker 24% higher than the UK. Nevertheless this gap between the USA and the UK has also closed and is lower than the 37% reported for 1990.

A further refinement can be made: while the GDP per worker measure takes into account different employment rates, it does not take into account the intensity of employment, the fact that workers in different countries tend to work differing amounts of time, with workers in the USA in particular tending to work more hours per week than elsewhere.<sup>2</sup> Looking at GDP per hour worked further refines the picture of productivity differences between countries. Using this measure shows that differences in productivity between the UK and its European competitors in particular become even more pronounced:

<sup>2</sup>OECD figures show that average annual hours worked in the USA are 7% higher than in the UK, 24% higher than in Germany and 25% higher than in France.

- On this measure, the UK lags its major competitors with the exception of Japan, which has productivity of just 82% of the UK average;
- Workers in Germany and the United States produce more output per hour than their UK counterparts, 6% and 17% respectively;
- On this measure, the most productive of the major economies is France where output per hour worked is 20% higher than in the UK;
- Again the gap has closed significantly between the UK and France, Germany and the USA since the early 1990s.

The productivity gap can be disaggregated into that caused by the differing stock of capital per worker, the average level of skills per worker and residual total factor productivity.<sup>3</sup> The gap with France and Germany is largely attributed to the capital stock and average skill levels, whereas with the USA the gap is due to differences in total factor productivity.<sup>4</sup>

There is a significant body of research that suggests that the productivity gap with the USA can be attributed to the earlier investment in and adoption of Information & Communications Technology (ICT).<sup>5</sup> This body of research also points to retail as the sector where ICT has made the greatest difference to productivity performance between the UK and the USA. This suggests that the application of new technologies is just as, if not more, important than their development. Kitson (2005) points out that technology using sectors are significantly larger than technology generating sectors.<sup>6</sup>

The key message from this analysis is that while the UK may now have closed the gap with France and Germany in terms of GDP per capita, when it comes to productivity, it still lags some way behind its major developed competitors, despite progress in recent years.

Chart 1 also suggests a noteworthy cultural implication. This is that as a result of their high GDP per hour worked the major European economies, who work fewer hours than Americans do, 'buy' more leisure time than Americans. This explains the differences in the comparisons between GDP per capita and GDP per hour worked. We are not suggesting that one model is superior to the other – each is the result of different institutional, cultural and policy choices made over a significant period of time.

This also highlights a flaw of GDP data: it does not capture everything that a person or society considers as contributing to wellbeing. For example GDP per capita captures the monetary value of output per person and on this measure the USA is wealthier than France. However it does not show whether or not Americans are more satisfied with life – the leisure time that the French 'buy' might mean that the French are more satisfied with the overall quality of their lives. On the other hand, unemployment in France is around twice the level in the USA and when a person becomes unemployed in France, he or she will, in general, be out of work much longer than a person in the USA. This would clearly detract from quality of life.

There is now quite an extensive literature on the subject of wellbeing or life satisfaction. This shows that although GDP has increased significantly in the industrialised nations during the last three decades, people's sense of wellbeing has remained constant.<sup>7</sup> A number of attempts have been made to measure wellbeing. Among these is the Regional Index of Sustainable Economic Wellbeing (R-ISEW) developed for emda by the New Economics Foundation and the University of Surrey. This takes consumer expenditure as its starting point and makes a series of adjustments based on valorised estimates of the wider costs and benefits associated with a given level of output. These include the costs of pollution and benefits from care work undertaken in the home.<sup>8</sup>

Despite closing the gap in recent years, there is still a significant productivity gap between the UK and its major competitors

<sup>3</sup>Total factor productivity (TFP) is the contribution of residual factors after the contribution of capital and labour have been accounted for. This residual captures factors such as skills, technology, organisation, competition and economies of scale but is very difficult to measure, which is why the emphasis in this document is on measures of labour productivity such as output per hour worked. See *Productivity in the UK 5: Benchmarking UK productivity performance*, HM Treasury and DTI, March 2004.

<sup>4</sup>*Productivity Policy: Election Briefing 2005*, Laura Abramovsky, Steve Bond, Rupert Harrison and Helen Simpson, Institute for Fiscal Studies, 2005.

<sup>5</sup>*Raising UK Productivity – Developing the Evidence Base for Policy*, Economics Paper No 8, Department of Trade and Industry, 2004.

<sup>6</sup>*The American Economic Model and European Economic Policy*, M Kitson, *Regional Studies*, Vol 36:7, October 2005.

<sup>7</sup>Addressing the issue of life satisfaction has become increasingly important in policy debate as evidenced by the publication of *Life Satisfaction: The State of Knowledge and Implications for Government* by the Strategy Unit in December 2002.

<sup>8</sup>*Measuring Regional Progress – Developing a Regional Index of Sustainable Economic Wellbeing (R-ISEW) for the East Midlands*, T Jackson, N McBride and N Marks, February 2006.

### 3. Output and productivity in the East Midlands

In the previous section it was noted that there are significant differences in levels of output and productivity between the UK and its major industrialised competitors. Chart 2 shows that significant differences exist between regions within the UK.

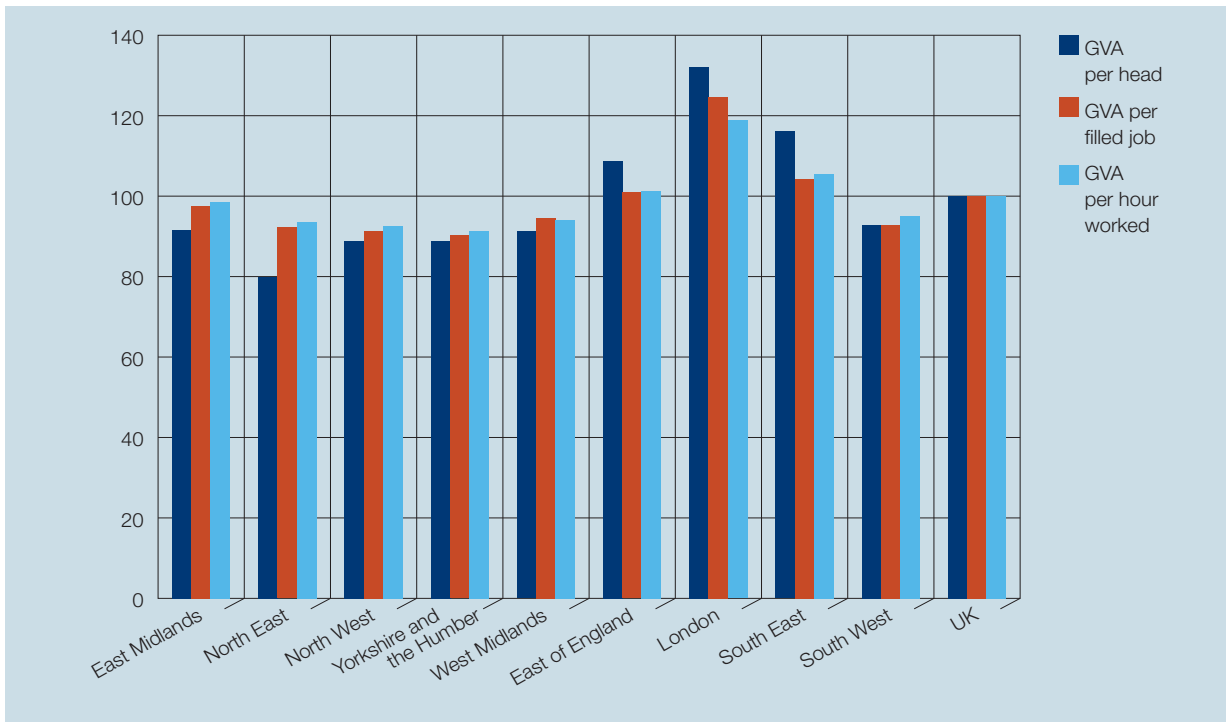
- In the East Midlands gross value added (GVA)<sup>9</sup> per head was 91.5% of the UK average in 2004;
- The lowest level of GVA per head in 2004 was in the North East, where it was just under 80% of the UK average. In contrast, in London, which is the leading region, GVA per head was more than 30% above the UK average.

The data for GVA per filled job and GVA per hour worked share a number of common features:

- On both measures the East Midlands is ranked fourth out of the nine English regions, behind the East of England, the South East and London;
- On both measures the East Midlands is below the national average, by 2.5% on the filled job measure and by 1.5% on the per hour worked measure;
- On both measures the East of England, the South East and London are the only regions where productivity is above the national average.

#### CHART 2

Regional comparisons of output and productivity 2004 (UK=100)



Source: Office for National Statistics

<sup>9</sup>Gross value added is the recognised measure of economic output used at regional level. It is a measure of output at basic prices, whereas GDP is a measure of output at market prices. The difference between the two is down to the treatment of taxes and subsidies:  $GDP = GVA + taxes - subsidies$ . It is not possible to reliably measure taxation and subsidies at regional level which is why GVA is used.

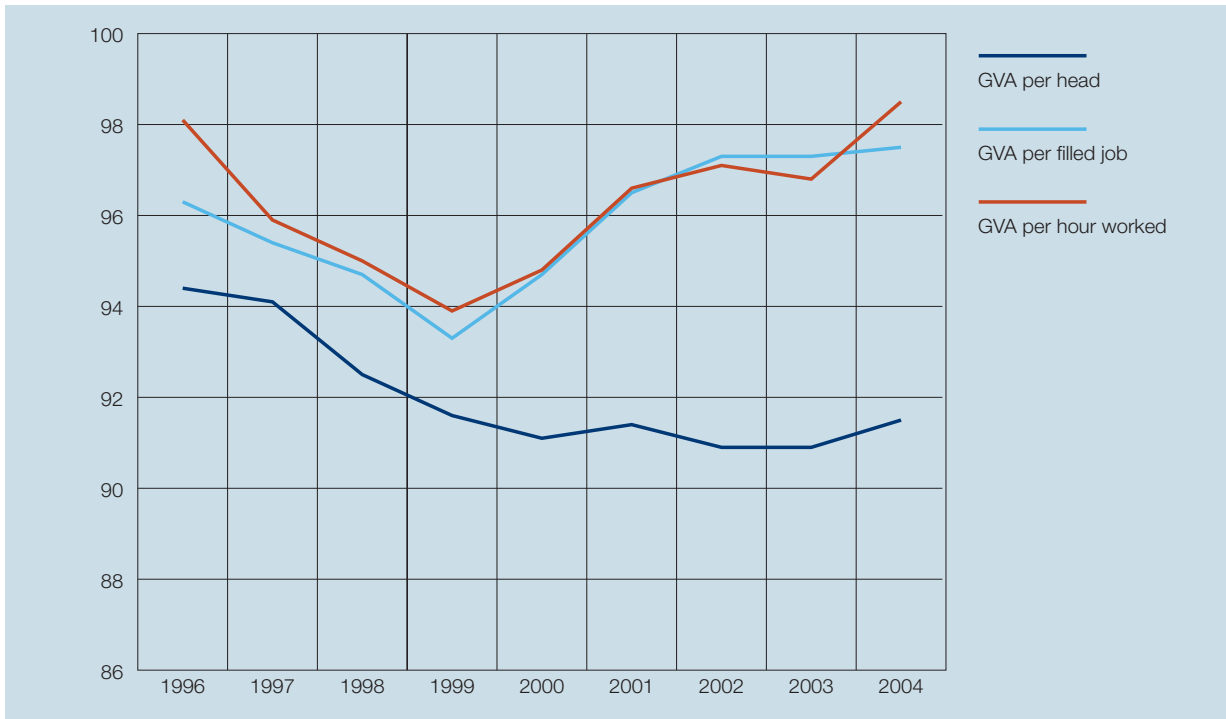
Chart 3 shows how the East Midlands has performed relative to the UK average on each of the three measures between 1996 and 2004:

- GVA per head in the region has fallen from 94.4% of the UK average to its current level of 91.5%. This fall occurred early during this period and since 1999 the figure has fluctuated around 91%;
- GVA per filled job initially declined from its level of 96.3% of the UK average but has increased since 1999 to its current level of 97.5%;
- GVA per hour worked was slightly higher in 2004 than in 1996 but this hides a significant drop between 1996 and 1999 that has since been reversed.

The East Midlands has improved its relative productivity performance as indicated by improvements in GVA per filled job and GVA per hour worked. However, the only two regions to improve their position relative to the UK on all three measures between 1996 and 2004 were the East of England and the South East.

### CHART 3

**Change in output and productivity in the East Midlands 1996-2004 (UK=100)**



Source: ONS Crown Copyright, 'Regional Productivity', January 2006, from STATBASE, 22 February 2006

### 3.1 Sub-regional performance

Data on sub-regional performance is more limited. GVA per head by NUTS3<sup>10</sup> region is available for 2003 (the latest available) and this is shown in Chart 4. It should be noted that at this level the workplace based statistics are influenced by commuting patterns (so the figures for the three cities of Derby, Leicester and Nottingham, for example, will be an overstatement of their true position). Nevertheless they still provide an indication of differing levels of economic activity and performance in the region. Chart 4 highlights disparities that exist within the region:

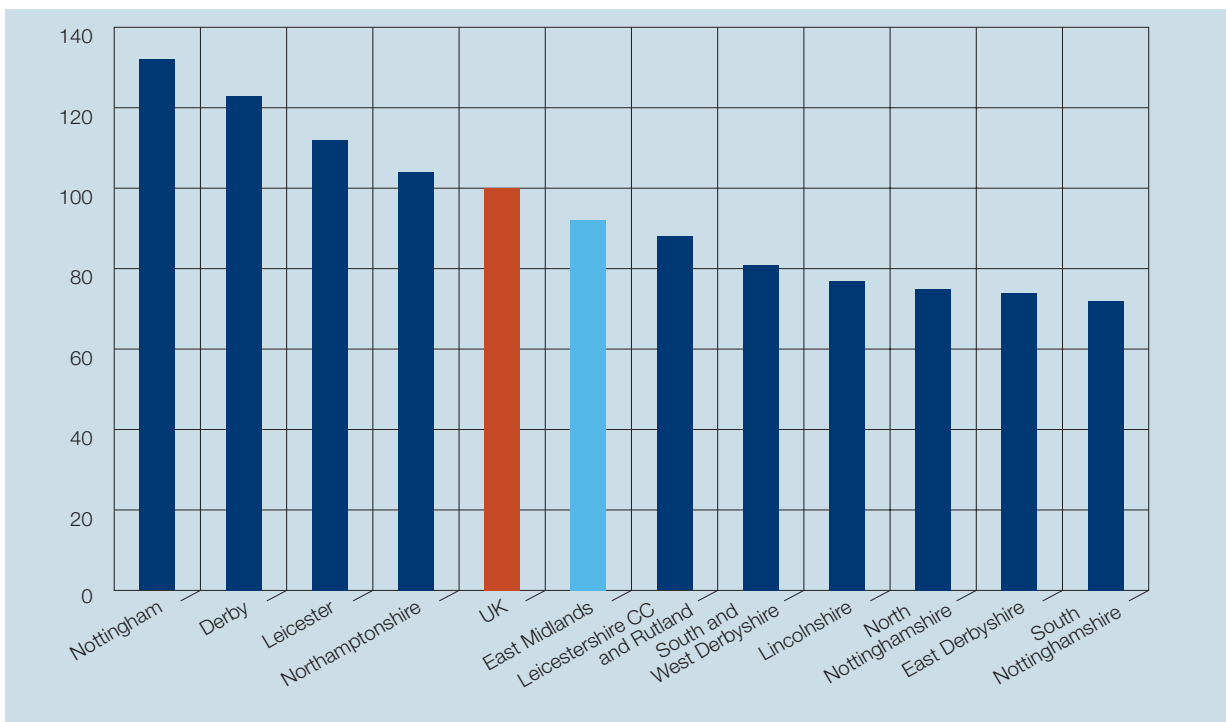
- GVA per head is highest in Nottingham City, where it is 32% above the UK average, and Derby, where it is 26% above the UK average. Both are significantly above the East Midlands average;
- GVA per head is also above the UK and East Midlands averages in Leicester City (by 12%) and Northamptonshire (by 4%);

- The lowest level of GVA per head is in South Nottinghamshire, where it is just 72% of the UK average – though commuting is a key factor in this area;
- GVA per head is also below the UK and East Midlands averages in East Derbyshire (74%), North Nottinghamshire (75%), Lincolnshire (77%), South & West Derbyshire (81%) and Leicestershire CC & Rutland (88%).

There have been significant changes in the relative positions of the NUTS3 sub-regions in the East Midlands between 1995 and 2003. Derby, East Derbyshire, South Nottinghamshire and Northamptonshire have all improved relative to the UK average. South and West Derbyshire, Nottingham, North Nottinghamshire, Leicestershire & Rutland and Lincolnshire have all fallen relative to the UK. The position of Leicester City has remained unchanged.

## CHART 4

**GVA per head by NUTS3 region in the East Midlands 2003 (UK=100)**



Source: Office for National Statistics, December 2005

<sup>10</sup>Nomenclature of Units for Territorial Statistics (NUTS) areas were created by Eurostat as a hierarchical classification of spatial units used for statistical production across the European Union. NUTS3 regions are counties, unitary authorities or groups of Local Authority Districts.



### 3.2 EU regional performance

Officially produced data at European sub-regional level is made available by Eurostat and we use that here to place the East Midlands performance in a wider European context. However this data is less timely than that discussed above and 2002 is the latest year for which the data is available. Chart 5 shows the five regions with the highest output per head and the five regions with the lowest output per head, along with the East Midlands:

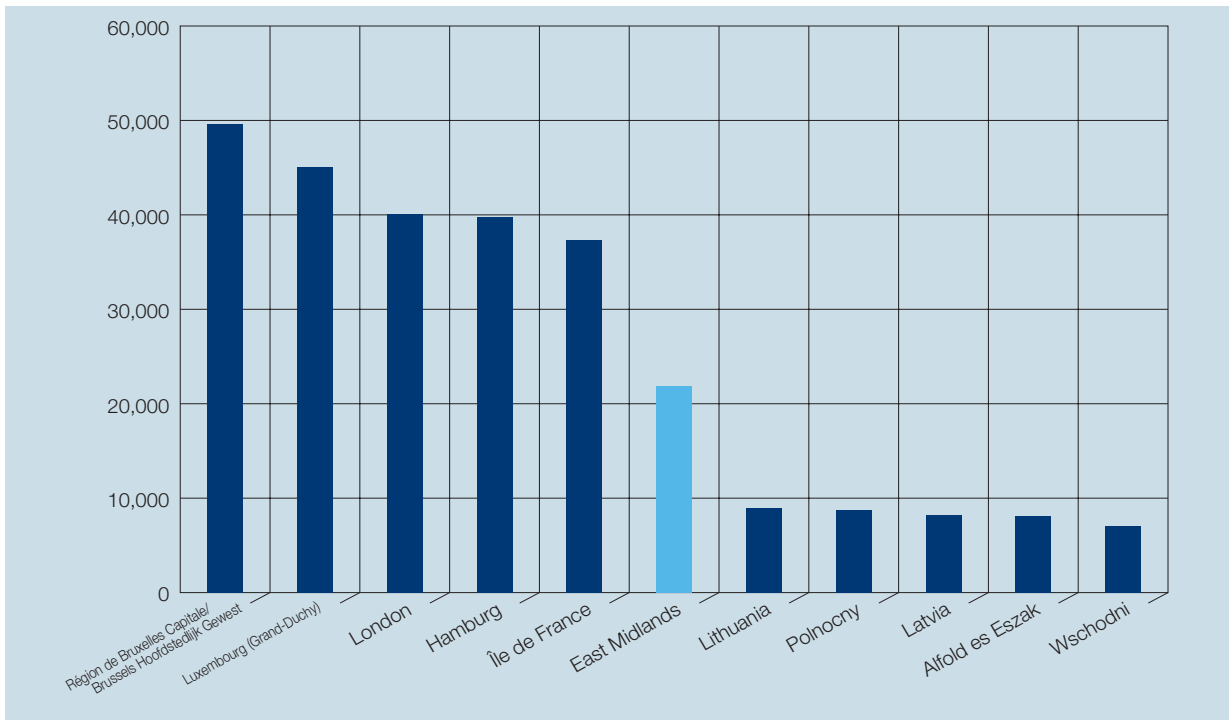
- Output per head in the East Midlands was almost €21,900 in 2002. This is less than half of Brussels (the leading region in the EU with a figure of €49,600) but three times the figure of Wschodni in Poland (the poorest region in the EU with output per head of just €7,100);
- Of the 88 regions in the EU, the East Midlands is ranked 34th in terms of output per head;<sup>11</sup>

- The chart shows that the leading regions tend to be those with capital cities such as Brussels, London and Paris. The lagging regions are those of the recent entrants to the EU such as Poland and the Baltic States;
- There are thirteen regions comparable to the East Midlands (i.e. those within +/- 5% of East Midlands output per head). These include Nordrhein-Westfalen, Saarland & Schleswig-Holstein in Germany, Este in Spain, Sudosterreich in Austria, Est, Sud Ouest and Bassin Parisien in France and, in the UK, the South West, West Midlands, North West and Yorkshire and the Humber.

At regional level the best performing region has a level of output per head that is seven times the poorest region. As might be expected the difference between the leading and lagging areas is even greater at sub-regional level. The leading NUTS3 region in the EU is Inner London West where output per head is €120,600 which is around 30 times greater than in the Latvian region of Latgale, which has output per head of around €4,000.

## CHART 5

Leading and lagging regions in the EU 2002 (€) vis-à-vis the East Midlands



Source: Eurostat, January 2005

<sup>11</sup>This is one component of the Top 20 Index, a composite index that includes data on output, employment, unemployment, disparity and resource efficiency. It is an attempt to quantify the vision set out in the previous Regional Economic Strategy, *Destination 2010*.

## 4. Drivers of productivity in the East Midlands

By understanding the current position and the factors that drive productivity and regional economic performance, we will be in a position to better understand potential options and limitations in policy aimed at improving productivity.

The literature on the subject identifies a wide range of determinants of regional economic performance. These include: productive capital (the region's economic and business structure), human capital (labour force skills and qualifications), creative capital (knowledge, innovation and entrepreneurship), infrastructural capital, socio-institutional capital (business networks and associations, workplace traditions, public organisations etc.) and cultural capital (range and quality of cultural assets and facilities).<sup>12</sup>

The Government has identified a number of drivers of productivity which contain elements of the above list. This section will use this framework to explain the differences in productivity between the UK and its key competitors and the East Midlands and the other English regions. These five drivers are:

- Investment;
- Innovation;
- Skills;
- Enterprise;
- Competitiveness.

This section will examine four of these drivers – skills will be covered extensively in Section 3 of *The East Midlands in 2006: The East Midlands Labour Market*.

A series of indicators to measure national and regional performance in these areas has been proposed by HM Treasury and the Department of Trade & Industry (DTI). We will use these (and other data as appropriate) in this section to point to those areas where the East Midlands is either successful or under-performing.

### 4.1 Investment

In this section we use 'investment' to mean all business investment by UK and foreign owned companies. Investment is important because by increasing the amount and quality of capital available, a worker is able to produce more outputs. It is estimated that every 1 percentage point increase in total investment leads, in the long term, to a 0.05 percentage point increase in the growth rate of labour productivity.<sup>13</sup>

The distinction between UK and foreign owned firms is also important. There exists a body of research which suggests that foreign owned multinational companies (and US owned multinationals in particular) that operate in the UK are more productive than their UK owned counterparts.<sup>14</sup> This suggests that there may be a higher return to foreign investment so it is important to be able to identify the magnitude of this investment.

International comparisons show that during the last decade levels of business investment in the UK have been lower on average than in major competitor economies such as the United States, France and Germany.<sup>15</sup>

Chart 6 shows investment by UK and foreign owned businesses in the East Midlands as a proportion of regional GVA. It is clear from the chart that levels of investment have been falling:

- In 2002 investment by UK owned companies was equivalent to 5.6% of GVA in the East Midlands, a fall from 8.5% in 1998. This fall mirrors what has happened nationally (which was largely determined by global conditions at that time), but levels of investment by UK owned companies in the East Midlands have been below the UK average during this period;
- There has also been a fall in investment by foreign owned companies in the region, from 1.5% of GVA in 1998 to 1.2% of GVA in 2002. This has remained relatively stable at national level during this period;
- Compared to other regions, total levels of investment are relatively low. Investment by UK companies in the East Midlands is lower than any other region except London and investment by foreign owned companies is lower than in all other regions apart from the North West and Yorkshire and the Humber.

<sup>12</sup>*Thinking About Regional Competitiveness: Critical Issues*, R Martin, University of Cambridge, emda RES Evidence Commission, August 2005.

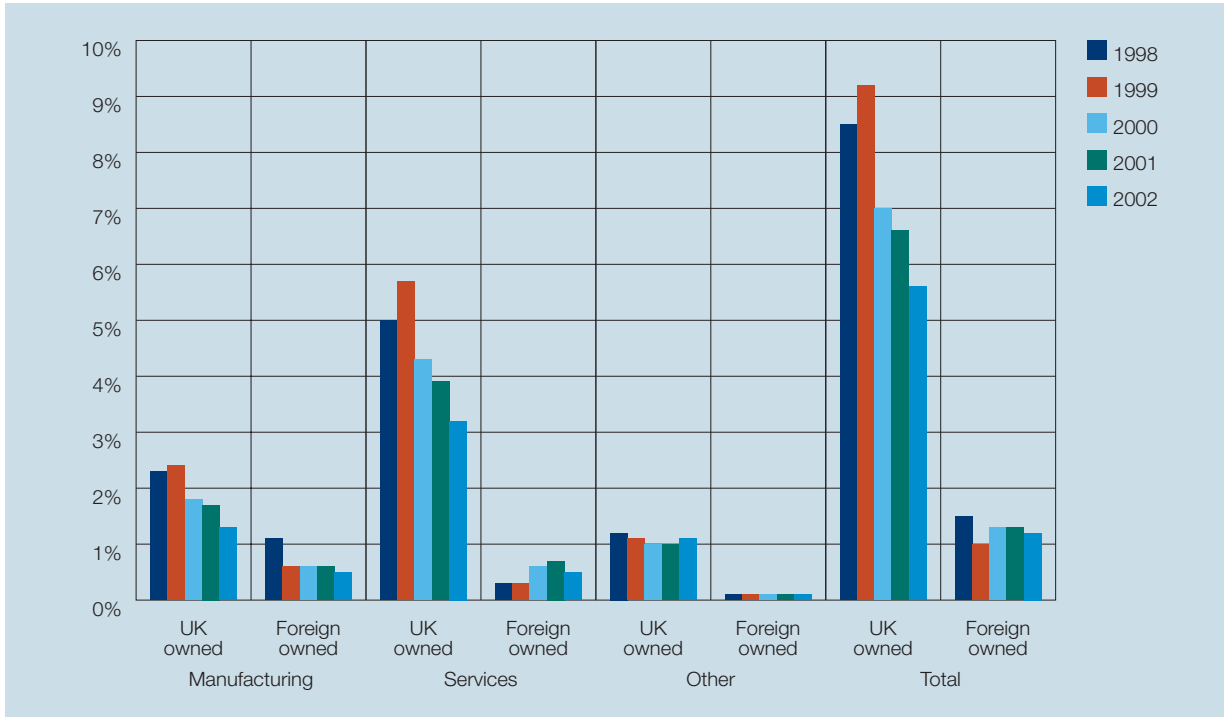
<sup>13</sup>*Productivity in the UK 5: Benchmarking UK Productivity Performance*, HM Treasury and the Department of Trade & Industry, March 2004.

<sup>14</sup>*Multinationals and US Productivity Leadership: Evidence from Great Britain*, Chiara Criscuolo and Ralf Martin, OECD, April 2004.

<sup>15</sup>*DTI UK Competitiveness Indicators*, Department of Trade & Industry, 2005.

## CHART 6

### Investment by UK and foreign owned companies in the East Midlands as % of regional GVA



Source: Regional Competitiveness and State of the Regions, Department of Trade & Industry, May 2005

A breakdown of the data by broad sector is also available and is shown in Chart 6:

- Investment by UK owned manufacturing companies in the East Midlands has fallen from 2.3% of GVA in 1998 to 1.3% in 2002. Again this reflects a decrease nationally but levels of investment in the East Midlands are above the UK average. The East Midlands compares well with other regions, with only manufacturing companies in the North West and Yorkshire and the Humber investing relatively more;
- Levels of investment by foreign owned manufacturing companies in the East Midlands accounted for 0.5% of regional GVA in 2002, which is similar to the UK average. On this measure levels of investment are higher only in the North East, Yorkshire and the Humber and the West Midlands;

- Investment by UK owned service companies in the East Midlands fell from 5.0% of GVA in 1998 to 3.2% in 2002, which is significantly lower than in any other region and below the national average. Levels of investment have fallen relatively faster than the national average;
- There has been an increase in investment by foreign owned service companies from 0.3% to 0.5% but this is also below average and is lower than in other regions.

Levels of investment by UK and foreign owned companies fell in the East Midlands in the late 1990s and early in this decade

## 4.2 Innovation

Innovation can be described as the successful exploitation of new ideas – either new products or new processes. A constant stream of successful innovation is therefore essential if an economy is to remain competitive and standards of living are to increase. Innovation is not just about products and processes that are completely new but also about those that are new to a particular firm i.e. the diffusion of new products and processes.

Empirical evidence shows a positive correlation between levels of innovation indicators and measures of economic performance. In a global economy where the scope to compete on a cost basis is increasingly limited, innovation is one way in which developed economies can maintain competitive advantage – ‘it offers firms a high road – high wage, high growth – strategy.’<sup>16</sup>

A number of critical success factors have been identified as contributing to a successful innovation system.<sup>17</sup> These include: the capacity to absorb and exploit knowledge and technology, the regulatory framework and competition regime, access to finance, sources of new technological knowledge and the extent and depth of networks and collaboration.

The literature is clear about the fact that there are significant economic benefits to be gained from innovation. Recent research published by the OECD<sup>18</sup> shows that the impact of business Research and Development (R&D) on multi-factor productivity (MFP)<sup>19</sup> has been increasing over time. This research shows that the impact of R&D may vary by type. For instance, it is shown that a 1% increase in business R&D leads to a 0.13% increase in MFP, a 1% increase in foreign R&D leads to a 0.44% increase in MFP, whilst a 1% increase in public R&D leads to a 0.17% increase in MFP. Research published by the Institute for Fiscal Studies<sup>20</sup> shows that, based on a sample of UK companies, patents have a significant impact on firm level productivity and market value.

### 4.2.1 Business enterprise research & development (BERD)

Business enterprise research & development (BERD) is the total cost of research & development carried out in the business sector. International comparisons show that this has been consistently lower in the UK than in the United States, Germany and France during the last decade.

The East Midlands compares favourably with the UK on this measure. Chart 7 shows that total BERD in the East Midlands in 2002 was equal to 1.8% of GVA, compared to 1.4% for the UK. Between 1995 and 2002 BERD was higher in the East Midlands than in the UK in every year and the gap between the East Midlands and the UK has increased. In 2002 only the South East and the East of England had higher levels of BERD than the East Midlands. However, anecdotal evidence suggests that the expenditure on R&D in the East Midlands is concentrated in a small number of large multinational companies and that there is a long tail of the business population that spends very little on R&D.

Levels of business enterprise research and development are relatively high in the East Midlands, but this expenditure is concentrated in large multinational companies

<sup>16</sup>*Innovation Policy*, C Oughton and M Frenz, Birkbeck, University of London, emda RES evidence commission, August 2005.

<sup>17</sup>*Competing in the Global Economy – The Innovation Challenge*, Economics Paper No7, Department of Trade & Industry, November 2003.

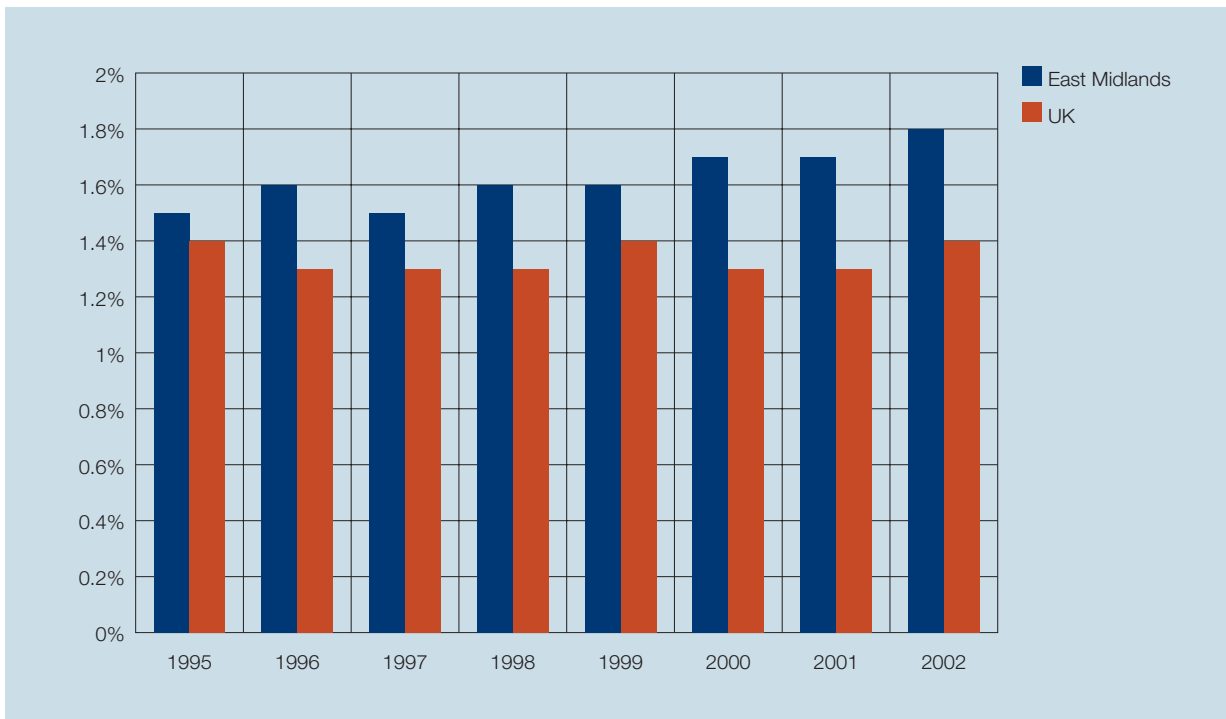
<sup>18</sup>*R&D and Productivity Growth: Panel Data Analysis of 16 OECD Countries*, Dominique Guellec and Bruno van Pottelsberghe de la Potterie, OECD, 2001.

<sup>19</sup>Multi-factor productivity is also known as total factor productivity.

<sup>20</sup>*Real Options, Patents, Productivity and Market Value: Evidence from a Panel of British Firms*, Nicholas Bloom and John Van Reenan, Institute for Fiscal Studies, 2000.

## CHART 7

### Business enterprise research & development as % of GVA



Source: Regional Competitiveness and State of the Regions, Department of Trade & Industry, May 2005

A broad sector breakdown into manufacturing, service and other sectors is available. This shows that the East Midlands is slightly below the UK average in the manufacturing and service sectors but significantly ahead in the 'other' sector.<sup>21</sup>

#### 4.2.2 Gross domestic expenditure on research & development

BERD is only one component, albeit the largest, of expenditure on research & development. The public sector, through government and higher education, also spends on R&D. Adding these three components together gives Gross Domestic Expenditure on R&D.

As with the BERD component, the UK spends a smaller proportion of its economic output on total Gross Domestic Expenditure on R&D than its major competitors such as the USA, France and Germany, and has done so for a number of years.

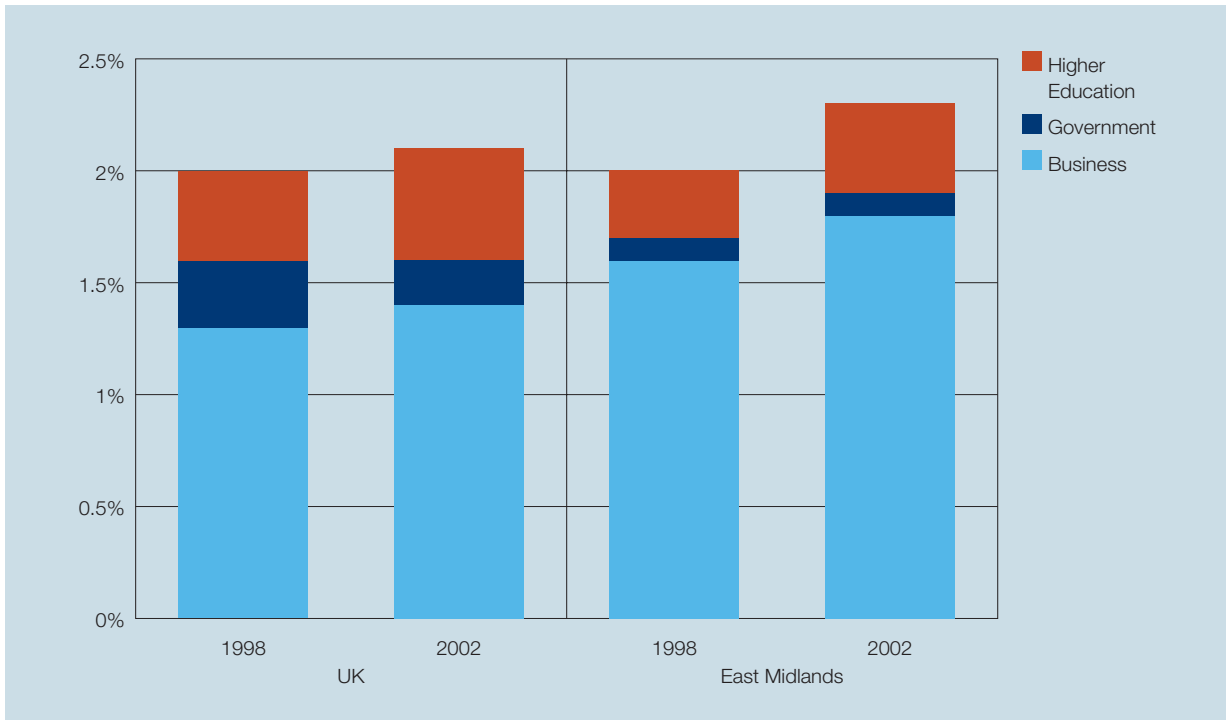
In 2002 Gross Domestic Expenditure on R&D in the East Midlands was equivalent to 2.3% of GVA, an increase from 2.0% in 1998. This is the third highest level among the English regions after the East of England and the South East. Chart 8 shows that the composition of Gross Domestic Expenditure on R&D in the East Midlands is quite different from the national average. In particular:

- Levels of Government R&D are low in the East Midlands, equivalent to just 0.1% of GVA, which is half of the national average. Government expenditure on R&D is concentrated in the East of England, the South East and the South West;
- Levels of R&D expenditure from Higher Education, at 0.4% of GVA in the East Midlands, are also below the national average of 0.5%. Higher Education expenditure is much more evenly spread by region. In London, where it is the highest, it is equivalent to 0.6% of GVA.

<sup>21</sup>The 'other' sector is everything outside of manufacturing and services and is made up of primary production sectors (such as agriculture and mining) and construction.

**CHART 8**

**Gross domestic expenditure on research & development as % of GVA**



Source: Regional Competitiveness and State of the Regions, Department of Trade & Industry, May 2005

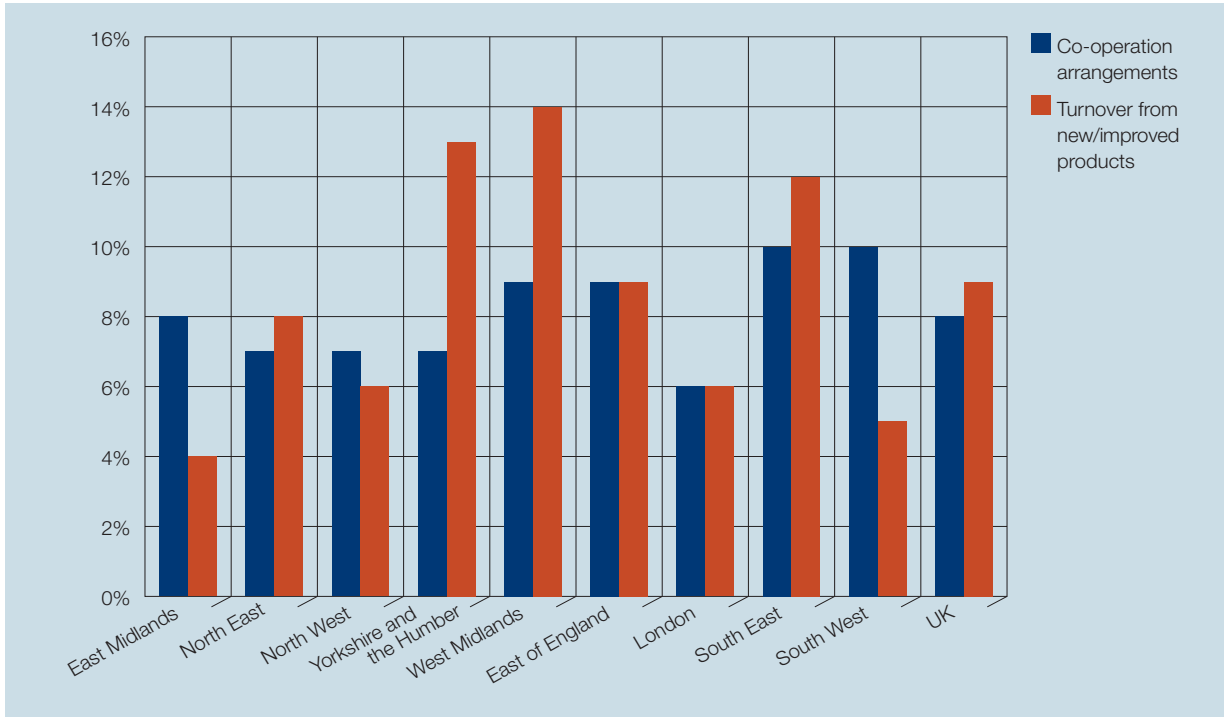
**4.2.3 Proportion of enterprises with co-operation arrangements on technological innovation**

Co-operation arrangements are considered important as a means of transferring the knowledge produced by universities and other institutions into the business sector for successful commercial exploitation. National data from the Third Community Innovation Survey shows that the proportion of firms reporting co-operation arrangements in the UK is higher than in Germany but lower than in France. Comparable data for the USA is not available. Data for the English regions is shown in Chart 9. In the East Midlands:

- The Third Community Innovation Survey reports that 8% of firms reported having co-operation agreements on innovation activities, which is in line with the average for the UK;
- These agreements are most common in the South East and South West, where they are reported by 10% of firms.

## CHART 9

### Co-operation arrangements and turnover accounted for by new and improved products (%)



Source: Regional Competitiveness and State of the Regions, Department of Trade & Industry, May 2005

#### 4.2.4 Proportion of turnover accounted for by new or improved products

Innovation needs to be successful if productivity is to be increased. Having a good idea is simply not good enough unless it is implemented. The Third Community Innovation Survey also collects data on the proportion of turnover that can be attributed to new or improved products. Again international comparisons are limited but we can say that the proportion of turnover accounted for by new or improved products in the UK is higher than in France but lower than in Germany. This data is also shown in Chart 9. In the East Midlands:

- Just 4% of turnover is attributable to new or improved products, compared to an average of 9% for the UK. This is the lowest of the English regions;
- New or improved products contribute most to turnover in the West Midlands (14%).

Additional information from the Third Community Innovation Survey shows that:<sup>22</sup>

- The proportion of novel product innovation in the East Midlands (10.9%) is above the UK average (9.5%);
- The proportion of novel process innovation in the East Midlands (5.8%) is close to the UK average (5.9%);
- The proportion of enterprises implementing new or changed corporate strategies, advanced management techniques or changes in organisational structure are at or above the UK average in the East Midlands.<sup>23</sup>

<sup>22</sup>This data is taken from *Innovation Policy*, C Oughton and M Frenz, Birkbeck, University of London, *emda* RES evidence commission, August 2005.

<sup>23</sup>The East Midlands New Technology Initiative (EMNTI) was established in 2002 and one of the aims of the project was to assist SMEs with the adoption of new technologies and innovative business processes. Evaluation of this project suggested that it had been successful but that some of its activities should be more closely aligned with the mainstream Business Support services on offer in the region. *East Midlands New Technology Initiative – Second Evaluation Report*, Otter Consulting, May 2004.

## 4.3 Enterprise

Enterprise is important because new businesses increase competition, providing an incentive for new products and processes. It leads to a more efficient economy through a process of 'churn' whereby new enterprises with new products and processes lead to the closure of companies that are not able to compete, thus freeing resources for more productive uses. Enterprise is not just about new businesses (though this is the focus of much of government policy). Entrepreneurial activity can, and does, take place in existing businesses. The OECD report that increases in entrepreneurial activity resulted in higher employment growth rates and reductions in unemployment in a number of western European countries.<sup>24</sup>

The UK does have some advantages over its competitors when it comes to encouraging enterprise. For example it is quicker and cheaper to start a business in the UK than it is in Germany and more venture capital funding is available than in France or Germany (the UK lags behind the US on these measures). Despite these advantages the data shows that levels of entrepreneurial activity in the UK are only slightly higher than in France and Germany (and well below those reported for the USA).

A number of factors have been identified that characterise an entrepreneurial region:<sup>25</sup>

1. Entrepreneurial regions have a culture that recognises, encourages and supports entrepreneurs and entrepreneurial ways of working;
2. Entrepreneurial regions have a dynamic business population that is based on a healthy start-up rate, improving levels of firm survival, a large and rising proportion of growing entrepreneurial firms and agglomeration effects that speed up regional growth through clustering and the geographical concentration of businesses;
3. The institutions and infrastructure of a region support and enable entrepreneurial activity.

Elements of these factors are captured by the indicators used in the HM Treasury/DTI drivers of productivity framework.<sup>26</sup>

### 4.3.1 Total entrepreneurial activity

Total entrepreneurial activity (TEA) is measured by the Global Entrepreneurship Monitor (GEM), a survey of entrepreneurial activity among the adult population. TEA is calculated as the sum of nascent entrepreneurs (those who said that they were actively involved in creating a new business that they would own all or part of and have not paid any wages or salaries to anyone for more than three months) and baby businesses (more established owner-manager businesses that have been running for between 4 and 42 months). The global GEM shows that the UK, with a TEA of 6.2%, is more entrepreneurial than France (5.4%) or Germany (5.4%) but less so than the USA (12.4%).<sup>27</sup>

Between 2002 and 2005 total entrepreneurial activity increased in the East Midlands

<sup>24</sup> *Linking Entrepreneurship to Growth*, David B Audretsch and Roy Thurik, OECD, 2001.

<sup>25</sup> *Entrepreneurial Regions – Exploring the Entrepreneurial Capacity of the East Midlands*, A Atherton and K Frith, University of Lincoln, emda RES evidence commission, August 2005.

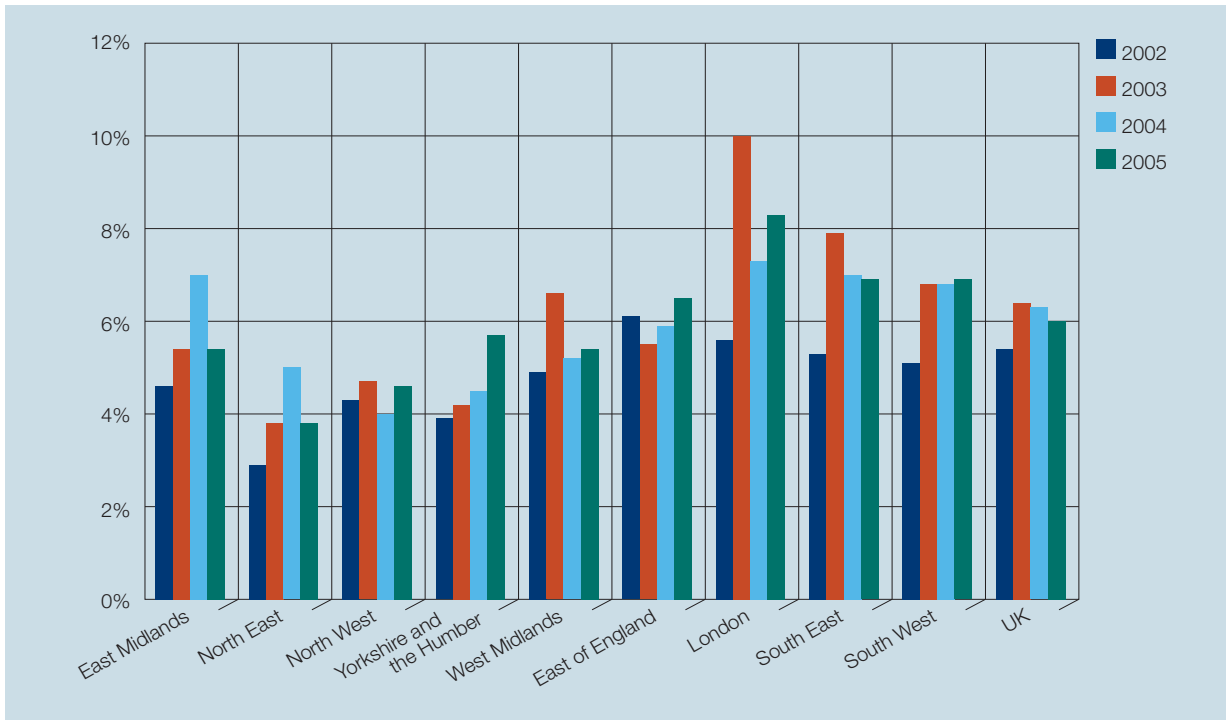
<sup>26</sup> *Productivity in the UK 5: Benchmarking UK Productivity Performance*, HM Treasury and Department of Trade & Industry, March 2004.

<sup>27</sup> *Global Entrepreneurship Monitor United Kingdom 2005*, London Business School, February 2006.



## CHART 10

### Total entrepreneurial activity in the UK (%)



Source: Global Entrepreneurship Monitor UK 2005

Chart 10 shows TEA by region for the last four years:

- TEA in the East Midlands was 5.4% in 2005, compared to 6.0% for the UK;
- Although falling back between 2004 and 2005, over the longer period between 2002 and 2005, TEA has increased in the East Midlands. TEA in all regions was higher in 2005 than in 2002;
- Levels of TEA are highest in London (at 8.3%), the South East (6.9%) and the South West (6.9%). The lowest levels of TEA are to be found in the North East where just 3.8% of the adult population were involved in entrepreneurial activity in 2005.

Data for the East Midlands<sup>28</sup> shows that TEA varies between different groups of the population:

- Entrepreneurs in the East Midlands are most likely to be aged between 25 and 34, which means that they are younger than the national average (where entrepreneurs are most likely to be aged between 35 and 44);
- Entrepreneurs in the East Midlands are most likely to have a Masters or a Bachelors degree;
- Entrepreneurial activity also varies by ethnic minority group.<sup>29</sup> Among Indian, Pakistani and the Black Caribbean populations TEA is higher than among White British people.

<sup>28</sup>GEM UK East Midlands Summary Report 2005, London Business School, February 2006.

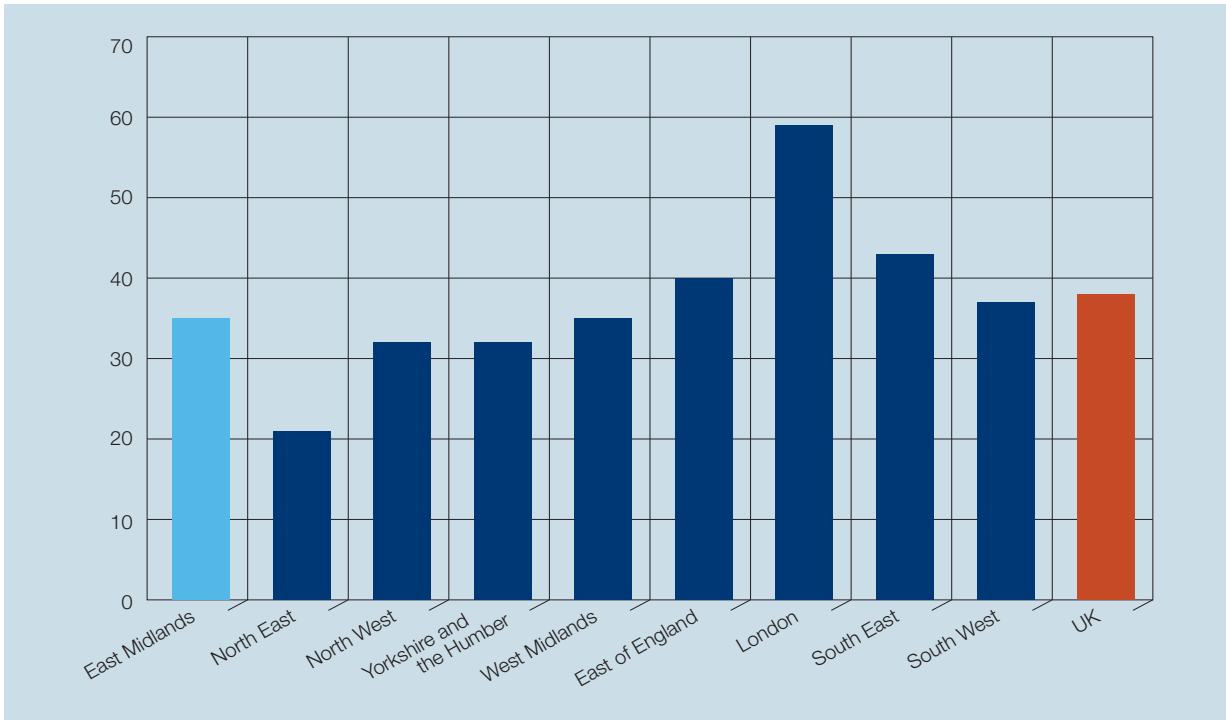
<sup>29</sup>For more information on enterprise among ethnic minority groups see *Ethnic Minority Enterprise and Business Support in the East Midlands*, T Jones and M Ram, De Montfort University, emda RES evidence commission, August 2005.

### 4.3.2 Business start-ups

Business start-ups are measured by the number of VAT registrations per 10,000 adult population. There is no comparable international data that allows us to put the UK performance into context on this measure.

#### CHART 11

**Business start-ups per 10,000 population by region 2004**



Source: VAT Statistics, Small Business Service, October 2005

Chart 11 shows business start-ups per 10,000 population in the UK in 2004:

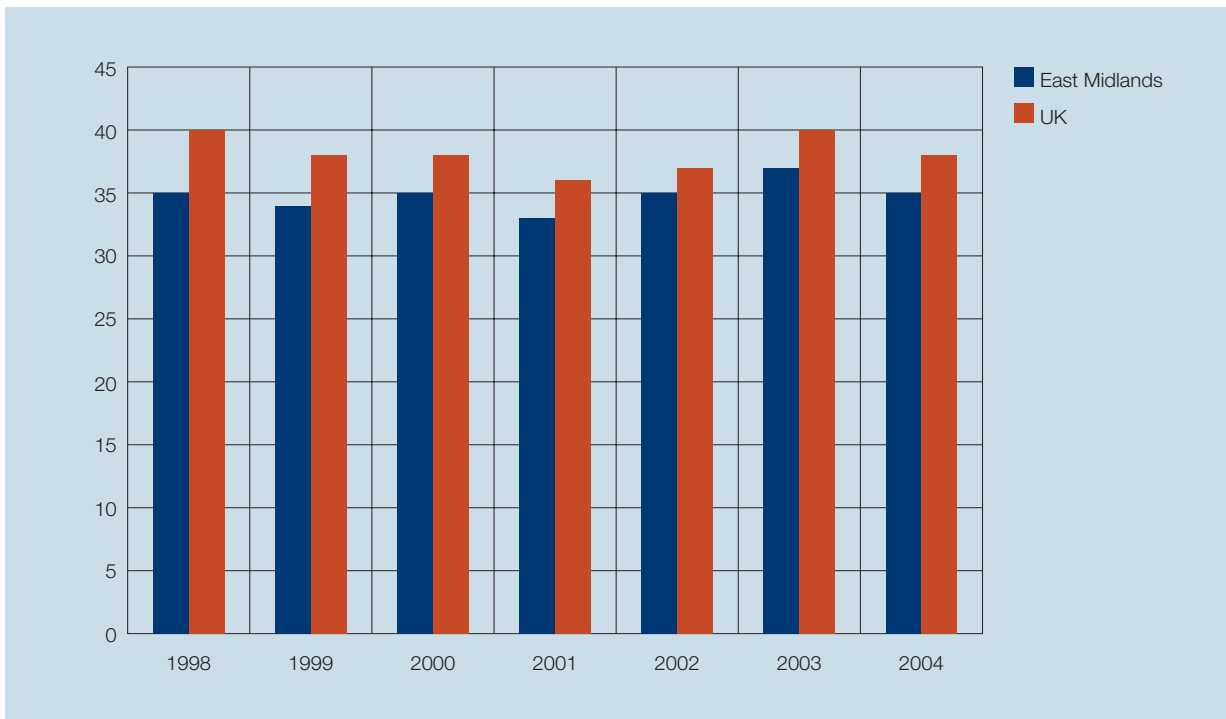
- In the East Midlands there were 35 start-ups per 10,000 population, below the UK average of 38;
- VAT registrations are significantly lower in the East Midlands than the leading region in the country, which is London where there were 59 start-ups per 10,000 population;
- The poorest performing region on this indicator is the North East where there were just 21 start-ups per 10,000 population in 2004.

The number of business start-ups has fluctuated over time but exhibits no clear trend in the East Midlands as illustrated in Chart 12:

- The number of business start-ups per 10,000 population has fluctuated around 35 between 1998 and 2004. A low point of 33 was recorded in 2001 and a high of 37 in 2003;
- This reflects what has happened nationally where business start-ups have fluctuated between 36 and 40 starts per 10,000 population in the same period.

## CHART 12

### Change in business start-ups per 10,000 population 1998-2004



Source: VAT Statistics, Small Business Service, October 2005

Start-ups have fluctuated in all regions between 1998 and 2004 and no region has made a significant improvement in its position relative to the UK average during this period. However, there has been a clear deterioration in the relative positions of London, the South East and the South West regions.

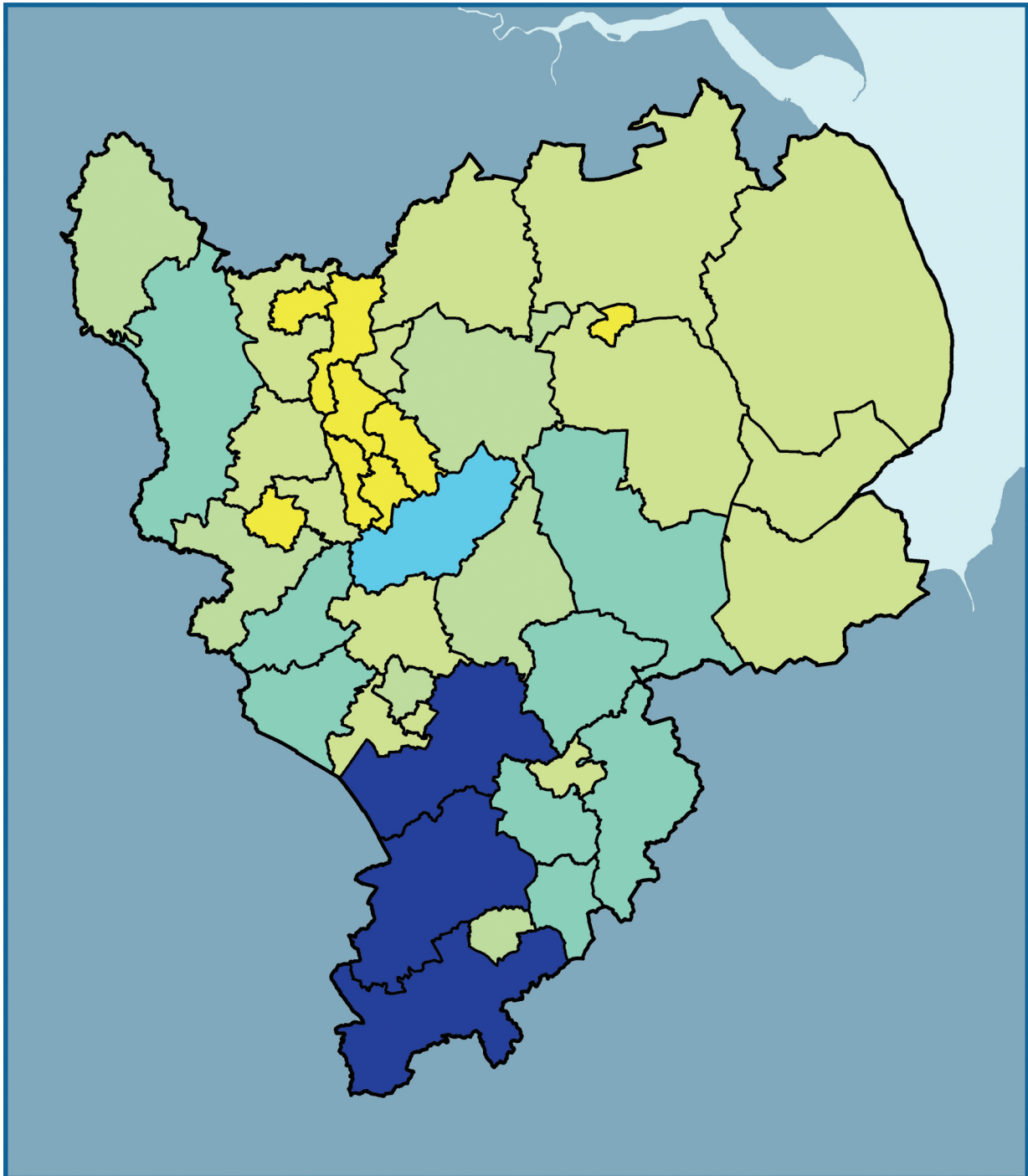
This data is available at local authority district level and Map 1 shows how the number of business start-ups per 10,000 population varied within the East Midlands in 2004:

- The highest levels of start-up per 10,000 population in 2004 were in Harborough (57), Daventry and South Northamptonshire (both with 56);
- The lowest levels of start-up were recorded in Broxtowe (23 per 10,000 population) and Lincoln (24);

- Levels of start-up are relatively low in Derby and Nottingham (27 and 29 per 10,000 population respectively) but above the regional average in Leicester (37);
- Although there are districts with very high and very low start-up rates throughout the region, there is a general north-south split with levels of start-up higher in the south of the region (Leicestershire, Northamptonshire and Rutland) and lower in the north (Derbyshire, Lincolnshire and Nottinghamshire).

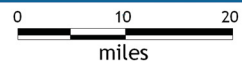
MAP 1

VAT registrations per 10,000 population 2004



- 23 to 29
- 29 to 35
- 35 to 41
- 41 to 47
- 47 to 53
- 53 to 60

VAT Registration  
Rates per 10,000  
Population, 2004



Ordnance Survey © Crown Copyright. All rights reserved.  
East Midlands Development Agency.  
Licence Number: 100035438. 2005



Source: SBS, 'VAT Registrations and De-Registrations 2004', October, 2005

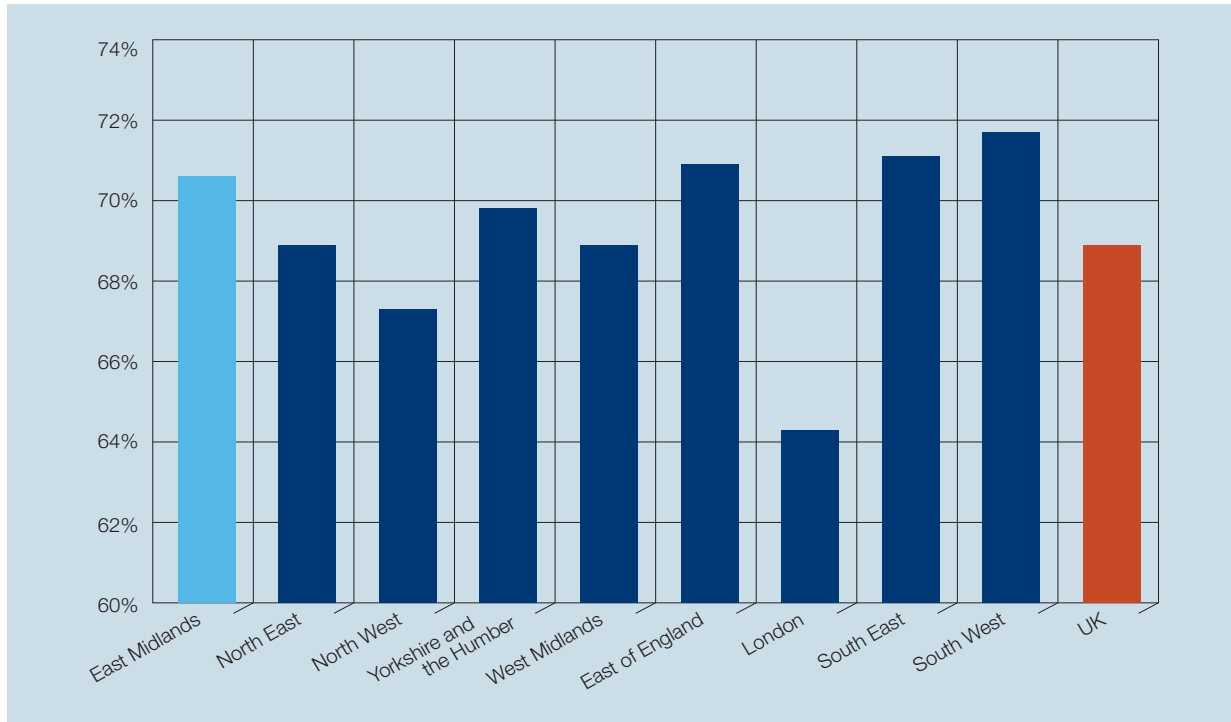
Business start-ups are important but they are only part of the story. It is essential that businesses survive so that employment can be maintained and increased throughout the company's lifespan. Data is available which shows the survival rate for businesses three years after registration.

In the East Midlands 70.6% of businesses that had registered for VAT in 2001 were still in business three years later, which is above the UK average of 68.9%. As shown in Chart 13, among the English regions this survival rate is highest in the South West, at 71.7%, and lowest in London, at 64.3%. In common with the rest of the country, as the economy recovered from the recession of the early 1990s, business survival rates have increased in the East Midlands, and by more than the national average.

Businesses in the East Midlands are more likely than the national average to survive for three years

**CHART 13**

**Three year survival rate for businesses registering for VAT in 2001 (%)**



Source: Small Business Service, February 2006

There are a number of barriers to business start-up and these include access to finance<sup>30</sup> and the necessary skills to start a business. Key sources of finance and expertise include venture capital and business angels.<sup>31</sup> There is some data available to assess this activity in the East Midlands.

The British Venture Capital Association (BVCA)<sup>32</sup> highlights the relatively poor performance of the East Midlands in terms of equity investment, particularly compared to London and the South East. The number of companies financed in the East Midlands in 2004 represented only 6% of the 1,301 UK companies financed, and the amount invested in the region's companies was less than 5% of the £5,336 million invested in total in UK companies. In addition, in the East Midlands, the number of companies financed and the amount invested mainly relate to larger, later stage investment deals. The number of companies financed at start-up and early stage has remained low at 3% and 9% respectively. Over the last few years, a number of venture capitalists, most notably 3i and Lloyds TSB Development Capital, have also closed their regional offices. The East Midlands is now 'home' to only two venture capital providers targeting start-up and early stage companies, namely Catapult Venture Managers Ltd (RVCF) and Quester Capital Management Ltd (Lachesis).

Business angels typically invest smaller amounts than venture capitalists – generally in the region of £50,000 to £200,000 – and tend to take a more direct interest in the companies in which they invest. Data on business angel activity is harder to come by but research for *emda*<sup>33</sup> shows that business angel activity is below average in the East Midlands, both in terms of the number of investments made and the size of those investments.

#### 4.4 Competition

Competition is important because it encourages firms to become more efficient (i.e. to reduce costs and prices) and to innovate (to exploit a new idea and gain a market advantage). There are various ways that companies can compete (on price, quality, etc). OECD research<sup>34</sup> suggests that an anti-competitive regulatory environment and delays in implementing pro-market reforms are associated with poor multi-factor productivity performance. The OECD also cites a number of studies<sup>35</sup> which show that domestic competition has a positive impact on firm level productivity in the UK.

It is difficult to measure the competitiveness of a national economy but the more efficient regulatory systems are and the stronger the competition regime, the more efficiently an economy works. These systems and regimes would apply to all regions so this does not provide a useful way of assessing how competition in this sense impacts on productivity at regional level.

The East Midlands performs relatively poorly in terms of equity investment

<sup>30</sup>Small Business Service Evaluation of High Growth Start-Up Programme Final Report, Databuild, May 2002 reported that high growth businesses have greater financial requirements than other businesses and that these requirements are not being met by the business and finance community.

<sup>31</sup>Business angels are individuals who usually have had considerable management experience, often of an entrepreneurial nature, who are willing to assist companies both in the role of advisor and investor.

<sup>32</sup>Report on Investment Activity 2004, PricewaterhouseCoopers, May 2004.

<sup>33</sup>Business Angel Activity in the East Midlands, O'Herlihy & Co Ltd, August 2003.

<sup>34</sup>Regulation, Productivity and Growth: OECD Evidence, Giuseppe Nicoletti and Stefano Scarpetta, OECD, January 2003.

<sup>35</sup>Product Market Competition, Wages and Productivity: International Evidence from Establishment Level Data, D Blanchflower and S Machin, Centre for Economic Performance Discussion Paper No 286, 1996. Competition and Corporate Performance, S Nickell, Journal of Political Economy Volume 104, 1996. What Makes Firms Perform Well?, S Nickell, D Nicolitsas and N Dryden, European Economic Review 41, 1997.

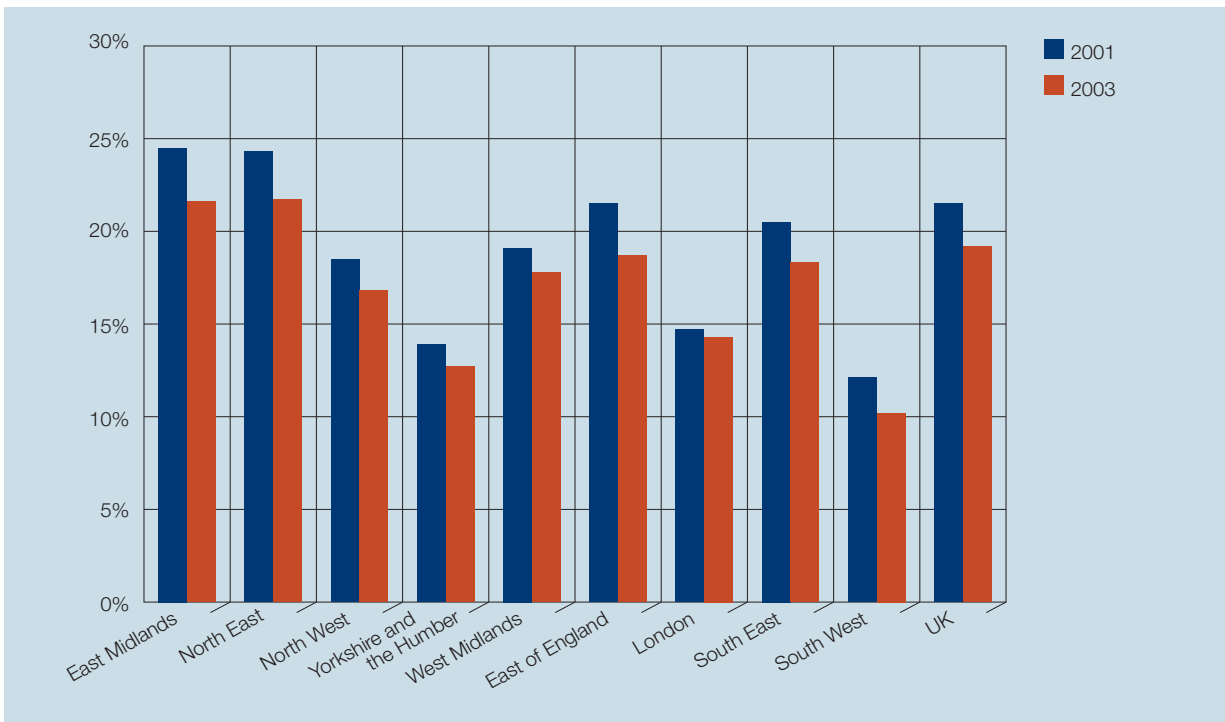
Based on readily available data, the HMT/DTI drivers of productivity framework assesses the extent of competition in a region by examining the extent to which companies in a region are exposed to international markets. The rationale for this is that those who export will generally be subject to much greater levels of competitive pressure and be more productive than those companies that serve local markets. Because of the difficulties associated with measuring service sector exports and activity, this data is influenced in a significant way by the scale of manufacturing activities in regional economies.

Chart 14 shows that on this measure the East Midlands has one of the most open regional economies in the country:

- In 2003 exports from the East Midlands were equivalent to 21.6% of GVA, well above the average of 19.2% for the UK;
- The most open region on this measure is the North East, where exports are equivalent to 21.7% of GVA;
- As a proportion of GVA, exports have fallen nationally and in all regions since 2001. Net trade has acted as a drag on UK growth in recent years.

### CHART 14

#### Exports of goods as % of GVA



Source: Regional Competitiveness and State of the Regions, Department of Trade & Industry, May 2005

On this measure it is clear that the East Midlands is more exposed to external competition than most other regions in the country. However, while this can drive improvements in productivity, a larger number of competitors also increases the vulnerability of businesses in the region, especially those businesses engaged in low value added, price sensitive markets.<sup>36</sup>

As noted above, competition and regulatory frameworks are determined at national level but there is a significant policy lever that is available to regional and local bodies that can be used to generate increased levels of competitive pressure. Through public procurement activities, by increasing the range of potential suppliers, the public sector can achieve greater value for money and through project and product specification influence investment, innovation and enterprise of the region's business base. This will help to shape markets for goods and services in the region.<sup>37</sup>

Data from the Public Expenditure Statistical Analyses 2005, published by HM Treasury, shows that total identifiable expenditure<sup>38</sup> in the East Midlands was around £23.2 billion (£16.5 billion by central government departments and £6.7 billion by local government) in 2003/04, which is 6.2% of the total for the UK. This proportion has remained unchanged since 1999/00. Expenditure largely reflects the pattern of population within the UK so those regions with the largest populations are in receipt of the largest amount of expenditure (London, the South East and the North West).

Adjusted for population the figures tell a different story. In the East Midlands total identifiable expenditure per head was £5,917 in 2003/04, which was 89% of the UK average. Regions where this was highest were London (116%), the North East (111%) and the North West (105%).

Expenditure by the Department for Work & Pensions and the Department of Health account for a total of just over two thirds of total identifiable expenditure in the East Midlands. However, it is more useful to look at expenditure by function as this allows for a more accurate assessment of expenditure that can be influenced by *emda* and its regional partners. Social protection and health account for 65% of expenditure, and are largely outside of regional influence, but education & training, agriculture, fisheries & forestry, transport, environmental protection, enterprise & economic development, employment policies, housing & community amenities and science & technology account for a total of £5.2 billion of spend in the region.

Not all of this is available for public procurement. Data is limited but the Office for Government Commerce estimates that the value of procurement on known large projects already in the pipeline in the East Midlands is £3.3 billion for the period 2005-08. This should be considered the low end of the range of potential resource that can be influenced at the regional level.

Procurement is a significant policy lever that can increase competitive pressures

The East Midlands is more exposed to external competition than most other regions of the country

<sup>36</sup>For a discussion of international competition, see *The Impact of Offshoring on the East Midlands Economy*, DTZ Pleda, October 2004 and *The Impact of EU Enlargement on the East Midlands*, Experian Business Strategies, April 2004.

<sup>37</sup>For a detailed discussion of the potential benefits arising from public procurement see *Achieving Community Benefits Through Contracts*, R MacFarlane & M Cook, Joseph Rowntree Foundation, December 2002, *Public Spending for Public Benefit*, New Economics Foundation, August 2005, *Skills, Government Intervention and Business Performance: implications for the regional skills partnership (RSP)*, D Ashton & L Unwin, University of Leicester, 2004.

<sup>38</sup>Identifiable expenditure is that which has been incurred for the benefit of individuals, businesses or communities within particular regions. Non-identifiable expenditure is that which benefits the whole of the UK such as defence.



## 5. Industrial structure of the East Midlands economy

The Government's five drivers of productivity framework is a useful way of organising discussion of the underlying factors which impact on productivity and economic performance. However, they do not tell the whole story. In particular, the industrial structure of the region explains much of the difference in economic performance between the East Midlands and the UK. The industrial structure of any region is rooted in that region's history and natural resources and is not amenable to rapid change. In the UK, regions in the north and midlands have already experienced decades of (often painful) restructuring and this process is likely to continue for some time to come.

The industrial structure of a region is likely to be a key determinant of what has been termed 'adaptive capability' – this is the capacity of the regional economy to 'respond to exogenous forces on the one hand and, on the other, to create new paths of economic development from within'. Adaptive capability provides a way for a region to avoid getting 'locked in' to a path of long term relative economic decline.<sup>39</sup>

In this section we examine the industrial structure of the East Midlands in some detail, highlighting where it differs from the UK and how these differences contribute to the productivity gap between the East Midlands and the UK. We start by describing the business population of the region before looking at the industrial structure of the economy in terms of output and employment in greater detail. This will highlight where there are productivity differences by sector so that the overall productivity gap between the East Midlands and the UK can be disaggregated.

### 5.1 Business demography

This sub-section of the evidence base outlines the size and structure of the VAT registered business<sup>40</sup> population in the East Midlands region. This section of the evidence base has already examined total business start-ups and survival rates. The emphasis here is on describing the business stock by location and industry and examining changes over time.

#### 5.1.1 Business numbers

At the beginning of 2005 the Small Business Service<sup>41</sup> reported that there were 125,170 VAT registered businesses in the East Midlands, which is 6.9% of the UK total. Chart 15 shows how the stock of VAT registered businesses is distributed within the East Midlands.

At the beginning of 2005 there were 125,170 VAT registered businesses in the East Midlands – 6.9% of the UK total

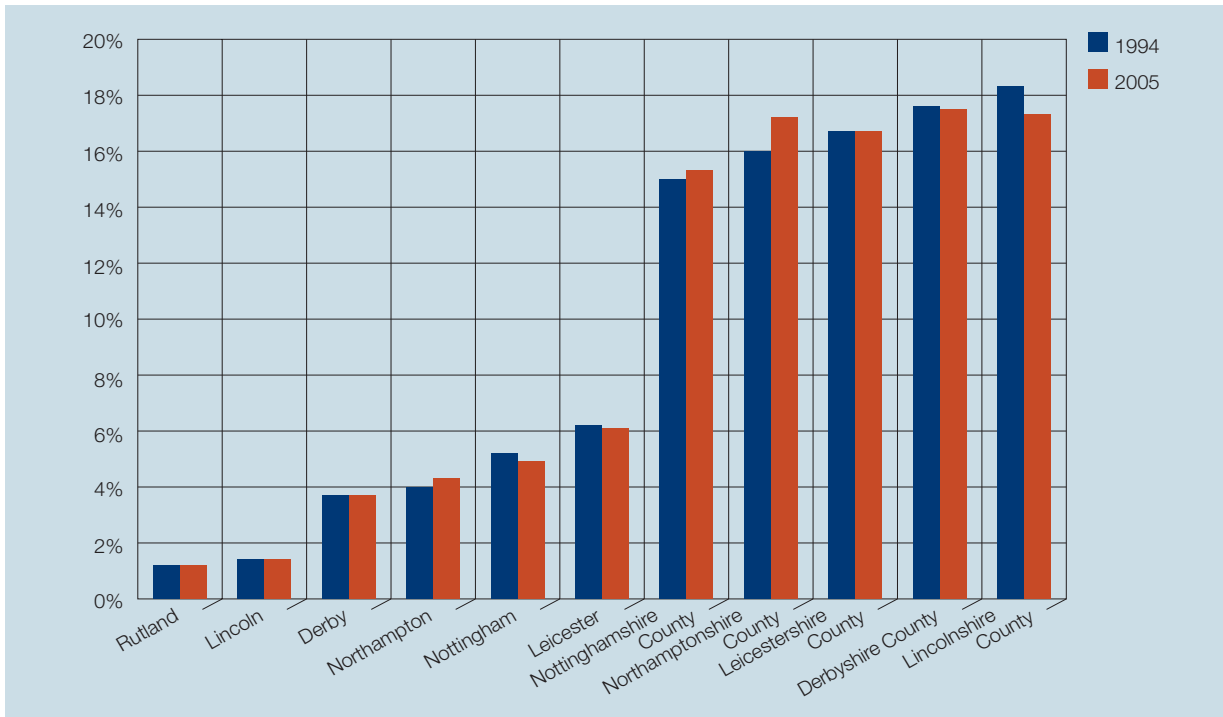
<sup>39</sup>For further discussion of these concepts see *Thinking About Regional Competitiveness: Critical Issues*, R Martin, University of Cambridge, emda RES Evidence Commission, August 2005.

<sup>40</sup>As of April 2005, a business is required to register for VAT when it has turnover of more than £60,000.

<sup>41</sup>The data used in this sub-section is taken from *Business Start-Ups and Closures: VAT Registrations and De-Registrations in 2004*, Small Business Service, 2005.

## CHART 15

### Stock of VAT registered businesses in the East Midlands (%)



Source: Business Start-Ups and Closures: VAT Registrations and De-Registrations in 2004, Small Business Service, 2005  
 Note: Lincolnshire County includes figure for Lincoln and Northamptonshire County includes figure for Northampton

The key points to note from Chart 15 are:

- Around 18,500 VAT registered businesses are in the three cities of Derby, Leicester and Nottingham. This is 14.7% of the total in the East Midlands. As almost half of economic activity in the region is located in these cities, this suggests that the average size of businesses in these cities is larger than elsewhere in the region;
- Derby has 4,600 VAT registered businesses (3.7% of the regional total). Leicester has 7,700 (6.1% of the total) and Nottingham has 6,200 (4.9% of the total);
- Northampton accounts for 4.3% of the business stock (5,400 businesses) and Lincoln a further 1.4% (1,800 businesses);
- Each of the five counties has between 19,000 and 22,000 businesses or 13%-17% of the total. The stock of businesses in Derbyshire is slightly higher than elsewhere.

Estimates of firm density have been made for sub-regions of the East Midlands<sup>42</sup>, where firm density is defined as the number of firms per square kilometre. These estimates show that firm densities are highest in Nottingham, Leicester and Northampton, which have the largest populations of firms, as shown in Chart 15. These three areas are much more likely to benefit from what are known as agglomeration economies which include larger and deeper markets for inputs (such as labour and intermediate goods), for the goods and services produced and spill-over benefits from the close location of firms and a large pool of labour.

Chart 15 also shows how the distribution of the stock of VAT registered businesses has changed between the beginning of 1994 and the beginning of 2005. The chart shows that there has been a very minor fall in the share accounted for by the cities of Derby, Leicester and Nottingham, a slightly larger fall in the share accounted for by Lincolnshire and an increase in Northamptonshire. Although there have been small changes to the distribution there has been an increase in the stock of VAT registered businesses throughout the region.

<sup>42</sup>Mapping the Structure of Regional Economies: A Framework for Assessing Regional Distributions of Economic Activity, A Atherton and A Johnston, University of Lincoln, August 2005.

**TABLE 1****Change in the stock of VAT registered businesses in the East Midlands 1994-2005**

	1994	2005	Change	% change
Derby	4,115	4,620	505	12.3
Leicester	6,935	7,650	715	10.3
Nottingham	5,800	6,190	390	6.7
Lincoln	1,600	1,805	205	12.8
Northampton	4,465	5,385	920	20.6
Rutland	1,295	1,505	210	16.2
Derbyshire County	19,620	21,930	2,310	11.8
Leicestershire County	18,665	20,865	2,200	11.8
Lincolnshire County	20,460	21,710	1,250	6.1
Northamptonshire County	17,890	21,515	3,625	20.3
Nottinghamshire County	16,735	19,190	2,455	14.7
East Midlands	111,520	125,170	13,650	12.2

Source: Business Start-Ups and Closures: VAT Registrations and De-Registrations in 2004, Small Business Service, 2005

Note: Lincolnshire County includes figure for Lincoln and Northamptonshire County includes figures for Northampton  
Totals do not agree due to rounding

Table 1 shows that between the beginning of 1994 and 2005 the VAT registered business stock increased by around 13,650, or 12.2%, in the East Midlands. This is slightly below the UK figure of 12.3%. It should also be noted that:

- Among the three cities of Derby, Leicester and Nottingham, only Derby has experienced an increase in the VAT registered business stock of similar magnitude to the East Midlands. In Nottingham the VAT registered business stock increased by just 6.7% during this period;
- In Northampton the VAT registered business stock increased by just over one fifth between 1994 and 2005;
- The largest increases in the VAT registered business stock occurred in the south of the region in Northamptonshire.

### 5.1.2 Businesses by sector

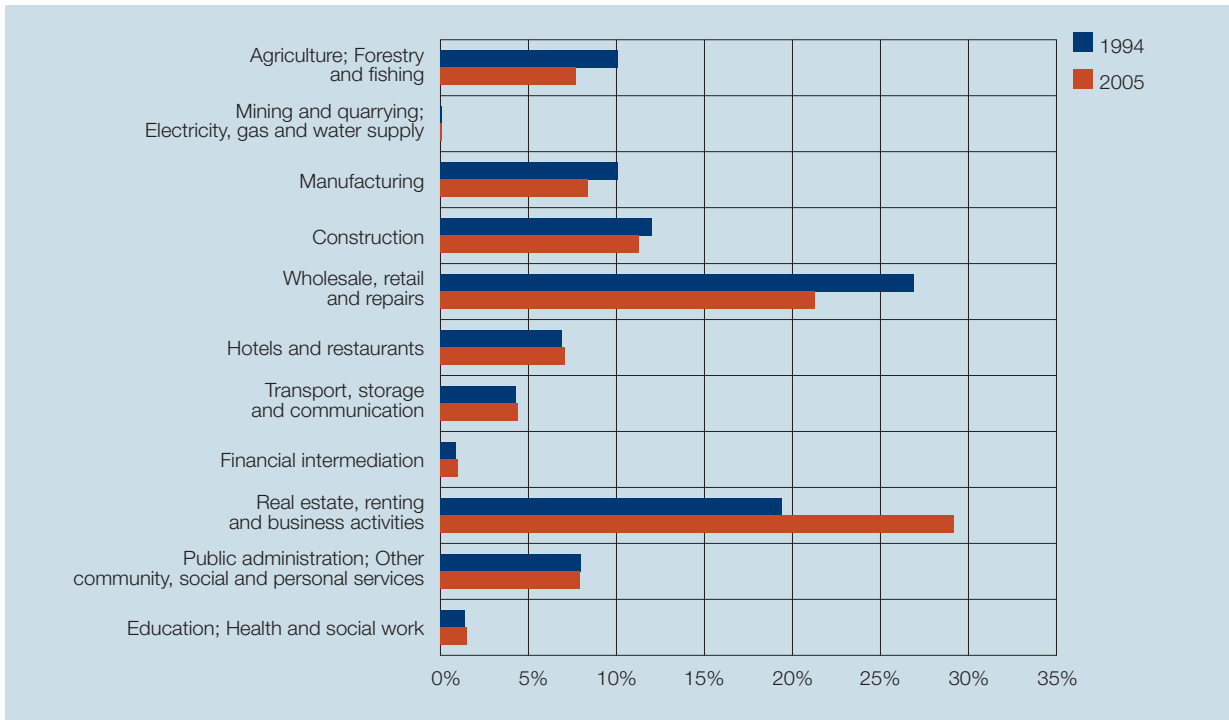
This sub-section examines the industrial structure of the stock of VAT registered businesses in the East Midlands. It makes comparisons with the UK, examines change over time and discusses significant sub-regional variations.

Charts 16 and 17 show the distribution of the VAT registered business stock in the UK and the East Midlands for 1994 and 2005. Although the largest and smallest sectors in the East Midlands tend to be the same as those for the UK there are important differences in the detail:

- The majority of VAT registered businesses are in the service sector. In the East Midlands 68.6% of businesses are service sector businesses, compared to 72.5% for the UK;
- Real Estate, Renting & Business Activities is the largest sector in the East Midlands, accounting for 24.8% of the VAT registered business stock (compared to 29.2% for the UK). Wholesale, Retail & Repairs also account for more than a fifth of the VAT registered business stock at both regional and national levels;
- The Manufacturing and Construction sectors in the East Midlands account for a greater share of businesses than the UK average (10.9% and 12.3% compared to 8.4% and 11.3% respectively). There are also relatively more businesses in Agriculture, Forestry & Fishing in the East Midlands.

**CHART 16**

**VAT registered business stock by industry 1994 and 2005 in the UK (%)**

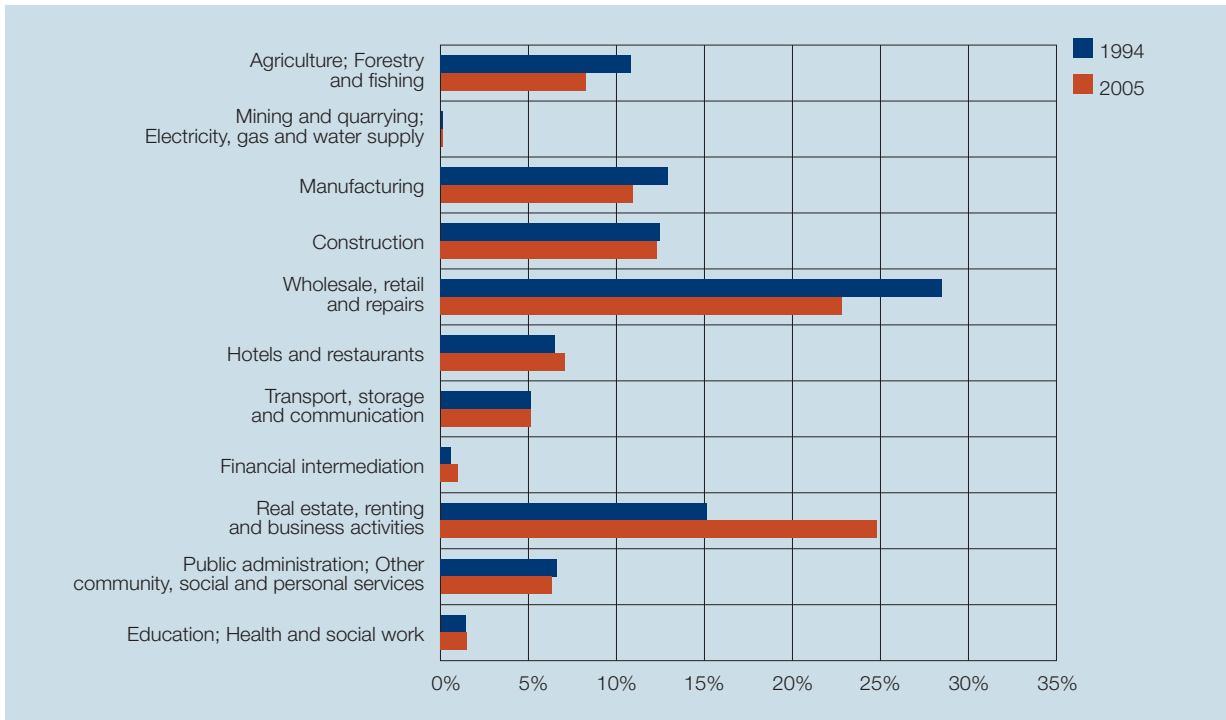


Source: Business Start-Ups and Closures: VAT Registrations and De-Registrations in 2004, Small Business Service, 2005

The majority of VAT registered businesses are in the service sector

**CHART 17**

**VAT registered business stock by industry 1994 and 2005 in the East Midlands (%)**



Source: Business Start-Ups and Closures: VAT Registrations and De-Registrations in 2004, Small Business Service, 2005

There are some notable differences at sub-regional level. In both Nottingham and Northampton the Real Estate, Renting & Business Activities sector accounts for more than 30% of the VAT registered business stock. The three cities of Derby, Leicester and Nottingham all have a relatively large share of businesses in the Wholesale, Retail & Repairs sector.

Charts 16 and 17 also show that there have been significant changes in the industrial structure of businesses in the East Midlands and the UK:

- There has been a shift away from production activities to the service sector. The proportion of VAT registered businesses in the East Midlands in the service sector has increased to 68.6% in 2005 from 63.8% in 1994;

- The most significant changes have occurred within the service sector. At both national and regional levels, there has been a ten percentage point increase in the share of businesses accounted for by Real Estate, Renting & Business Activities and a decline of more than five percentage points in the share of businesses accounted for by the Wholesale, Retail & Repairs sector.

These changes have occurred throughout the region.

## 5.2 Industrial structure

This sub-section examines the industrial structure of the East Midlands and the following sub-section focuses on

key sectors in the region. Table 2 shows the structure of the economy in the East Midlands based on output and employment data from our econometric model of the region, the Scenario Impact Model (SIM).<sup>43</sup>

**TABLE 2**
**Industrial structure of the East Midlands 2004**

	Output (%)		FTE <sup>44</sup> Employment (%)		East Midlands Location Quotients <sup>45</sup>	
	East Midlands	UK	East Midlands	UK	Output	Employment
Agriculture, Forestry & Fishing	1.6	1.0	1.8	1.5	1.5	1.2
Oil & Gas Extraction	0.2	2.1	0.0	0.1	0.1	0.4
Other Mining	0.4	0.2	0.3	0.1	1.5	2.0
Gas, Electricity & Water	1.8	1.8	0.5	0.5	1.0	1.1
Fuel Refining	0.0	0.3	0.0	0.1	0.1	0.2
Chemicals	2.0	1.9	1.1	0.8	1.1	1.3
Minerals	1.4	0.6	0.9	0.5	2.3	1.8
Metals	2.7	1.6	2.4	1.8	1.6	1.3
Machinery & Equipment	1.7	1.3	1.5	1.2	1.3	1.3
Electrical & Optical Equipment	1.5	1.7	1.5	1.4	0.9	1.0
Transport Equipment	3.5	1.9	1.9	1.4	1.9	1.4
Food & Drink	4.8	2.4	3.1	1.7	2.0	1.8
Textiles & Clothing	1.1	0.5	1.8	0.7	2.2	2.7
Wood & Wood Products	0.4	0.3	0.5	0.3	1.3	1.5
Paper, Printing & Publishing	1.9	2.2	2.0	1.7	0.8	1.1
Rubber & Plastics	1.2	0.8	1.3	0.8	1.5	1.6
Other Manufacturing NEC	1.0	0.7	1.3	0.9	1.4	1.5
Construction	8.2	6.2	8.7	8.3	1.3	1.1
Retailing	6.3	6.2	8.8	8.8	1.0	1.0
Wholesaling	8.9	7.4	7.8	6.8	1.2	1.1
Hotels & Catering	3.1	3.7	4.2	5.2	0.8	0.8
Transport	5.1	5.1	4.7	4.7	1.0	1.0
Communications	2.4	3.3	1.7	2.0	0.7	0.8
Banking & Insurance	2.6	5.0	2.3	4.1	0.5	0.6
Business Services	10.5	13.8	11.4	14.0	0.8	0.8
Other Financial & Business Services	3.4	4.6	2.0	2.6	0.7	0.8
Public Admin & Defence	5.0	5.8	4.2	5.5	0.9	0.8
Education	6.0	5.7	7.3	7.1	1.0	1.0
Health	6.9	6.7	9.7	9.2	1.0	1.1
Other Services	4.2	5.1	5.1	6.0	0.8	0.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>1.0</b>	<b>1.0</b>

Source: emda/Experian Scenario Impact Model Summer 2005

<sup>43</sup>emda/Experian Scenario Impact Model July 2005.

<sup>44</sup>FTE employment is full-time equivalent employment and is the sum of full-time employment, self-employment and 0.4\* part-time employment.

<sup>45</sup>A location quotient is a measure of relative concentration and is calculated as: the proportion of a sector in the regional economy/the proportion of a sector in the national economy.

The table clearly shows the dependence of the East Midlands economy on primary and production activities:

- In the primary sector Agriculture, Forestry & Fishing and Other Mining both account for a relatively larger than average share of economic output and employment in the East Midlands, with location quotients greater than one;
- The manufacturing sector is relatively large in the East Midlands where it accounts for 23.2% of output and 19.3% of employment. This compares with UK figures of 15.9% and 13.2% respectively;
- Within the manufacturing sector all sub-sectors, with the exceptions of Electrical & Optical Equipment and Paper, Printing & Publishing (which have location quotients less than one), are relatively larger than average in output terms. In employment terms all manufacturing sub-sectors are relatively larger than average in the region, with location quotients greater than one;
- The largest manufacturing sub-sectors in the East Midlands are Food & Drink and Transport Equipment. It is estimated that these sectors account for 4.8% and 3.5% of total output respectively, and have location quotients of 2.0 and 1.9 respectively;
- Major losses of employment mean that the Textiles & Clothing sub-sector is no longer a major part of manufacturing even though, in relative terms, it is twice the size of the sector nationally (with location quotients greater than two).

Correspondingly, the service sector is relatively smaller in the East Midlands than in the UK:

- The service sector accounts for 64.5% of output in the East Midlands (compared to 72.4% for the UK) and 69.2% of employment (compared to 76.0% for the UK);
- In terms of scale, Business Services is the largest services sub-sector, accounting for 10.5% of output in the East Midlands and 13.8% nationally. This shows, however, that the Business Services sub-sector is relatively less important in the East Midlands with a location quotient of 0.8;

- In addition to Business Services, the Hotels & Catering, Communications, Banking & Insurance and Other Financial & Business Services are all relatively less important in the East Midlands, as evidenced by location quotients of less than 1;
- The scale of the public sector is similar to the UK average in the East Midlands.

There are differing sectoral strengths at sub-regional level. Examples of particular strengths include: Agriculture, Forestry & Fishing and Food & Drink in the Lincolnshire and Welland SSP areas, Transport in the Northamptonshire and Welland SSP areas, Business Services in the Northamptonshire and Greater Nottingham SSP areas, Public Administration & Defence in the Greater Nottingham SSP area and Transport Equipment in the Derby & Derbyshire SSP area.

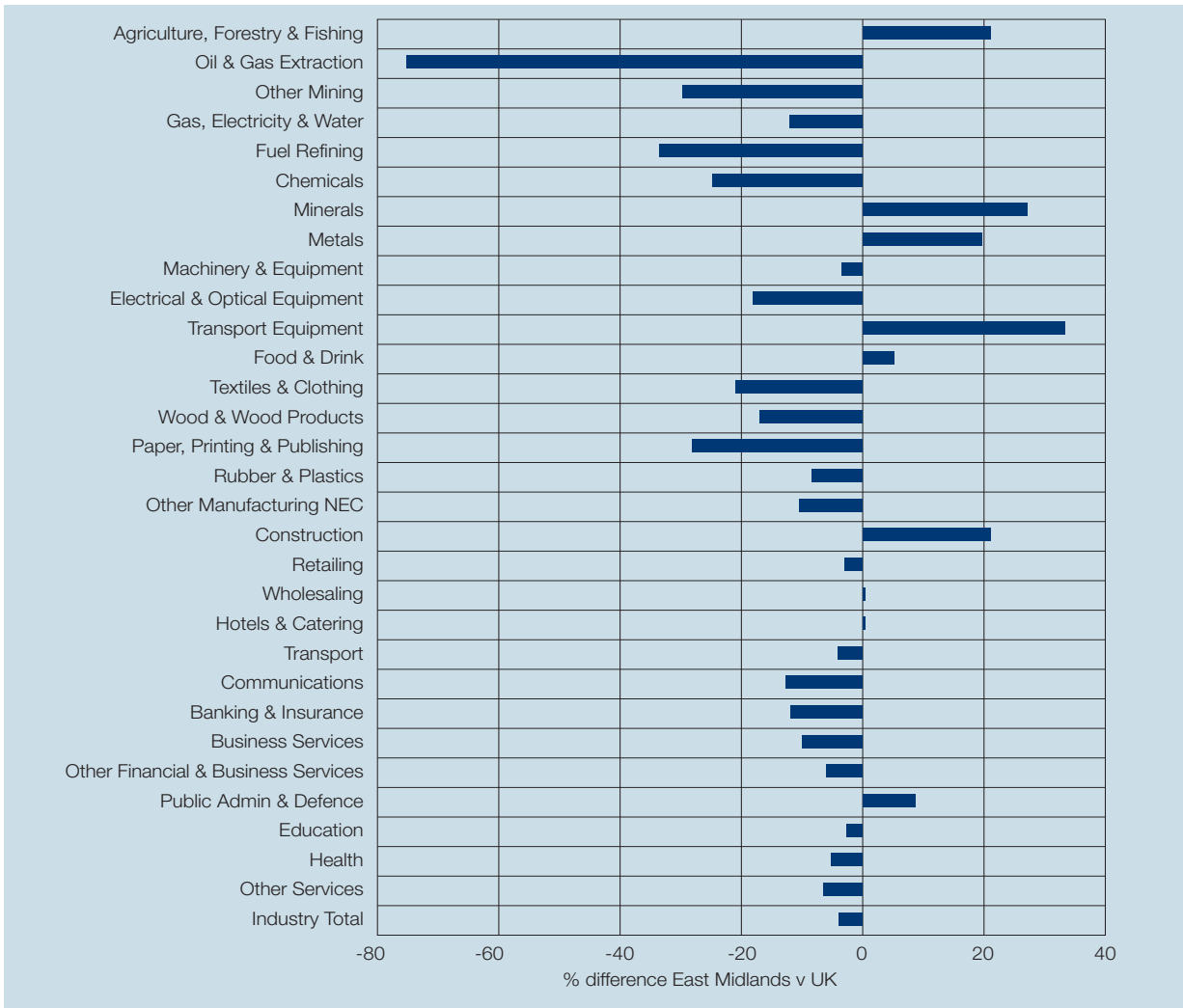
The fact that the location quotients for output and employment differ suggest differences in productivity by sector between the East Midlands and the UK. The Scenario Impact Model for the East Midlands contains estimates of sector productivity for the East Midlands and the UK. The differences between the East Midlands and the UK are shown in Chart 18:

- The chart shows that average productivity per FTE employee is above the national average in nine sub-sectors in the East Midlands (although in two of these the East Midlands has only a marginal advantage). Of these six are in the production sector and three in the service sector;
- The flip side of the coin is that productivity is below average in twenty one sectors of the East Midlands economy.

Production activities account for a relatively large share of the East Midlands economy

**CHART 18**

**Productivity differences by sector between the East Midlands and the UK (%), 2004**



Source: emda/Experian Scenario Impact Model July 2005

The chart shows that, of the nine sub-sectors in the region that out-perform the national average, the largest advantage is held by Transport Equipment (which includes the manufacture of vehicles and other transport equipment). The East Midlands is home to a number of major companies in this sub-sector such as Toyota, Rolls Royce and Bombardier. Productivity in the sub-sector is one third higher than the national average. In addition:

- Productivity is around 20% higher than the UK average in the Agriculture, Forestry & Fishing,

Minerals, Metals and Construction sectors. The high productivity in the Agriculture, Forestry & Fishing sector may be due to the fact that the East Midlands has a relatively large supply of Grade 1 land;

- Productivity is also above average in the Food & Drink, Wholesaling, Hotels & Catering and Public Administration & Defence sectors, although only marginally above average in the case of Wholesaling and Hotels & Catering;



- Productivity is below average in much of the manufacturing sector and a number of key service sub-sectors such as Business Services.

As shown in Table 2 these nine sub-sectors account for 35% of FTE employment in the region. Two thirds of employment in the East Midlands economy is in sectors that are less productive than the national average. It should be noted, of course, that these are average figures and that there will be very productive businesses in all sectors of the East Midlands economy – just as there are relatively poor performers.

The Sector Skills Development Agency (SSDA) has published an analysis of sectoral productivity that uses a shift-share analysis to disaggregate the gap in productivity that exists between regions and the UK average.<sup>46</sup> This analysis breaks the productivity gap into three components:

- **Industry mix:** this measures the contribution to regional productivity differentials that comes from a region's sectoral composition, assuming that productivity in each sector in the region is equal to the national average;
- **Productivity differential:** this measures the contribution to regional productivity differentials that arise because of differing sectoral productivities, assuming that the region's sectoral composition is equal to the national average;
- **Allocative component:** this is the contribution to regional productivity differentials that comes from a region being specialised, relative to the national average in sectors in which it has above or below average productivity.

The SSDA analysis suggests that in 2002 there was a positive contribution from the East Midlands industry mix, meaning that the East Midlands has a degree of specialisation in sectors with high productivity (such as Transport Equipment). There was also a positive contribution from the allocative component which means that the East Midlands has some success at allocating employment to sectors in which it has a comparative advantage (such as Transport Equipment and Food & Drink). However these are outweighed by a much greater negative contribution from the productivity differential, which means that the region has below average productivity in most of its sectors (as illustrated in Chart 18).

This analysis would suggest that, in addition to maintaining and building upon those sectors in which the East Midlands has a comparative advantage, there is a requirement to increase productivity in all sectors of the economy if the productivity gap with the UK is to be closed.

### 5.3 Key sectors in the East Midlands economy

The previous Regional Economic Strategy (RES), *Destination 2010*, gave priority to the development of a small number of clusters – Aerospace, Motorsport, Food & Drink, Healthcare, Creative Industries, Clothing & Textiles, and Environmental Technologies. Consultation on the new RES proposed a new approach to sectors and clusters. It gives greater emphasis to sectors – highlighting the need for a regional sector policy and proposing policy principles – but recognises that there is still a place for some limited cluster development within such a policy.

During that consultation process a number of criteria were used to determine candidate sectors for support during the lifetime of the new RES and this sub-section summarises the results of that exercise before providing a more detailed analysis of the sectors selected for support from the new RES.

Table 3 summarises the analysis undertaken to determine candidates for sector support. The criteria used were:

1. The proportion of the East Midlands economy accounted for by each sector;
2. The output location quotient for each sector, so that concentration as well as scale is accounted for in the analysis;
3. The proportion of total full-time equivalent (FTE) employment in the East Midlands that is accounted for by each sector;
4. The FTE employment location quotient for each sector, again accounting for concentration as well as scale;
5. Levels of productivity per FTE worker in the East Midlands, relative to the UK. This is a measure of regional comparative advantage;
6. Forecast output growth for the period 2004-14;
7. Forecast FTE employment growth for the period 2004-14;
8. Forecast productivity growth for the period 2004-14;

<sup>46</sup> *Sectoral Productivity Differences Across the UK*, Research Report 13, Skills for Business, October 2005.

9. The number of large employers (those with 200+ employees) in the East Midlands. This is an attempt to capture the strategic significance of each sector in the region;
10. Annual average gross full-time earnings for each sector in the region, which is an attempt to capture the quality of employment in each sector.

Table 3 shows how each of 30 sectors in the East Midlands are ranked on these indicators, along with an overall average score. The chart shows that the top five sectors are the manufacture of Transport Equipment,

the manufacture of Food & Drink, Business Services, Construction and Health.

Following the consultation period on the new RES it was proposed that Business Services should not be considered for priority support in the new RES as it is too disparate a sector to formulate targeted policy intervention to address market failure. It was also decided that the definition of health include not only care services but also the manufacture of medical instruments and equipment and the manufacture of pharmaceuticals.

**TABLE 3**  
**Sector selection criteria summary for the East Midlands**

	Rank of % of Regional GVA 2004	Rank of GVA Location Quotient 2004	Rank of % Regional FTE Employment 2004	Rank of FTE Location Quotient 2004	Rank of Relative Productivity 2004	Rank of Forecast Output Growth 2004-14	Rank of FTE Employment Growth 2004-14	Rank of Productivity Growth 2004-14	Rank of Large Employers	Rank of Annual Average Gross Full Time Earnings 2004	Average Ranking Score
Transport Equipment	11	4	16	8	1	9	15	5	10	3	8.2
Food & Drink	9	3	11	3	7	8	9	14	4	18	8.6
Business Services	1	25	1	23	18	2	1	7	2	8	8.8
Construction	3	10	4	16	3	13	7	19	9	6	9.0
Health	4	16	2	17	14	4	3	15	6	20	10.1
Wholesaling	2	13	5	13	9	16	16	11	8	9	10.2
Retailing	5	17	3	21	11	7	12	9	1	25	11.1
Education	6	15	6	19	10	15	6	25	5	7	11.4
Transport	7	18	8	20	13	11	10	13	7	22	12.9
Metals	14	5	12	10	5	12	13	28	20	19	13.8
Communications	16	27	19	24	22	1	2	1	11	16	13.9
Minerals	23	1	25	4	2	17	17	17	24	10	14
Banking & Insurance	15	28	13	28	20	5	8	6	15	5	14.3
Other Services	10	24	7	22	16	6	4	21	13	26	14.9
Chemicals	17	14	24	9	26	20	23	2	18	4	15.7
Public Admin & Defence	8	21	10	26	6	24	20	29	3	11	15.8
Electrical & Optical Equipment	22	20	20	18	24	3	14	3	14	21	15.9
Hotels & Catering	13	23	9	25	8	10	5	22	19	29	16.3
Rubber & Plastics	24	7	23	5	17	18	24	8	17	24	16.7
Other Financial & Business Services	12	26	14	27	15	14	11	12	25	12	16.8
Gas, Electricity & Water	19	19	27	15	21	21	26	4	22	2	17.6
Agriculture, Forestry & Fishing	21	6	17	12	4	25	22	26	28	15	17.6
Machinery & Equipment	20	12	21	11	12	23	21	23	21	13	17.7
Other Manufacturing NEC	26	9	22	6	19	19	19	24	23	17	18.4
Other Mining	28	8	28	2	28	27	28	10	26	1	18.6
Paper, Printing & Publishing	18	22	15	14	27	26	25	20	12	14	19.3
Textiles & Clothing	25	2	18	1	25	30	30	18	16	28	19.3
Wood & Wood Products	27	11	26	7	23	28	27	16	27	27	21.9
Oil & Gas Extraction	29	30	29	29	30	22	18	27	29	23	26.6
Fuel Refining	30	29	30	30	29	29	29	30	30	30	29.6

Source: emda analysis, November 2005

### 5.3.1 Transport equipment

This is the best performing of the sectors in the analysis in Table 3. This sector includes the manufacture of motor vehicles, trailers & semi-trailers and the manufacture of other transport equipment.

- **Scale:** This is one of the larger manufacturing sub-sectors in the region, accounting for 3.5% of the region's economy and 1.9% of employment in the region in 2004. An output location quotient of 1.9 shows that this sector is much more significant to the East Midlands than it is to the national economy;
- **Productivity:** Levels of productivity are estimated to be about one third higher than the national average in the East Midlands. Transport Equipment has the highest productivity of any sector in the region;
- **Growth prospects:** Output growth in the East Midlands (29% for the period 2004-14) is forecast to be higher than the national average (around 8%). A small fall in employment is forecast, though this fall is not as severe as that expected for the UK;
- **Employment quality:** This is a high quality employment sector, with average annual earnings almost a third above the East Midlands average in 2004;
- **Strategic significance:** There were a significant number (more than 30) of large employers in this sector in the East Midlands in 2003. This sector contains the motorsport and aerospace presence in the region, which are parts of internationally-recognised clusters<sup>47</sup> and which were identified as regional priorities in the previous RES, *Destination 2010*.

### 5.3.2 Food & drink

Food & Drink was the second ranked sector in the summary analysis presented in Table 3. It is defined simply as the manufacture of food products & beverages.

- **Scale:** Food & Drink is the largest of the manufacturing sub-sectors in the East Midlands, accounting for just under 5.0% of the region's economy and just over 3.0% of employment in the region in 2004. An output location quotient of 2.0 shows that this sector is much more important regionally than it is nationally;
- **Productivity:** The East Midlands has a slight productivity advantage in this sector with output per FTE worker around 5% higher than the UK average in 2004;
- **Growth prospects:** The Food & Drink sector is forecast to grow more strongly in the East Midlands than nationally during the period 2004-14. The forecast is for output growth of around 30% (compared to 9% for the UK) and employment is forecast to grow by just over 4% (compared to a decline of -15% for the UK);
- **Employment quality:** Average annual earnings in the Food & Drink sector were around 9% below the regional average in 2004;
- **Strategic significance:** There was a significant number (more than 70) of large employers in this sector in the East Midlands in 2003. This is a sector that was also identified as a priority by the previous RES, *Destination 2010*.

<sup>47</sup>Cluster Development: The Way Forward, DTZ Pleda Consulting, March 2005.

### 5.3.3 Construction

Construction was the fourth ranked sector in the summary analysis presented in Table 3.

- **Scale:** Construction is one of the larger sectors in the region, accounting for 8.2% of the region's economy and 8.7% of employment in 2004. An output location quotient of 1.3 shows that this sector is more significant to the East Midlands than it is to the national economy;
- **Productivity:** Levels of productivity in Construction are estimated to be about one fifth higher than the national average in the East Midlands;
- **Growth prospects:** Output growth in the East Midlands (27% for the period 2004-14) is forecast to be higher than the national average (around 24%). Employment growth is forecast to be twice as fast as that for the UK, and could be higher as this baseline forecast includes only half of the proposed MKSM development<sup>48</sup>;
- **Employment quality:** Average annual earnings in the Construction sector were around 5% above the East Midlands average in 2004;
- **Strategic significance:** There were a significant number (more than 30) of large employers in this sector in the East Midlands in 2003. However, as noted above, the MKSM development is a significant opportunity for construction companies in the East Midlands, with a significant house-building programme in place up to 2021 with further development proposed in the period 2021-31. There is also a significant opportunity for construction companies in the region to benefit from infrastructure projects that will be put in place in the run up to the 2012 Olympics in London.

### 5.3.4 Health

Health has been defined to include the provision of care as well as the manufacture of medical instruments and equipment and pharmaceuticals.<sup>49</sup>

- **Scale:** Health is one of the larger sectors in the region. In 2004 it accounted for around 7.5% of the East Midlands economy and around 10% of total FTE employment. Location quotients show that the whole sector is just as important to the East Midlands economy as the national economy, and the chemicals sector is relatively more important in the East Midlands than nationally;
- **Productivity:** The Health sector in the East Midlands has a small productivity disadvantage with levels of output per FTE employee around 91% of the UK average;
- **Growth prospects:** Health is forecast to be one of the faster growing sectors in the East Midlands, with total output growth of 44% forecast between 2004 and 2014. This compares with 40% for the UK. FTE employment in health is also forecast to grow more quickly than the national average in the East Midlands;
- **Employment quality:** Average annual earnings in the Health sector were around 10% below the average for the East Midlands in 2004. However the Chemicals sub-sector had average earnings almost one quarter above this average;
- **Strategic significance:** There was a significant number (more than 70) of large employers in the Health sector in the East Midlands in 2003. There are increasing opportunities for those in the Health sector, with the demand for products and services driven by the significant demographic changes taking place in the region.

<sup>48</sup>Experian assume half of the proposed development will go ahead in their baseline forecast. It should be remembered that this is an independent forecast and cautious assumptions are made on the basis of the significant risks associated with a project of this scale.

<sup>49</sup>Difficulties in disaggregating data mean for the manufacture of medical instruments and equipment we use the manufacture of electrical and optical equipment. The 2003 Annual Business Inquiry suggests that the manufacture of medical instruments and equipment accounts for 7.5% of the manufacture of electrical and optical equipment. The manufacture of pharmaceuticals accounts for 17% of the manufacture of chemicals sectors which is used here.

## 6. Future prospects for the East Midlands economy

The final section of this chapter sets out our forecast for the performance of the East Midlands economy during the next decade, based upon our econometric model of the region, the Scenario Impact Model.

We set out our baseline scenario, along with high and low growth alternatives. At the outset it should be noted that these are scenarios and are not by any means a statement of fact about the future performance of the East Midlands economy. They are an independently produced assessment of prospects and do not represent *emda*'s aspirations for the region. Less emphasis should be placed on the exact figures and more on the direction of travel and the general magnitude of change. They are just a number of possible futures and this should be borne in mind throughout.

The baseline scenario can be thought of as a combination of historical trends and expected changes in macroeconomic conditions in the UK that are filtered down into the regional model. These forecasts do not take into account any RES (or other local) intervention apart from an assumption that 50% of the population boost expected through the Milton Keynes-South Midlands (MKSM) growth area occurs. The high and low growth scenarios are variants on the baseline, created by using alternative macroeconomic assumptions and running them through Experian's suite of models (including the Scenario Impact Model).

In addition to these macroeconomic scenarios we also present 'RES policy on' scenarios, which are a broad attempt to demonstrate the potential impact of achieving the key policy objective of closing the productivity gap that exists between the region and the UK. These scenarios assume full implementation of the MKSM growth area and that the productivity gap between the East Midlands and the UK is closed by 2009. Again, these scenarios have been created with the Experian suite of models so that all of our scenarios are internally consistent.

### 6.1 Analysis of regional performance

This section of the report analyses performance in the period 1999-2004 and discusses the regional scenarios for the period 2004-2014.

#### 6.1.1 Recent economic performance

This section summarises recent economic growth among the English regions. The period 1999-2004 has been a turbulent one for the global economy, with the bursting of the dotcom bubble, recession and the aftermath of the September 11th attacks in the United States, and a protracted period of below par growth in the Eurozone and Japan. However, during this period China has emerged as a driver of global growth. Despite these events UK growth has remained robust without there being a single quarter of negative growth – a unique performance among the major economies.

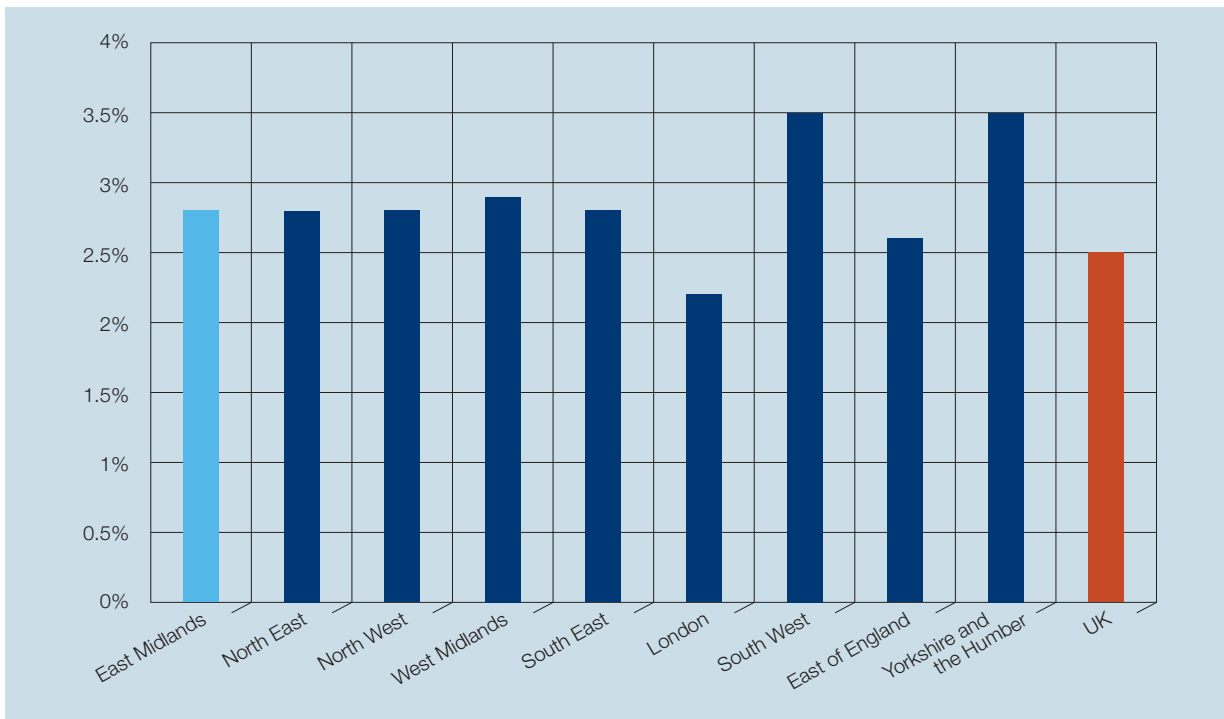
Chart 19 shows that the East Midlands has been an average performer among the English regions in recent years. The key points to note are:

- Economic growth averaged 2.8%pa in the East Midlands between 1999 and 2004. This means that the East Midlands is in the middle of the regional growth rankings for this period;
- The growth rate in the East Midlands was above the national average of 2.5%pa;
- Slowest growth in this period was in London, at 2.2%pa. London is more exposed than other regions to those sectors that were particularly hard hit as global growth slowed in the early part of the decade. These include business and financial services and tourism (especially in the wake of the September 11th attacks);
- The highest growth rate recorded was 3.5%pa, which was achieved in the South West and Yorkshire & the Humber.

Between 1999 and 2004 the East Midlands achieved a higher rate of growth than the UK

## CHART 19

### Economic growth 1999-2004 (%pa)



Source: Experian Regional Planning Service Spring 2005

This data shows that the north-south gap will have narrowed slightly during the early part of the decade as regions in the north of the country grew more rapidly than those in the south east of England. This is the aim of the joint HM Treasury/DTI/ODPM PSA target.<sup>50</sup> However, as we show below our forecasts suggest this might be a short lived occurrence with implications for the attainment of that target.

Within the East Midlands growth has varied significantly. The most rapid growth has been estimated to have occurred in the Lincolnshire and the Welland SSP areas.<sup>51</sup> In both growth has been above the average for the East Midlands, albeit from a low base in the case of Lincolnshire. Growth has been slowest in the Greater Nottingham and Derby & Derbyshire SSP areas.

Our data also allows us to show how growth has differed between the urban and rural<sup>52</sup> areas of the region. The data shows that growth in urban areas was significantly lower than in rural areas between 1999 and 2004 (2.5%pa compared to 3.3%pa).

### 6.1.2 Forecast for the next decade

Our baseline scenario shows that there will continue to be disparities in regional growth during the course of the next decade (without additional policy intervention) but with the pattern of growth reverting to a more traditional north/south split. Chart 20 summarises our forecast for the next decade. The key points to note are:

- Economic growth in the East Midlands is forecast to ease to an average of 2.6%pa in the period 2004-14. This is in line with the UK average;
- The slowest growing regions are expected to revert to those in the north – the North East is forecast to grow by 2.0%pa;
- The fastest growing regions are expected to be those of the Greater South East (London, the South East and the East of England), which are forecast to grow at around 3.0%pa.

<sup>50</sup>The HM Treasury/DTI/ODPM PSA target is to increase the growth rate of all regions and to close the gap between the growth rates in the best and worst performing regions.

<sup>51</sup>Chart 4 showed that output per head in Lincolnshire was 77% of the UK average in 2003. GVA per capita had fallen significantly relative to the national average between 1995 and 1999. The official data show that between 1999 and 2003 Lincolnshire's position relative to the UK has been stable and growth consistent with national trends. Even though our forecasts suggest above average growth in Lincolnshire in 2003/04 this is by no means enough to significantly close the gap that has opened up.

<sup>52</sup>Full information on the Rural and Urban classifications by Local Authority District can be found on:

[http://statistics.defra.gov.uk/esg/rural\\_resd/rural\\_definition.asp](http://statistics.defra.gov.uk/esg/rural_resd/rural_definition.asp). Please note, this is a different methodology than the sparsity index used to define the proportion of the population living in different types of settlement by Census Output Area. The district definition is designed to classify districts, rather than apportion population by urban and rural.

Within the East Midlands the baseline scenario (without additional policy intervention) is for continued disparities in growth rates with the highest growth forecast for the Northamptonshire SSP area (at 3.1%pa during the forecast period) and the lowest forecast for the Leicester Shire SSP area (at 2.4%pa). A finer level of spatial detail shows that forecast growth varies much more significantly between local authority districts in the region:

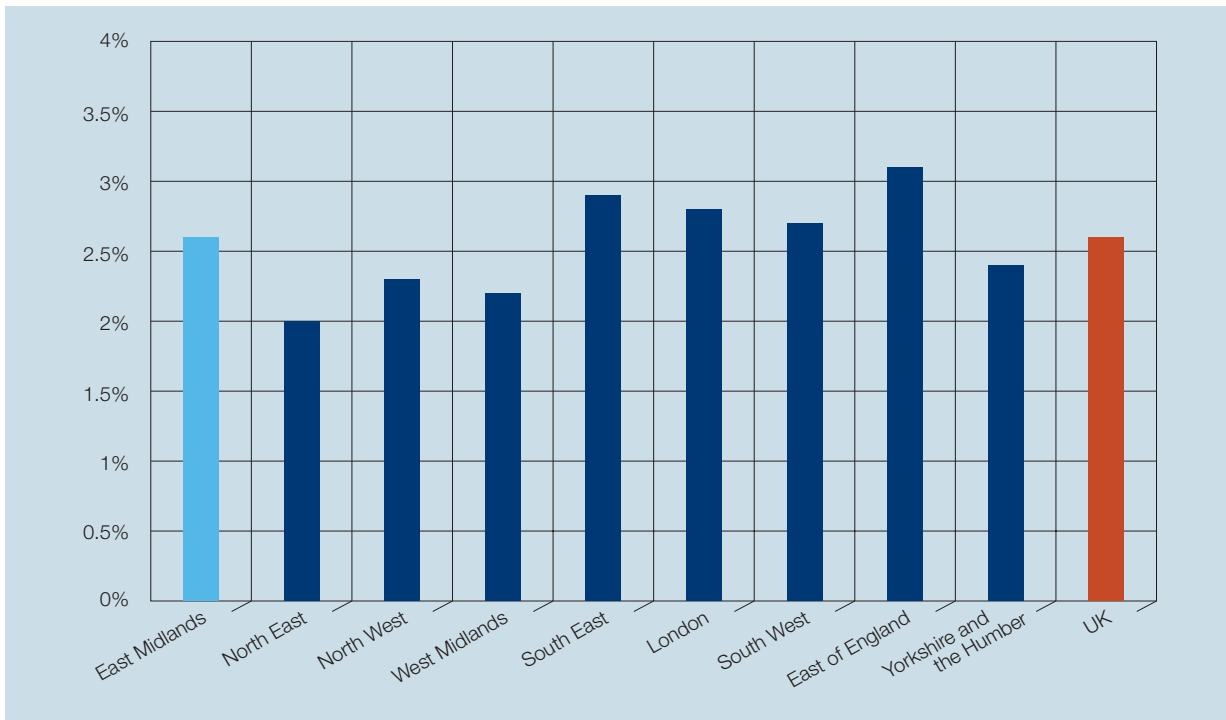
- The lowest growth, at around just 1.8% is forecast for Gedling and the highest growth, of around 3.8%pa in South Northamptonshire (reflecting the major development of the Milton Keynes-South Midlands growth area);
- A further eleven districts are forecast to experience growth of 3.0%pa or greater during the forecast period;

- In the three major cities of the region (Derby, Nottingham and Leicester) growth is expected to be at or just below the average for the East Midlands.

The forecast is for average growth of the urban areas, at 2.5%pa, to be just below the regional average. For the rural areas, average growth is forecast to be just above the regional average at around 2.8%pa during the forecast period. This is somewhat lower than in the previous five years. This forecast is illustrated in Map 2.

## CHART 20

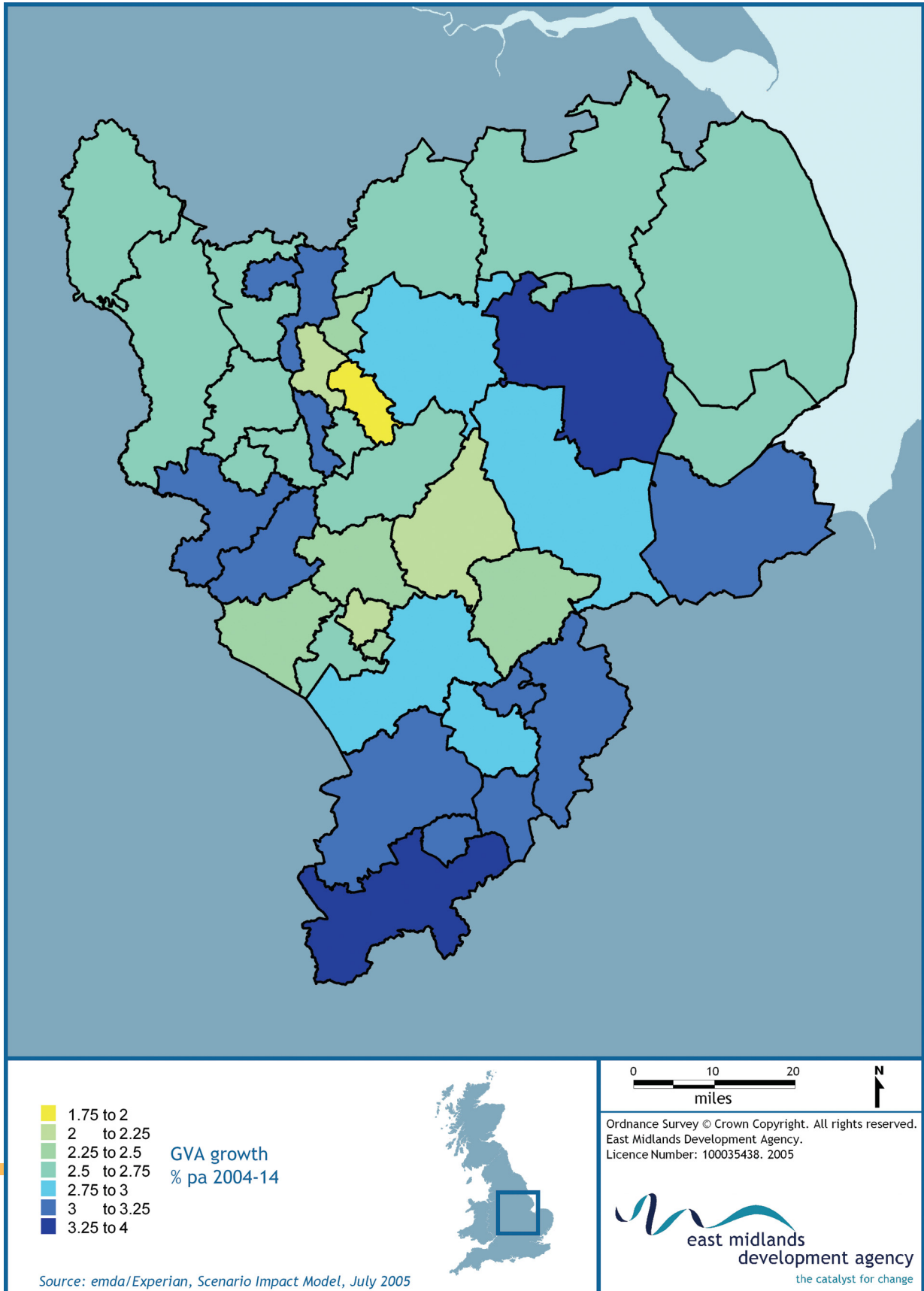
### Economic growth 2004-14 (%pa)



Source: Experian Regional Planning Service Spring 2005

MAP 2

Forecast GVA growth by district 2004-14





### 6.1.3 Economic growth scenarios

There are a number of risks to economic growth in the next few years. Chart 21 shows a high growth and a low growth scenario, along with our baseline scenario for the East Midlands. Again, these high and low growth scenarios are not statements of fact or aspiration, but rather are alternative paths that the economy may take in the short to medium term. The high and low growth macroeconomic scenarios are presented to illustrate the uncertainties around the performance of the UK economy and how they could impact on the East Midlands. Subsequent detailed analysis will focus on the baseline and RES 'policy on' scenarios.

#### 6.1.3.1 Macroeconomic scenarios

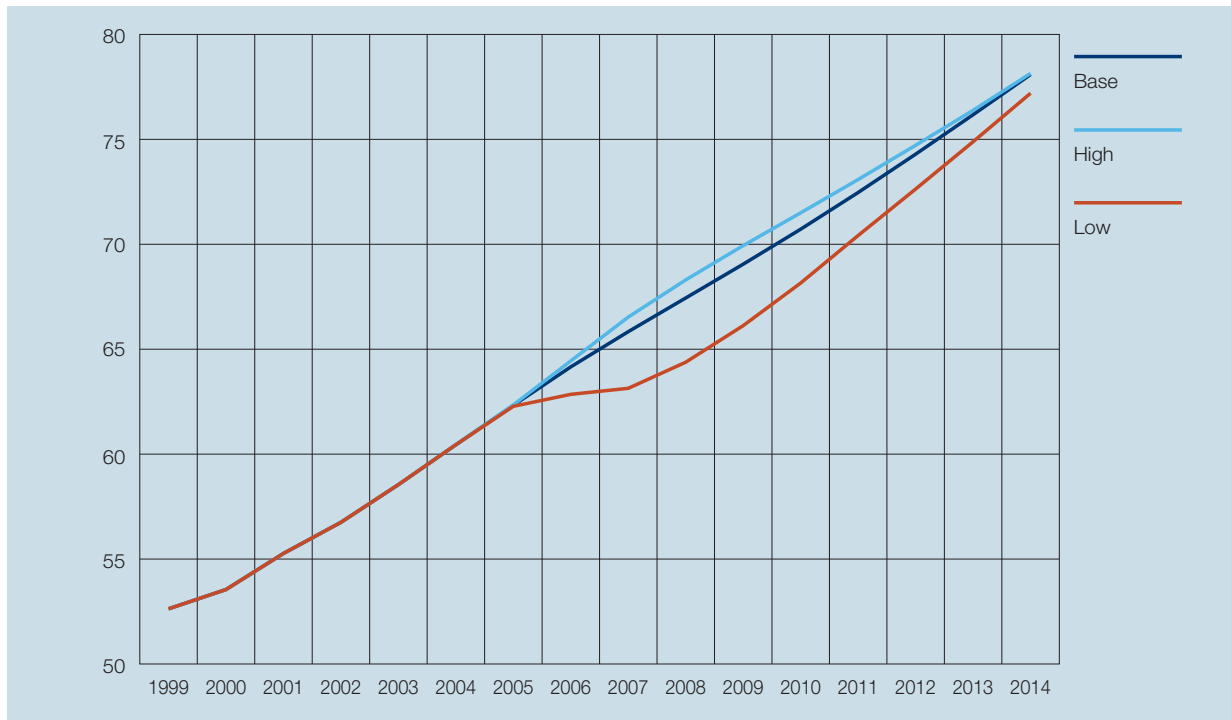
Risks to economic growth on the downside include rising oil prices, slowing consumer expenditure and a rapid slowdown in the housing market. For the purposes of this exercise we have modelled a downside scenario based on an oil price shock, where the price of oil rises to

\$90 per barrel in the latter half of 2006, with residual effects into 2007. This is shown as the low growth scenario in the chart. Our scenario models the impact through weaker world growth and the monetary policy transmission mechanism – as the oil price rise feeds into inflation the Bank of England's Monetary Policy Committee increases interest rates but, as is the historical experience, overshoots and this exacerbates the slowdown.

Risks to economic growth on the upside are much lower but evidence shows that the US economy is continuing to grow at a rapid rate despite the risks associated with its large budget and current account deficits. In our upside scenario we have modelled a stronger than expected US growth rate for years 2006/07. This is the high growth scenario in the chart. As the USA is a key export market of the UK, any increase in US demand translates into additional demand for UK produced goods and services and, therefore, provides a boost to growth in this country.

## CHART 21

Macroeconomic growth scenarios in the East Midlands (£ billion GVA)



Source: Experian Business Strategies, July 2005

The chart clearly shows that the impact of the oil price shock is much more significant than the impact of higher US growth in the next two years. Under the low growth scenario:

- In the short term – which we define to be 2005/06 – economic growth, at 0.9%, is significantly lower than in the baseline forecast of 2.9% for this period. In the medium term, between 2005 and 2010, average growth is 1.8%pa, which is also significantly below the baseline of 2.6%pa for this period. In the long term growth rates move back towards the baseline;
- For the period 2004 to 2014 a total of £18.4 billion of GVA is foregone in the East Midlands under the low growth scenario compared to the baseline;
- There are other impacts associated with the oil price spike in the East Midlands, most notably on employment and unemployment levels. In the medium term the unemployment rate would be 3.6 percentage points above current levels and by 2014 under the low growth scenario FTE employment is forecast to be 29,000 lower than the baseline. This is a much more severe impact than for the UK and reflects the structure of the East Midlands economy and its relatively large production sector.

Under the higher growth scenario:

- In the short term, economic growth increases to 3.4%pa in the East Midlands (which is 0.5 percentage points above the baseline) and 2.8%pa in the medium term (which is 0.2 percentage points above the baseline). As with the low growth scenario, in the long term the scenario converges with the baseline;
- Under this scenario, for the period 2004-14 the forecast is for an additional £4.8 billion of GVA over and above the baseline;
- There is a more positive, but marginal, labour market outcome under this scenario. By 2014 the forecast is for 3,000 more FTE jobs than the baseline.

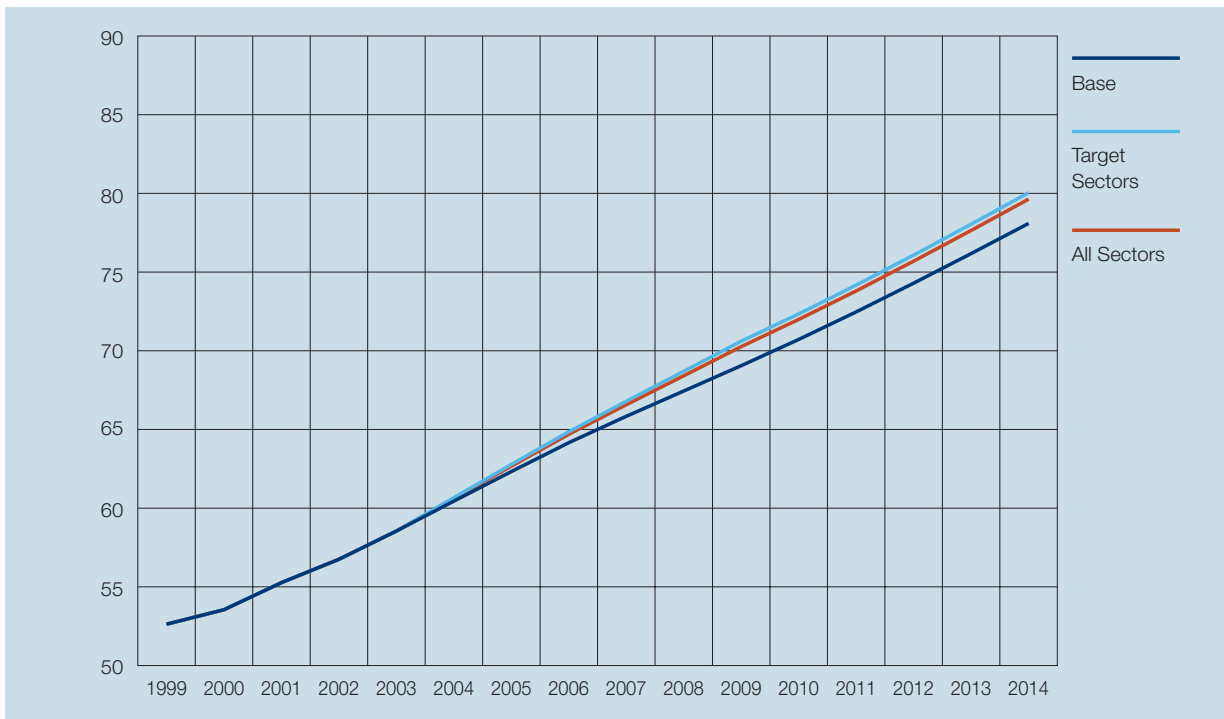
#### 6.1.4 RES policy on scenario

Chart 22 shows the RES 'policy on' scenarios along with the baseline. Two alternative ways of achieving RES objectives are shown. Both are based on full implementation of the MKSM growth area and on the target of increasing levels of productivity to the UK average by 2009, the end of the lifetime of the new RES. However the 'All Sectors' scenario is based on across the board increases in productivity by sector while the 'Target Sectors' scenario is based on closing the productivity gap through productivity improvements in those four sectors – Transport Equipment, Food & Drink, Construction and Health – that have been identified as regional priorities in the new RES.

Our scenarios suggest that meeting the RES productivity target will generate £11-14 billion of additional GVA between 2004 and 2014

## CHART 22

### RES policy on scenarios in the East Midlands (£ billion GVA)



Source: Experian Business Strategies, July 2005, March 2006

It is clear from Chart 22 that both of the RES ‘policy on’ scenarios have a positive outcome on the East Midlands economy:

- By 2014 the ‘Target Sectors’ scenario will have generated £14.1 billion of additional GVA over and above the baseline scenario. The figure for the ‘All Sectors’ scenario is lower, at around £11 billion of additional GVA. This suggests that returns are greater when interventions are targeted and build upon existing comparative advantage;
- Both RES ‘policy on’ scenarios have a similar profile over time with a boost to growth in the medium term and convergence with the baseline rate of growth in the long term;
- For the period 2004-14 the average annual growth rate is 2.8%pa<sup>53</sup> under the RES ‘policy on’ scenarios, compared to 2.6%pa under the baseline scenario.

The RES ‘policy on’ scenarios also impact on performance at sub-regional level. Under both of the RES ‘policy on’ scenarios growth is higher in each SSP but there are differences. Under the ‘All Sectors’ scenario growth in the Northamptonshire SSP is 0.3 percentage points higher than the baseline, which reflects the assumption of full implementation of MKSM. There are incremental increases in growth in each of the other SSPs.

Under the ‘Target Sectors’ scenario, however, the additional growth is not so evenly spread. Again, the largest boost to growth occurs in Northamptonshire as a result of MKSM but compared to the ‘All Sectors’ scenario more of the additional growth takes place in Lincolnshire, the Welland and Derby and Derbyshire SSPs. This is a reflection of the structure of those economies and the presence of significant parts of those sectors identified as regional priorities – such as Food & Drink in Lincolnshire and the Welland SSPs and Transport Equipment in the Derby and Derbyshire SSP.

<sup>53</sup>Note: The growth rate is higher under the ‘Target Sectors’ scenario than under the ‘All Sectors’ scenario, but this difference is hidden by the use of rounded figures for growth rates.

### 6.1.5 Forecast by industrial sector

It is possible to break down the scenarios by industrial sector and these are summarised in this section of the report. Table 4 shows the five sectors that are forecast to have the fastest growth in the period 2004-14.

**TABLE 4**

**Fastest growing sectors in the East Midlands and the UK 2004-14 (%)**

	East Midlands			UK	
	Baseline scenario	Target Sectors scenario	All Sectors scenario		
Communications	131.3	132.5	135.0	Communications	113.6
Business Services	79.4	80.8	81.7	Business Services	65.0
Electrical & Optical Equipment	55.4	57.5	59.2	Electrical & Optical Equipment	58.8
Health	47.1	48.5	48.0	Other Services	42.3
Banking & Insurance	43.3	44.7	46.7	Banking & Insurance	40.1

Source: *emda*/Experian Scenario Impact Model, July 2005, March 2006

There are two key points to note about Table 4. First, there is a significant degree of overlap between the fastest growing sectors in the East Midlands and the UK – four of the top 5 are common to both. Secondly, the fastest growing sectors in the three East Midlands scenarios are the same. In addition:

- The fastest growing sector in the East Midlands (and the UK) is forecast to be Communications, which is expected to more than double in size;
- The largest of the fastest growing sectors in the East Midlands is Business Services, which is forecast to grow by around 80%, which is more than is forecast for the UK;
- Electrical & Optical Equipment is the only manufacturing sector among the fastest growing sectors in both the East Midlands and UK, with expected growth of over 50% during the forecast period. Overall the manufacturing sector is forecast to grow by 13.7% in the East Midlands, slightly higher than the UK figure of 13.0%. Key manufacturing sectors such as Transport Equipment and Food & Drink are expected to grow more quickly in the East Midlands than in the UK.

The five fastest growing sectors in the East Midlands are smaller than those for the UK. They are estimated to have accounted for 23.9% of the economy in 2004, compared to 28.8% for the UK. It should also be noted that none of the five fastest growing sectors in the East Midlands are those where the region has a productivity advantage over the UK (see Chart 18).

The 'Target Sectors' scenario does impact on the relative performance of the four identified priority sectors. Under this scenario growth is almost 8 percentage points higher than under the baseline for the Transport Equipment sector, 14 percentage points higher for the Food & Drink sector and 11 percentage points higher for the Construction sector. Only in the Health sector is growth similar under all three scenarios.

Table 5 shows the slowest growing sectors in our various scenarios. There is less overlap here with the UK, reflecting the differing economic structure of the region.

**TABLE 5**

**Slowest growing sectors in the East Midlands and the UK 2004-14 (%)**

East Midlands			UK		
	Baseline scenario	Target Sectors scenario	All Sectors scenario		
Textiles & Clothing	-53.9	-53.5	-52.5	Textiles & Clothing	-21.1
Fuel Refining	-45.1	-42.4	-40.7	Oil & Gas Extraction	-17.5
Wood & Wood Products	-23.8	-21.2	-21.5	Public Administration & Defence	-4.9
Other Mining	-19.5	-17.8	-17.1	Fuel Refining	-4.0
Paper, Printing & Publishing	-10.9	-9.8	-8.5	Agriculture, Forestry & Fishing	-1.9

Source: *emda*/Experian Scenario Impact Model, July 2005, March 2006

Key points to note from Table 5 are:

- In both the East Midlands and the UK output is expected to fall in the five worst performing sectors;
- The worst performing sector at both regional and national level is Textiles & Clothing. Output is expected to halve during the forecast period in the East Midlands and fall by just over a fifth in the UK;
- With the exception of the Paper, Printing & Publishing sector, the other poor performing sectors identified in the East Midlands are relatively small;
- There is very little difference between the baseline scenarios and the RES 'policy on' scenarios.

Primary production and manufacturing industries are expected to contract in the East Midlands

None of these declining sectors are those where the East Midlands has a productivity advantage. Table 6 shows those sectors and compares growth in the East Midlands with the UK.

**TABLE 6****Growth in East Midlands productivity advantage sectors 2004-14 (%)**

	East Midlands			UK
	Baseline scenario	Target Sectors scenario	All Sectors scenario	
Agriculture, Forestry & Fishing	-9.0	-5.7	-6.8	-1.9
Minerals	11.3	13.5	13.9	2.0
Metals	4.1	5.8	6.8	-1.8
Transport Equipment	29.6	37.4	33.0	7.7
Food & Drink	30.1	44.1	33.5	8.7
Construction	27.4	38.1	30.3	23.5
Wholesaling	21.3	22.4	23.9	23.0
Hotels & Catering	28.7	29.7	30.6	22.3
Public Administration & Defence	-6.9	-6.6	-6.2	-4.9

Source: emda/Experian Scenario Impact Model, July 2005, March 2006

The table shows that regional growth is above national growth in six out of the nine sectors where the East Midlands has a productivity advantage.

## 6.2 East Midlands employment forecast<sup>54</sup>

In this section we set out the full-time equivalent (FTE) employment forecast for the East Midlands for the period 2004-14. Again, before looking at the prospects for sectors of the East Midlands economy we put total FTE employment growth in the region into context by making comparisons with the other English regions.

### 6.2.1 Recent employment performance<sup>55</sup>

Before setting out our employment forecast for the region, we briefly discuss the recent employment performance of the East Midlands. Chart 23 shows that there has been a wide range of performance over the course of the last 5 years.

- The East Midlands has been the only region where FTE employment has fallen between 1999 and 2004, with average FTE employment growth of -0.2%pa. This compares with UK growth of 0.8%pa. It should be noted that the East Midlands started this period with a very high employment rate;
- FTE employment growth was highest in the East of England, at 1.5%pa, and the South West, at 1.3%pa. Growth was also high, 1.0% or above, in the North East, North West and Yorkshire & the Humber;
- Notably, FTE employment growth was below average in London, reflecting the relatively poor economic performance of the capital during this period.

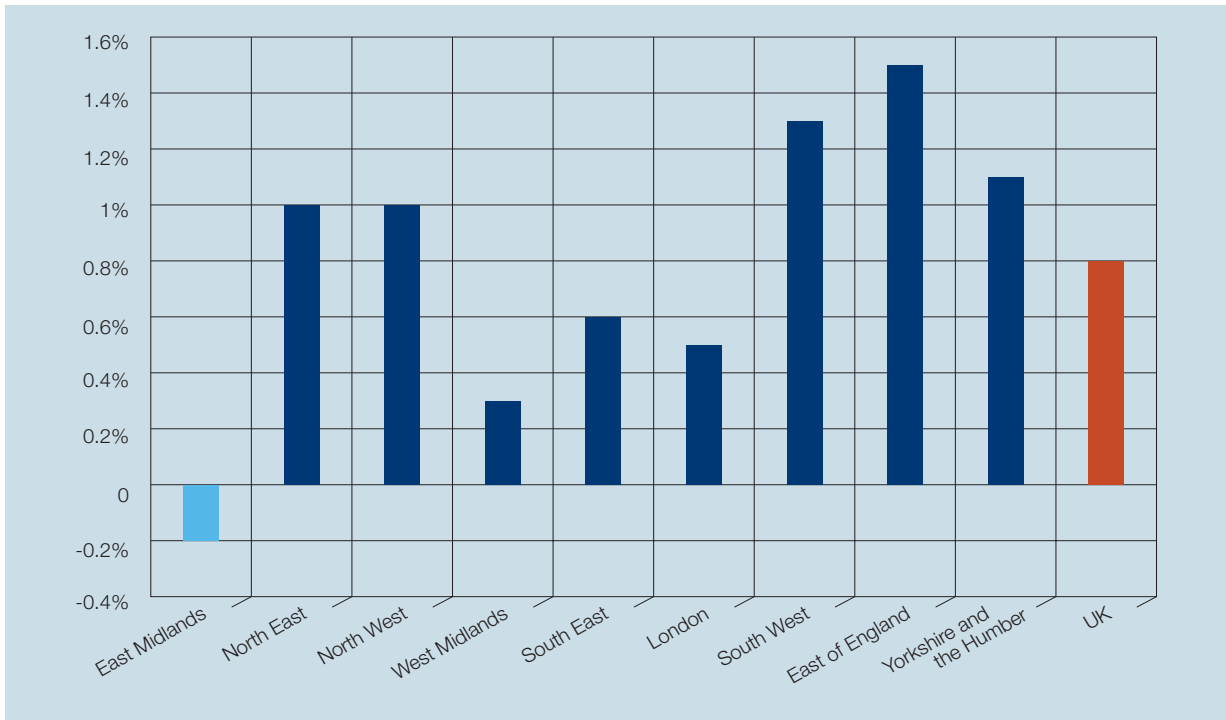
Within the region employment growth was positive in the Lincolnshire, Northamptonshire and the Welland SSP areas. Employment remained stable in the Leicester Shire SSP area but fell in the Greater Nottingham, Alliance and Derby & Derbyshire SSP areas. Our data suggest that employment fell in the urban areas, at the rate of -0.5%pa, between 1999 and 2004. This contrasts with growth of around 0.2%pa in the rural areas of the region.

<sup>54</sup>All forecast employment data presented in this paper is in terms of full-time equivalent employment. This is equal to the sum of full-time employees, the self employed and 0.4\* part-time employees.

<sup>55</sup>The employment forecasts presented in this chapter are different from those in Section 3 of *The East Midlands in 2006: The East Midlands Labour Market*. This contains data from Working Futures, which is based on the Cambridge Econometrics suite of models. The Working Futures forecasts contain data on the occupational breakdown of employment across the English regions and allows for a discussion of the skill requirements of employment in a way that is not possible with the model used in this section of the evidence base.

**CHART 23**

**FTE employment growth 1999-2004 (%pa)**



Source: Experian Regional Planning Service Spring 2005

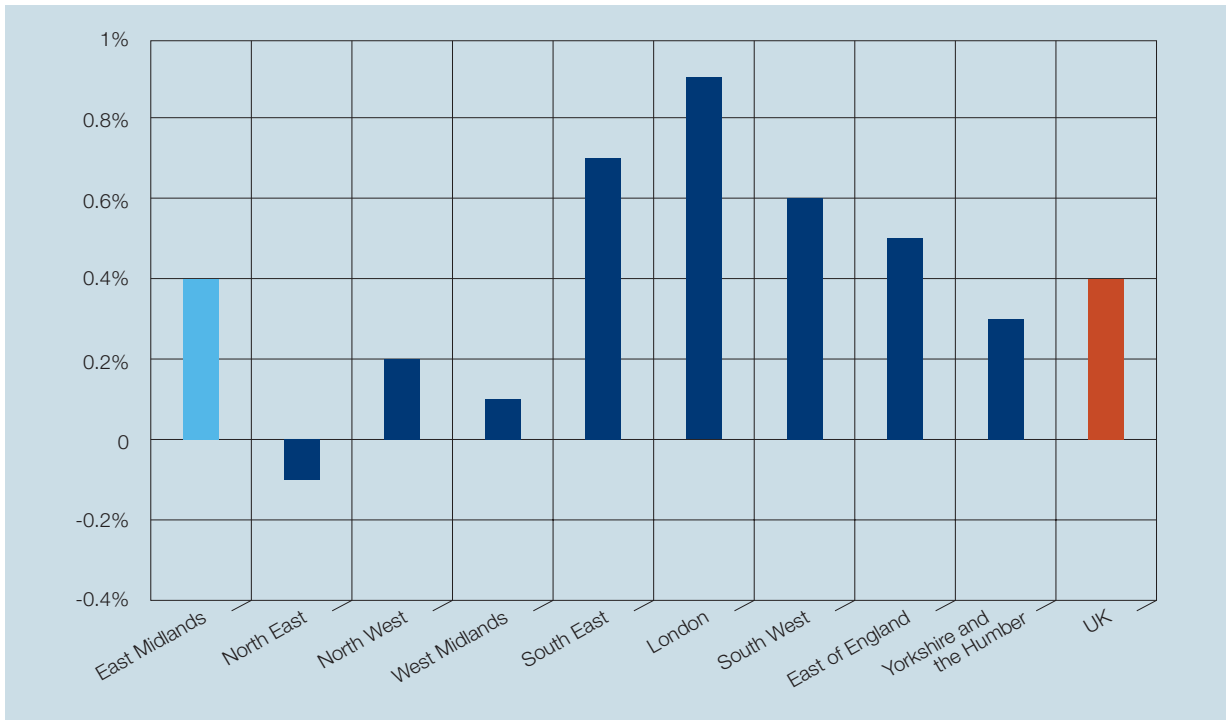
**6.2.2 Employment forecast for the next decade**

The baseline scenario for FTE employment growth reflects the forecast for economic growth outlined above:

- The forecast of FTE employment growth of 0.4%pa in the East Midlands is in line with the forecast for the UK;
- FTE employment growth is forecast to be highest in the south of the country: 0.9%pa in London, 0.7%pa in the South East, 0.6%pa in the South West and 0.5% in the East of England. This strong growth is underpinned by expectations of continuing population movements into these areas;
- In contrast, employment is forecast to decline by 0.1%pa in the North East and to grow by just 0.2%pa in the North West and 0.1%pa in the West Midlands.

## CHART 24

### Total FTE employment growth by region 2004-14 (%pa)



Source: Experian Regional Planning Service Spring 2005

Within the East Midlands the forecast for FTE employment growth is above the average for the East Midlands (and the UK) in the Lincolnshire, Northamptonshire and the Welland SSP areas. Employment growth is expected to be at or below average in the Greater Nottingham, Alliance and Derby & Derbyshire SSP areas. Employment is forecast to remain largely unchanged in the Leicester Shire SSP area. At local authority district level:

- Employment is forecast to contract in three districts – Leicester, Gedling and Ashfield. The most significant contraction is forecast for Leicester where employment is forecast to decline by -0.4%pa;
- The highest employment growth rate is forecast for South Northamptonshire, at 1.5%pa. Growth is also expected to be above 1.0%pa in South Derbyshire and North Kesteven.

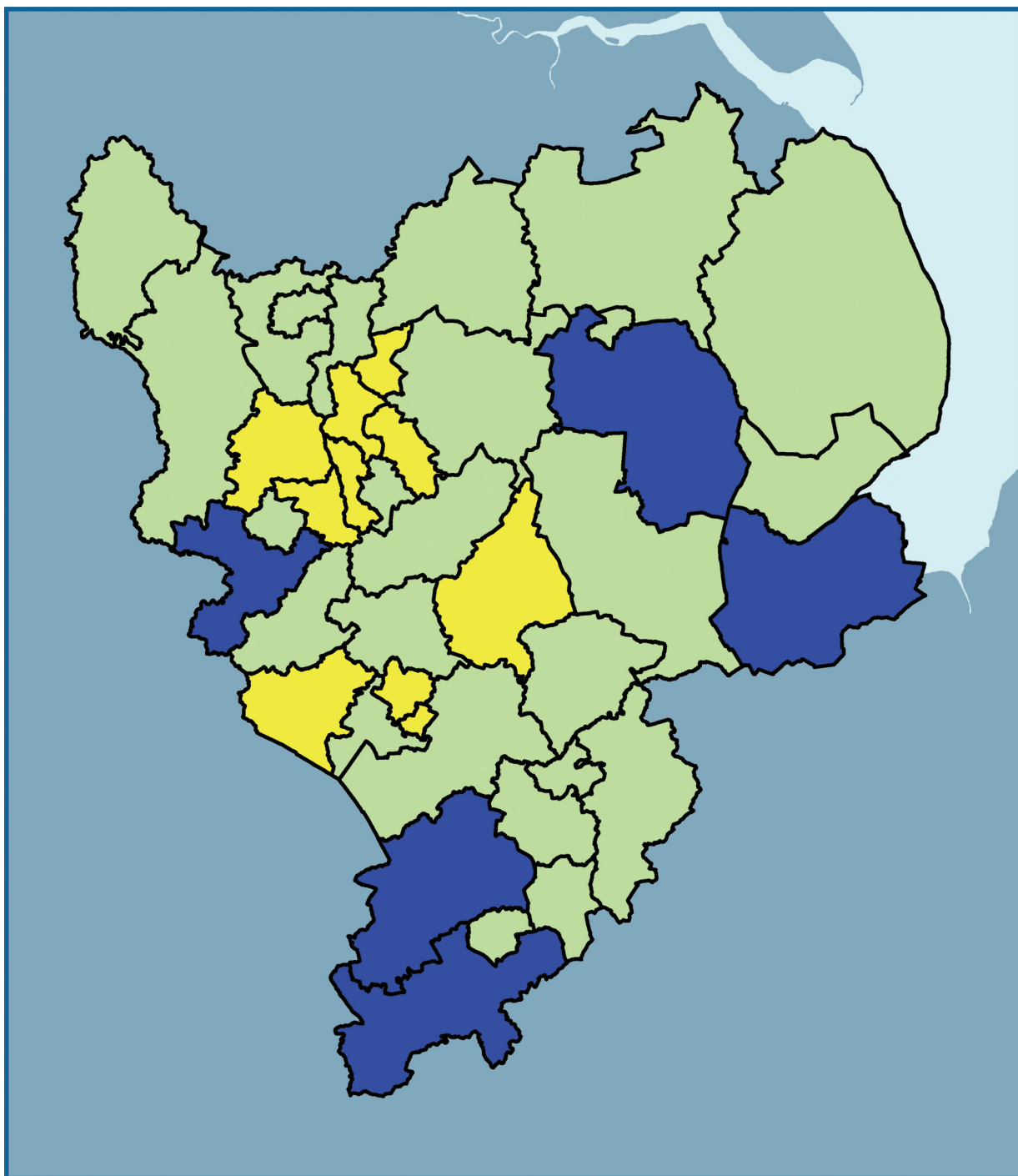
In the urban areas the employment forecast is for growth of 0.2%pa. While this is below the regional average it is higher than the estimate for the period 1999-2004. In contrast, average growth in employment in the rural areas is forecast to be around 0.6%pa, which is higher than the regional average. This forecast is illustrated in Map 3.

East Midlands employment growth is forecast to be in line with the UK average



MAP 3

FTE employment growth 2004-14



- -0.5 to 0.25 FTE Employment Growth
- 0.25 to 0.75 % pa 2004-14
- 0.75 to 1.5



Ordnance Survey © Crown Copyright. All rights reserved.  
East Midlands Development Agency.  
Licence Number: 100035438. 2005



Source: emda/Experian, Scenario Impact Model, July 2005

The baseline scenario for the East Midlands represents an absolute increase in employment of around 63,000 FTE jobs between 2004 and 2014. However there are differences between this baseline scenario and RES 'policy on' scenarios, as shown in Chart 25;

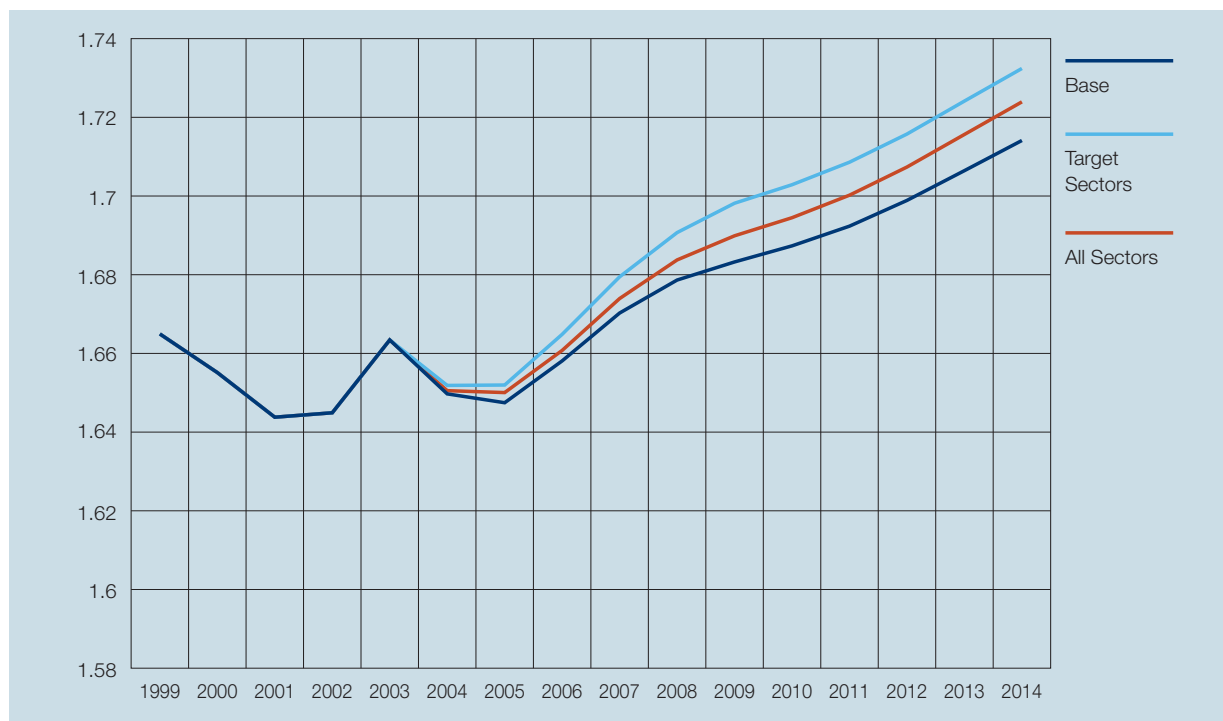
- Under the Target Sectors scenario total employment growth between 2004 and 2014 is almost 79,000 FTEs, a growth rate of 0.5%pa (which is 0.1 percentage points faster than the baseline scenario). By 2014 FTE employment is almost 18,000 FTEs higher than the baseline;

- Under the All Sectors scenario total employment growth between 2004 and 2014 is almost 72,000 FTEs, a growth rate of 0.4%pa. By 2014 FTE employment is around 9,500 FTEs higher than the baseline.

The RES 'policy on' scenarios generate higher FTE employment growth than the baseline scenario. As with the scenarios showing output growth, FTE employment is higher than the baseline scenarios across all of the SSP areas. Under both scenarios, FTE employment growth is highest in Northamptonshire, followed by Lincolnshire and the Welland SSP areas.

### CHART 25

#### RES 'policy on' scenarios in the East Midlands (million FTE)



Source: emda/Experian Scenario Impact Model July 2005, March 2006

### 6.2.3 Sectoral employment prospects

This sub-section shows how the scenarios break down by industrial sector, highlighting the key growth sectors and those where employment decline is expected to be most significant.

Table 7 shows those sectors that are forecast to have the most significant employment growth in the period 2004-14. The similarity in the list of high employment growth sectors between the East Midlands and the UK is notable – four sectors appear in both lists, though not necessarily in the same order. At both regional and national level there are only five sectors with double digit FTE employment growth forecast during the next decade:

- The fastest growing sector in the East Midlands is forecast to be Business Services. Growth of around 31-32% is forecast for the East Midlands under each of our three scenarios, compared to around 21% for the UK. This increase in the East Midlands is equivalent to 59,000-61,000 FTE jobs and is by far the largest absolute increase in the forecast. Around 40% of these will be created in the Greater Nottingham and Leicester Shire SSP areas;
- The Communications sector is expected to grow by 28-29% in the East Midlands under each of the three scenarios. This is an increase of almost 8,000 FTE jobs (almost one third of which are expected to be created in the Leicester Shire SSP area). This is the third fastest growing sector nationally. In the case of both Business Services and Communications the faster growth rates forecast for the East Midlands are catch-up as the structure of the East Midlands economy continues to move towards that of the UK;
- The Health sector is likely to continue to benefit from high levels of government expenditure. The forecast is for employment growth of between 16% and 18% in the East Midlands under the three scenarios during the forecast period (compared to 13.3% for the UK). This is equivalent to between 25,500 and 29,000 FTE jobs. Around 40% of these are expected to be created in the Lincolnshire and Leicester Shire SSP areas. The Health sector is the only sector where FTE employment is expected to be lower under the RES 'policy on' scenario. This is because an increase in productivity in this sector is less likely to result in a more competitive sector that is more able to compete in export markets and increase market share and employment. Health care services are less likely to be exported so that productivity gains in this sector lead to job losses;
- Other Services (which includes activities of membership organisations, and recreational, sporting and cultural activities) is forecast to grow at between 16% and 17% in the East Midlands (which is 13,000-14,000 FTEs). Other Services is forecast to have the fastest growing employment in the UK economy during the next decade;
- Although rates of growth are slower, significant numbers of jobs will be created in the Construction (10,000-14,000 FTEs) and Education (9,000-10,000 FTEs) sectors in the East Midlands;
- It should be noted that three of the fastest employment growth sectors are also identified in Table 7 as being among the fastest output growth sectors.

**TABLE 7**

**Fastest growing sectors in the East Midlands and the UK 2004-2014 (FTE)**

East Midlands			UK	
Baseline scenario	Target Sectors scenario	All Sectors scenario		
Business Services 31.4%	Business Services 32.3%	Business Services 31.5%	Other Services 23.2%	
Communications 28.2%	Communications 28.8%	Communications 28.8%	Business Services 20.8%	
Health 18.1%	Other Services 16.7%	Health 17.5%	Communications 18.3%	
Other Services 15.9%	Health 16.1%	Other Services 16.5%	Health 13.3%	
Hotels & Catering 10.3%	Hotels & Catering 11.1%	Hotels & Catering 10.6%	Education 10.1%	

Source: emda/Experian Scenario Impact Model July 2005, March 2006

Table 8 shows the five slowest growing sectors, or more accurately, those sectors that are forecast to experience the fastest declines in employment. Again there is a degree of overlap between the East Midlands and the UK with three sectors appearing in both lists. It is also notable that production sectors account for the five sectors showing the greatest forecast falls in employment. Overall, the manufacturing sector is forecast to experience a decline in employment of around 15% in the East Midlands (the same as the UK), which is a loss of 47,700 jobs. Table 8 shows that:

- The declining sectors in the East Midlands are forecast to decline at a more rapid rate than the UK sectors;
- Textiles & Clothing is expected to experience the fastest decline in employment. Our forecast is for a decline in employment of around 62% (-18,500-19,000 FTEs) during the forecast period. More than one third of these jobs are expected to be lost in the Leicester Shire SSP area. The sector will continue to contract as market share in low cost low value added products is lost to more competitive locations;
- Although Fuel Refining has the second most rapid rate of employment decline it is a very small sector in the East Midlands;
- The Other Mining sector is forecast to experience further job losses, even though it is a fraction of the size that it once was. Employment is forecast to decline by almost 40% in the East Midlands, a loss of around 1,700 jobs. Around 90% of these jobs will be lost in the Alliance and Derby & Derbyshire SSP areas;
- Employment is forecast to fall by more than one third in the Wood & Wood Products and Gas, Electricity & Water sectors in the East Midlands. Each of these sectors is forecast to lose over 3,000 FTEs during the forecast period. However this does not take into account any positive impact in the region associated with the recent announcement of an upgrade to the national grid;
- Although the rates of decline are slower significant numbers of jobs are also forecast to be lost in the Public Administration & Defence (around -8,000 FTEs), Paper, Printing & Publishing (-8,000 FTEs), Agriculture, Forestry & Fishing (around -5,500 FTEs, particularly in the Lincolnshire SSP area), Rubber & Plastics (a loss of around 4,500 FTEs), and Machinery & Equipment (-4,500 FTEs) sectors.

It should be noted that four of the slowest employment growth sectors are also identified in Table 5 as being among the slowest output growth sectors. However, the decline in employment is forecast to be greater than the decline in output, which suggests improved productivity among those who remain in these sectors.

**TABLE 8**

**Slowest growing sectors in the East Midlands and the UK 2004-2014 (FTE)**

East Midlands						UK	
Baseline scenario		Target Sectors scenario		All Sectors scenario			
Textiles & Clothing	-62.3%	Textiles & Clothing	-62.0%	Textiles & Clothing	-61.6%	Textiles & Clothing	-40.1%
Fuel Refining	-42.9%	Fuel Refining	-38.6%	Fuel Refining	-37.6%	Gas, Electricity & Water	-27.1%
Other Mining	-38.6%	Other Mining	-37.3%	Other Mining	-37.5%	Other Mining	-24.4%
Wood & Wood Products	-38.6%	Wood & Wood Products	-36.5%	Wood & Wood Products	-37.5%	Transport Equipment	-23.8%
Gas, Electricity & Water	-36.1%	Gas, Electricity & Water	-34.8%	Gas, Electricity & Water	-35.4%	Rubber & Plastics	-23.1%

Source: emda/Experian Scenario Impact Model July 2005, March 2006

# Summary

## 1. Introduction

This chapter assesses economic conditions in the East Midlands. It makes use of the Government's five drivers of productivity framework, examines the industrial structure of the region and presents a number of scenarios for the next ten years.

## 2. & 3. Productivity

Despite making progress during the last decade, there is still a productivity gap between the UK and its major competitors in the developed world:

- Workers in Germany and the USA produce 6% and 17% respectively more output per hour than their UK counterparts;
- The most productive of the major developed economies is France, where output per hour is 20% higher than in the UK.

There are significant differences in productivity within the UK:

- In 2004 output per hour worked in the East Midlands was 98.5% of the UK average, and the gap has been closing since 1999;
- On this measure the East Midlands is ranked fourth among the English regions behind London, the South East and the East of England.

## 4. Drivers of productivity

The Government has identified five drivers of productivity: investment, innovation, skills, enterprise and competition. Skills is covered extensively in Section 3 of *The East Midlands in 2006: The East Midlands Labour Market*.

## Investment

Investment is important because increasing the quantity and quality of capital available means a worker is able to produce more output. The data shows that levels of investment by companies in the East Midlands are lower than average and that there is a distinct sectoral split: levels of investment by manufacturing companies are above average but are relatively low in the service sector. This is a source of concern given that forecasts for growth are fastest in the service sector during the next decade.

## Innovation

Innovation can be described as the successful exploitation of new ideas – either new products or new processes, which may be new to the economy or new to an individual firm. It is essential if an economy is to remain competitive and standards of living are to increase. The available data paints something of a mixed picture for the East Midlands. Levels of research and development (R&D) are relatively high but appear to be concentrated in a small number of large global R&D intensive companies, and there is a long tail of companies who undertake very little or no R&D. Government and higher education funded R&D is relatively low in the East Midlands. Outcomes from innovation activity also appear to be relatively low as the proportion of turnover attributed to new or improved products is below average in the region.

## Enterprise

Enterprise is important because it increases competition and provides an incentive for new products and processes. As well as start up activity, enterprise can also take place within existing businesses. Levels of total entrepreneurial activity in the region have increased since 2002 while the VAT business registration rate, though increasing, remains below the UK average. The East Midlands has improved its relative position in recent years.

## Competition

Competition is important because it encourages companies to become efficient and to innovate. The more efficient regulatory systems are and the stronger the competition regime, the more efficiently the economy works. Exporters will be more exposed to competitive pressures and the data suggest that in the East Midlands exports account for a greater share of economic output than any other English region apart from the North East.

In terms of these drivers of productivity, the East Midlands has areas of strength and weakness. Because of the complex linkages between the individual drivers, regional policy aimed at any one will impact on all.

## 5. Industrial structure of the East Midlands

The industrial structure of the East Midlands is likely to be a key determinant of what has been termed adaptive capability – the ability of the region to respond to external forces and to generate new paths of development from within and avoid getting locked into a path of relative economic decline.

There were over 125,000 VAT registered businesses in the East Midlands at the beginning of 2005. The VAT registered business stock has increased by around one eighth between 1994 and 2005 and there has been a decline in the number of businesses in production activities and an increase in the number of businesses in the service sector during this period.

The data show that the manufacturing sector in the East Midlands accounts for 23.2% of economic output, which is well in excess of the UK average of 15.9%. Key manufacturing sub-sectors in the region include Food & Drink and Transport Equipment. The service sector is correspondingly relatively smaller than average in the region. The Business Services sub-sector does, however, account for a tenth of economic output in the region.

There are a number of sectors in the region with productivity levels above the UK average. These include: Agriculture, Forestry & Fishing, Minerals, Metals, Transport Equipment, Food & Drink, Construction, Wholesaling and Hotels & Catering.

Based on a number of criteria the new RES has identified Transport Equipment, Food & Drink, Construction and Health as priority sectors in the East Midlands.

## 6. Future prospects for the East Midlands economy

Our base scenario is for economic growth in the East Midlands of an average of 2.6%pa for the period 2004-14, which is in line with the UK average. Employment growth is expected to be 0.4%pa during the same period, also in line with the UK average. The fastest growing regions in the country are expected to be London, the South East and the East of England.

There are a number of risks to this baseline. In our downside macroeconomic scenario, which is based on an oil price spike of \$90 per barrel in 2006, economic growth would fall to just 0.9% in the short term in the East Midlands before increasing towards the baseline figure in the long term. This would lead to a significant loss of potential output and would have a significant impact on the labour market, a reflection of the industrial base of the East Midlands economy.

Our upside macroeconomic scenario, which is based on continuing strong growth in the USA, would be for growth of 3.4% in 2005/06 before converging on the baseline in the longer term. There would be additions to potential output and employment under this scenario but these would not be of the same magnitude as the losses under the downside scenario.

Our RES 'policy on' scenario, which is based on full implementation of the MKSM growth area plan and the East Midlands achieving UK levels of productivity during the lifetime of the new RES, suggests economic growth of 2.8%pa for the period 2004-14. This is 0.2 percentage points per annum above the baseline scenario.

Significant differences are forecast by sector in the region. The fastest growing sectors in the region are expected to be: Communications, Business Services, Electrical & Optical Equipment, Health and Banking & Insurance. The slowest growing sectors in the region are forecast to be: Textiles & Clothing, Fuel Refining, Wood & Wood Products, Other Mining and Paper, Printing & Publishing.