SOUTH EAST ENGLAND DEVELOPMENT AGENCY

Working for England's World Class Region

Regional Economic Strategy: A Review of International Performance & Benchmarking

Draft Final Report

South East England Development Agency (SEEDA)

April 2006

Deloitte.

Contents

Deloitte.

1. Summary Findings

1.1 The main conclusion emerging from the research is that the South East has:

- An efficient labour market, which utilises available human resources better than most regions;
- A highly productive economy, yet one which trails the leading European and global regions by a considerable margin in terms of productivity; and
- GDP per capita also trailing leading European and Global regions.

1.2 Given that the labour market performs so well relative to other regions, the lower GDP per capita is primarily due to the productivity gap.

1.3 Of the drivers of economic performance, the relative performance of the South East is summarised below:

1.3.1 **Employment** – within Europe the South East ranks first in terms of the proportion of population participating in the labour force and population in employment.

1.3.2 **Skills** – skills in the South East, as measured by level of qualifications are high. Compared to the rest of Europe, the South East has a high proportion of its workforce educated to degree level and a very small proportion educated to a minimum standard. However, UK research suggests that the South East suffers in the same way as the rest of the UK from skills deficiencies. This is especially true with regard to the way skills are used in the workplaces. Supply of skills is important, but what is more important is how skills are used in the workplace.

1.3.3 **Innovation** – whilst the South East ranks highly on R&D expenditure, employment in this sector is lower than many other regions. This may be indicative of the type of high-value added R&D activity prevalent in the region. There is also a sizeable gap in terms of patent applications between the South East and leading regions such as Zuid Nederland.

1.3.4 **Investment** – amongst OECD nations, the UK is characterised by low levels of investment relative to output, although UK regional statistics suggest that the South East is a national leader on this measure. However, data is acknowledged to be very volatile such that any interpretation has to be made with care.

1.3.5 **Enterprise** – the Global Entrepreneurship Monitor (GEM) suggests that the proportion of adults engaged in entrepreneurial activity in the UK is around half that seen in the US. Whilst the South East exceeds the UK average by some margin, it still trails many average US regions on this measure.

1.3.6 **Competition** – competition is difficult to measure on a regional basis other than using aggregate measures. The Deloitte Competitiveness Index (DCI) is a new ranking based on key drivers of wealth creation – innovation, enterprise, investment, skills and macroeconomic data. This recently identified the UK as 6th most competitive of the 25 leading nations. The World Economic Forum, however, placed the UK in 13th position in 2005 from 117 economies.

1.4 There are a number of issues around the reliability and focus of data used in the analysis, which receive further coverage in the main body of the report. The quality of associated data and variations in results from alternative indicators mean that it is difficult to prescribe a single key contributor to underperformance in productivity. In reality it is the way in which the drivers interact that determines productivity, rather than in isolation.

1.5 The research attempted to conduct meaningful international analysis for environmental, social exclusion, and investment data although the lack of comparable data prevented this.

1.6 A prospective reason for the gap not covered adequately in the skills indicators is managerial inefficiency. Managers in the South East may not be skilled enough to get the same product from the same resources as managers in the US. Research is currently being conducted into this field.

1.7 Forecasts suggest that productivity growth in the South East is likely to be stronger than most of its key European competitors over the next decade, and would thus result in a closing of the productivity gap. However, nations such as Japan are projected to see fast-ageing populations. For them the incentive to innovate and maintain prosperity may be greater than areas where labour is more abundant.

1.8 The report also identifies regions that perform exceptionally well in terms of innovation, skills and investment. These are:

- Manner Suomi (Uusimma) – Innovation and business links
- Zuid Nederland – Innovation;
- Hartford – Productivity & Skills; and
- Ireland – Inward Investment;

1.9 Zuid Nederland represents a major concentration of R&D activity in Holland. Recent initiatives employed with a view to enhancing and preserving the regions dominance in Europe includes a joint venture with Pudong province in China. This venture aims to allow R&D collaboration between the two regions but also confers access to a rapidly expanding market.

1.10 Hartford and the Connecticut knowledge corridor have undergone a significant transformation since the early 1980s. Moving from below US average productivity per worker to the national leader in the short space of 20 years, was built around the knowledge economy. The area has a significant concentration of educational establishments and students, as well as advanced programmes of student participation in business.

1.11 Ireland has long been a major destination for FDI in Europe. Much of this is due to a low-cost/low-tax base that the South East would be unable to emulate. However, Ireland has managed to buck the downward trend in manufacturing employment in Western Europe by attracting FDI from firms engaging in high-value added manufacturing activities.

1.12 Whilst Ireland is holding onto its low tax base it is struggling on cost terms with Eastern European and Far Eastern economies. Yet, it still manages to

retain a large share of US FDI on the basis of an English speaking workforce, EU membership, and cultural ties.

2. Introduction & Strategic Context

RES priorities

2.1 SEEDA are seeking to identify and quantify differences in economic performance with other European and Global Regions. As well as identifying the performance gap with key European and Global regions, SEEDA is seeking to identify the causes of such gaps and what can be done in the region to improve economic performance.

2.2 A revised Regional Economic Strategy (2006-2016) will be published in early 2006. The draft consultation document identifies the following key priorities:-

- Employment
- Enterprise
- Innovation and Creativity
- Skills
- Competition and business regulation
- Investment in infrastructure

2.3 In view of these priorities, this document compares the South East with other global regions and nations to highlight how the South East is performing on a number of associated indicators. It goes on to identify key areas in which the South East could improve, the regions leading the way in those areas and how they themselves address the associated issues.

2.4 The study is comprised of two elements: quantitative analysis and qualitative research.

2.5 Qualitative element ranked the South East against international regions in terms of:

- GVA per head
- Productivity
- Employment rates
- Economic inactivity rates
- Skills

2.6 The study also explored to benchmark regional performance on environmental, social exclusion, international trade, foreign direct investment and gross capital formation indicators. However, the data at regional level for these indicators is not available.

2.7 The qualitative element highlights the best practice examples and learning points for the South East in terms of:

- Productivity (especially enterprise and innovation)
- University business links
- Economic strategy-making
- Delivery mechanisms for economic development

2.8 In addition to that, raising the employability of marginalised groups was also explored but there is very limited information available from public sources on this issue.

3. Benchmarking the South East Internationally

3.1 This section considers the available evidence on the South East of England's economic standing in comparison to other major European and global regions.

3.2 Where international comparisons are not possible on a regional basis the report refers, where appropriate, to national level data.

3.3 In the main data comes from the following key sources:

- ONS
- Eurostat – REGIO Database
- OECD
- Robert Huggins Associates
- Experian

3.4 The available data can be split into three distinct categories:

- That which is easily available for comparison of regions across countries;
- that which is available domestically but not on a regional basis abroad; and
- That for which reliable information is hard to come by either via the ONS or foreign statistical organisations.

SOME CONSIDERATIONS WHEN BENCHMARKING

3.5 Care must be taken in the interpretation of comparators, especially when the difference between the South East and the comparator region is minor. Even when the selected variable is measuring exactly the same thing across national boundaries, it may be the case that sampling methods and associated accuracy have a bearing on the result.

3.6 The interplay of economic drivers determines output rather than each individual driver separately. Statistically each has to be considered separately but the way these interact is crucial and this interaction cannot be measured, other than through total performance. The low-skills/low-investment paradigm is an example of this. If workers in a region have low skills, investment may be low as firms seek to invest in areas where their capital can be put to better use. If this is the case skills not only contribute to productivity but increase the likelihood of investment, which will also improve productivity.

3.7 There is a need to compare like with like in international comparisons. The fairest of benchmarks are thus with regions in those countries exhibiting similar characteristics to the UK and the South East - in other words regions of developed rather than developing countries. That is not to say that emerging regions cannot provide examples of best practice and ideas for

change, rather that they are operating under conditions that differ significantly from the South East.

3.8 Equally there are issues around the role of regions in the wider economy. This is particularly true for the South East of England, which is an economic powerhouse in its own right but also fulfils a role as a hinterland to London. When comparing the South East to many of the leading international regions, it is important to recognise whether the regions involved fulfil a capital or major city role, or one of a hinterland.

THE DELOITTE CONCEPTUAL FRAMEWORK OF LONG-TERM ECONOMIC GROWTH

3.9 Deloitte has prepared a conceptual framework to highlight key interactions between contributors to long-term economic growth. This also serves to highlight the type of data available that can be used to assess the aforementioned contributors. The schematic overleaf presents the Deloitte conceptual model of long-term economic growth.

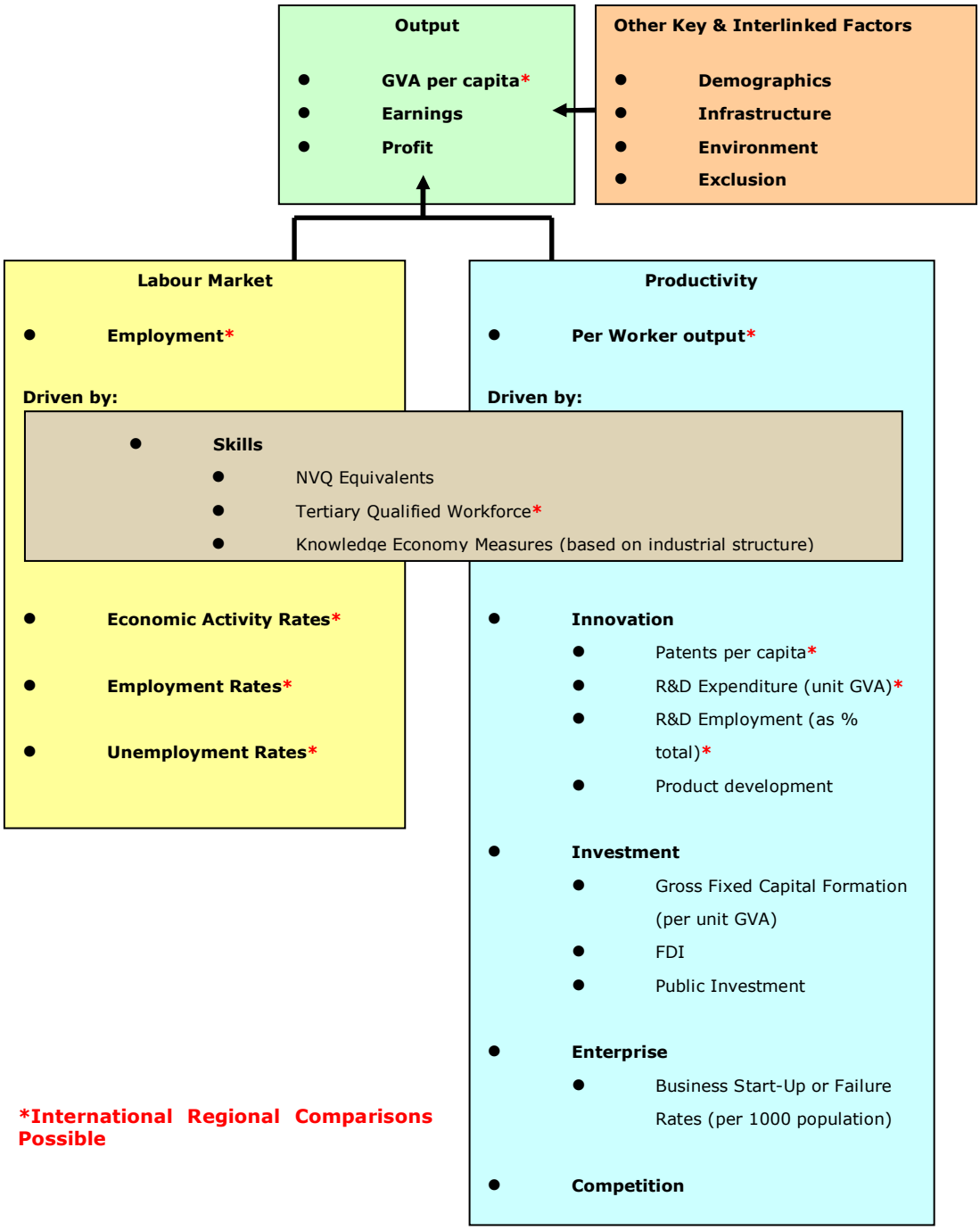
3.10 Output, earnings and profit are the end result of the production process. Working backwards the model identifies the factors contributing to growth in the long run, namely: the amount of available people engaged in productive activities through the labour market and the level of productivity these workers display.

3.11 Of course there are other interlinked factors that contribute to result from interactions in the labour and product markets, including demographics, infrastructure and the environment.

3.12 Furthermore the degree of exclusion arising from the externalities associated with economic activities cannot be ignored. The conceptual model is not intended to assign priorities to contributory factors or suggest that the relationships are deterministic in just one direction. Rather it attempts to provide a means of assessing performance and prospective performance in a logical manner.

3.13 To further illustrate interdependencies, skills contribute to a workers ability and thus productivity and also increase the likelihood of being in employment. This shows up in employment rates, with higher qualified people having higher rates. Skills thus appear as a driver of the labour market and productivity in the model of long-term growth.

Figure 1 – The Deloitte Conceptual Framework of Long-Term Economic Growth

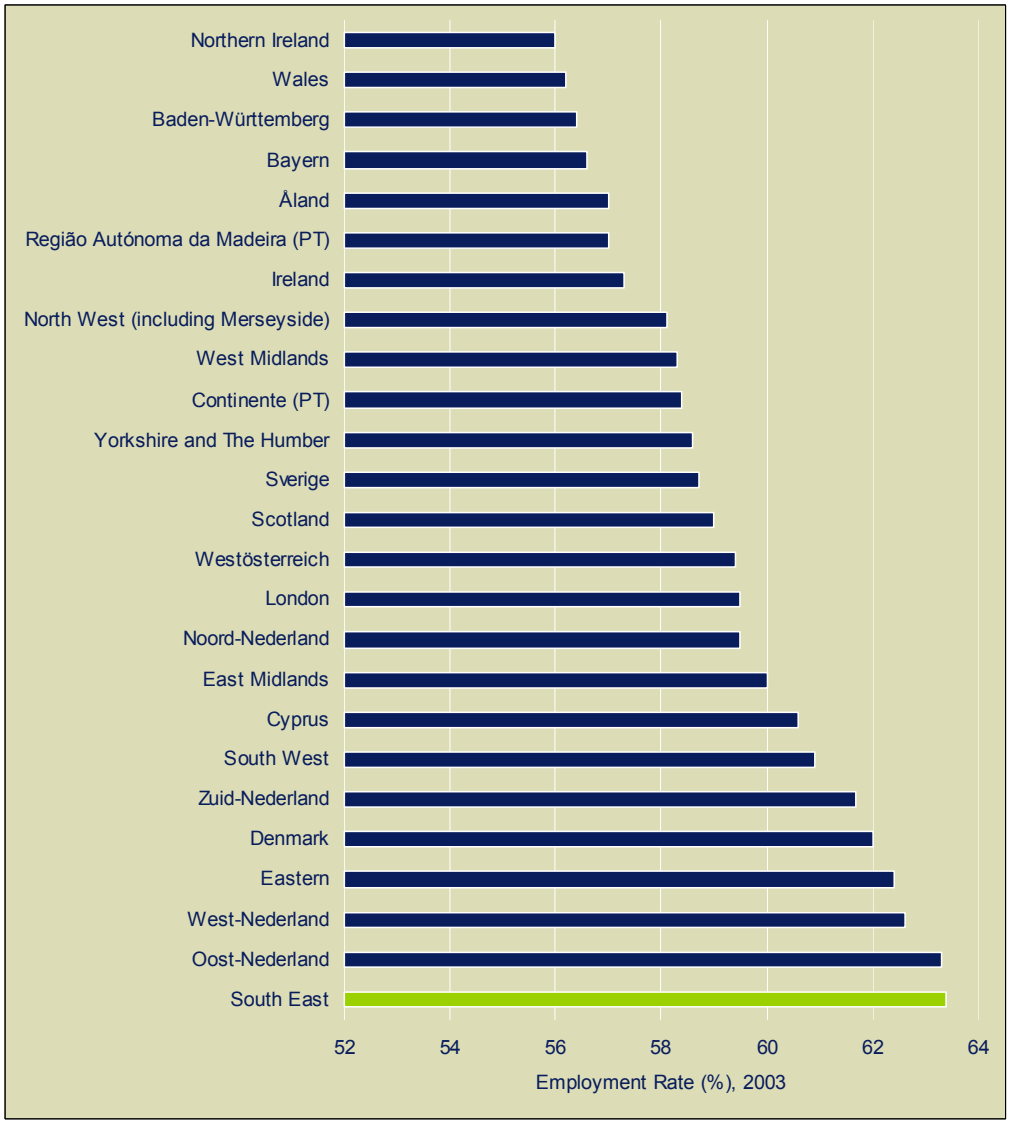


Source: Deloitte 2005

EMPLOYMENT RATES

3.14 Employment rates most usually relate the number of people in employment to the potential for employment as measured by the available working age population. The Eurostat figures presented here measure residence based employment against resident population and therefore assess both the ability of the region and surrounding regions to provide employment for residents, and the contribution of residents to productive activity. It is worth noting that this measure is based on overall resident population which implies that employment rates can be heavily influenced by demographics and the inclusion of non-working age residents.

Figure 2 – Employment Rates, 2003



Source: Eurostat, 2005.

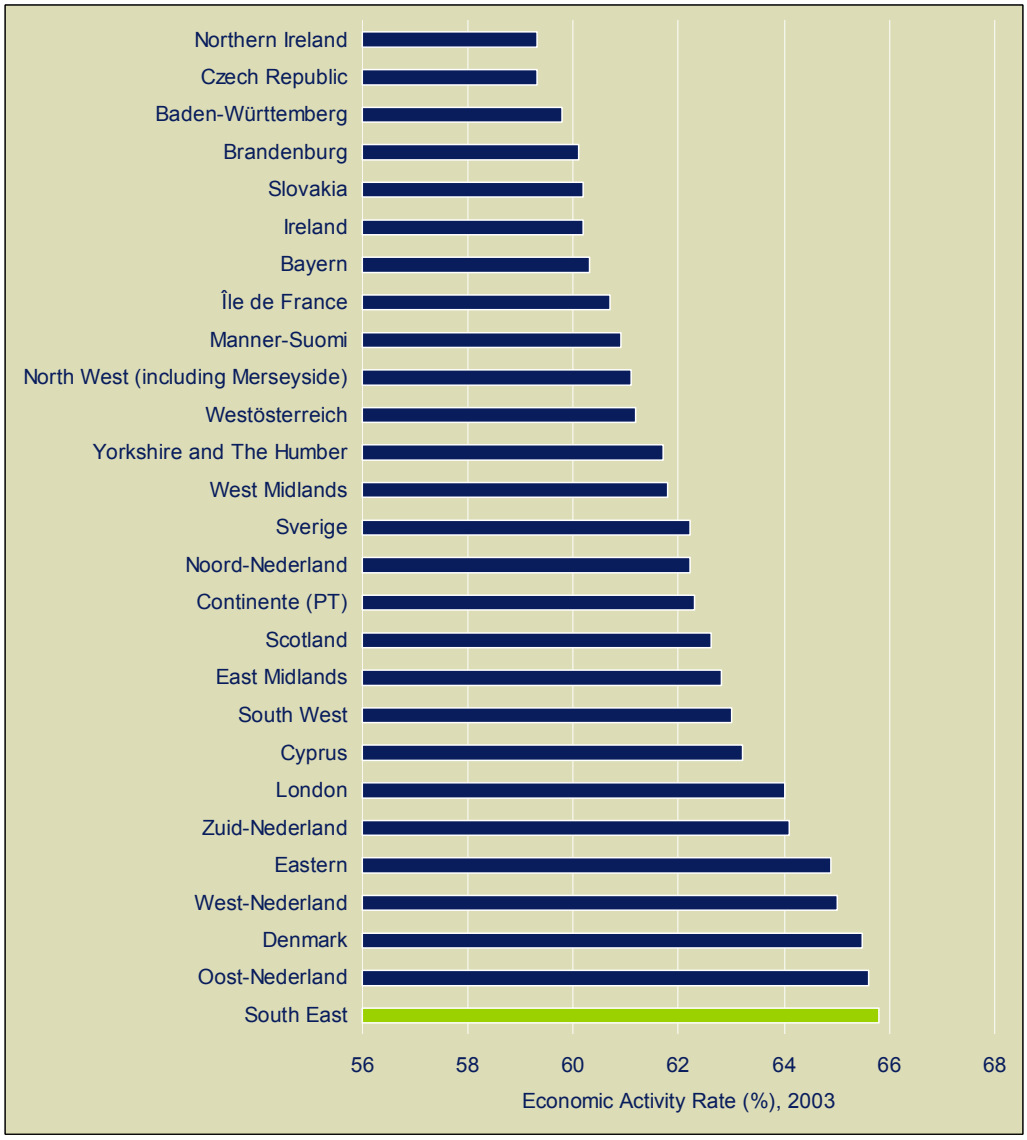
3.15 The South East performs very well on this measure, claiming 1st place amongst equivalent European regions.

3.16 This indicates that a higher proportion of residents of the South East are employed in productive activity than anywhere else in Europe. The South East and London are utilising potential labour resources from the South East to a high level.

ECONOMIC ACTIVITY RATES

3.17 Economic Activity Rates are a broader measure of participation than employment rates as also in addition to those in employment the measure incorporates the unemployed. The Eurostat activity rates employed here are referenced against total population.

Figure 3 – Economic Activity Rates, 2003



Source: Eurostat, 2005

3.18 The South East performs well using this alternative measure of prospective labour utilisation: again achieving 1st position amongst NUTS1 regions.

3.19 Economic activity rates are essentially measuring the same thing as employment rates, whilst also incorporating the ILO unemployed. High unemployment in the South East would contribute to higher economic activity

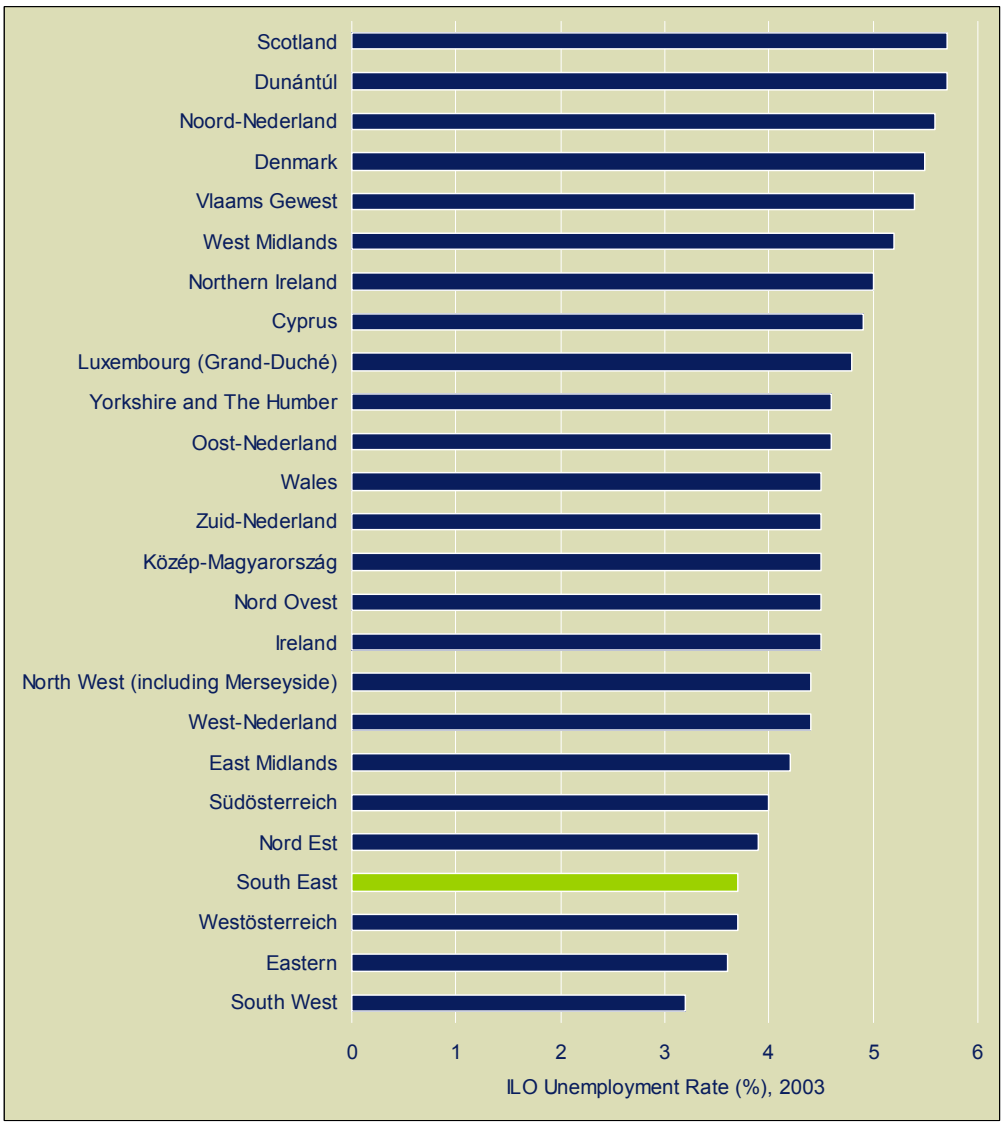
rates but would be indicative of problems in finding work for South East residents. To ascertain whether this is the case it is necessary to consider unemployment.

3.20 Economic inactivity rates are the opposite of activity rates and show the percentage of resident population outside the labour force.

UNEMPLOYMENT RATES

3.21 The unemployment measure used here is consistent with the International Labour Organisation's (ILO) guidelines. It is defined as the proportion of the labour force that is unemployed and who want to work, are available to work, and are actively seeking employment. This estimate is generally higher than the claimant count measure of unemployment, which only takes into account those claiming unemployment benefit.

Figure 4 – International Labour Organization % Unemployment, 2004



Source: Eurostat, 2005

3.22 The South East performs well in unemployment terms ranking 4th from the Eurozone NUTS1 regions, albeit trailing both the East of England and the South West.

3.23 However, these unemployment rankings reflect economic weakness in the Eurozone and contemporaneous health in the UK economy. Another possible reason as to why UK regional unemployment figures look so favourable in comparison to some European regions is due to the fact that on the continent there is a tendency to invest more in capital, whilst the UK has traditionally substituted labour for capital.

3.24 Taken together economic activity rates, employment rates and unemployment rates paint the South East in a very favourable light. The model of long-term economic growth identified that the major drivers of growth are labour market efficiency and productivity, and given that the labour market performance of the South East is favourable, any underperformance must therefore come from productivity.

PRODUCTIVITY

3.25 This section deals with productivity, the five identified drivers of productivity and some other factors that may affect productivity in the South East.

3.26 Huggins treats productivity predominantly in the aggregate – a primary focus of this study is to examine the five drivers of productivity growth rather than the aggregate outcome.

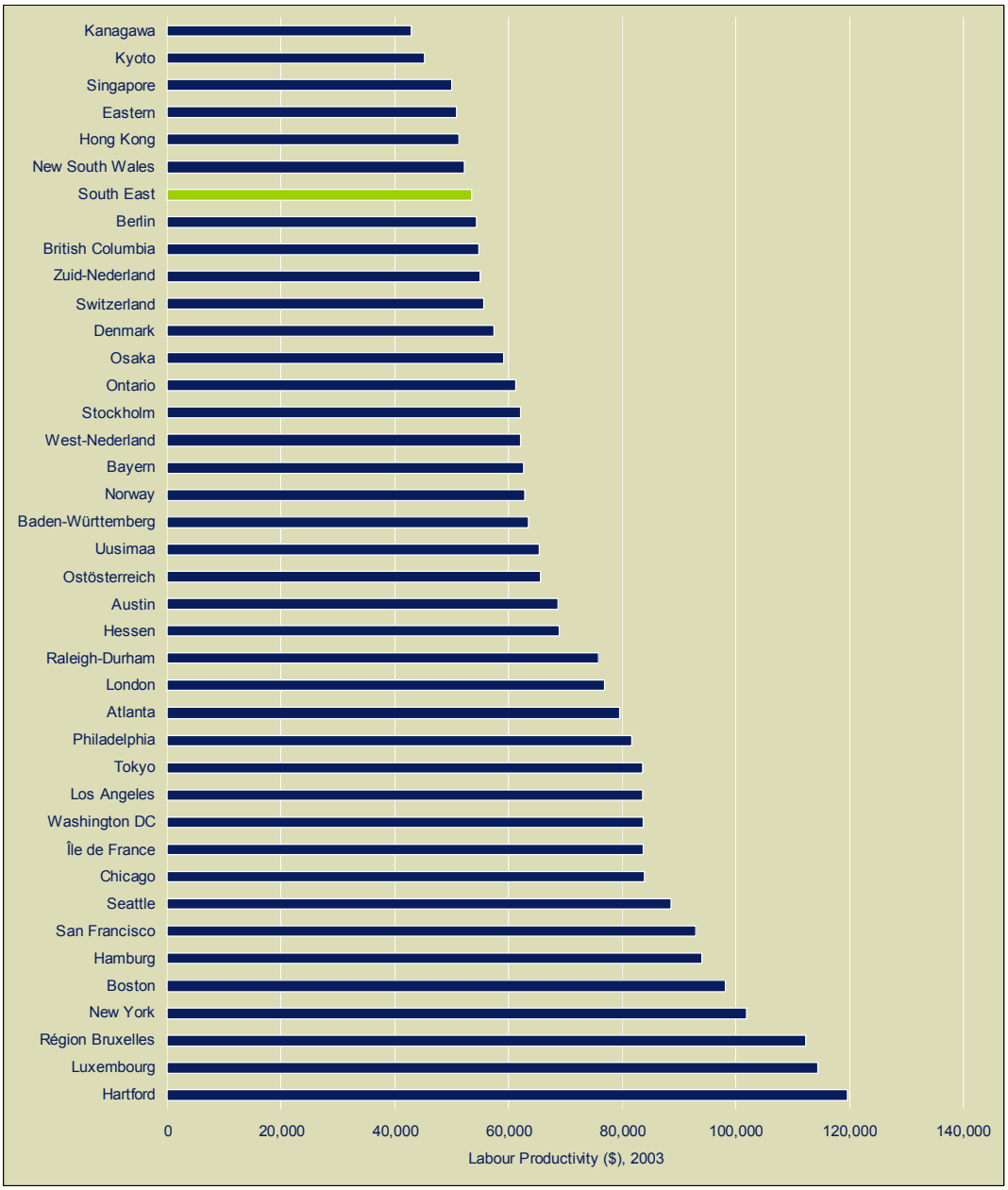
3.27 The drivers, as identified by HM Treasury, are:

- Investment;
- Innovation;
- Skills;
- Enterprise; and
- Competition.

3.28 Of these coherent data at European NUTS1 level is available for only innovation and skills. Two of the other drivers, investment and enterprise have data available for interpretation from the South East, and on a national basis but regional international data is a mixture of unavailable or inadequate for purpose. The final driver, competition, is not easily measurable but receives some limited discussion.

3.29 Labour productivity simply measures the amount of output produced per worker in the economy. This gives a measure of how efficient each employed person is by way of the average individual contribution. The following chart shows per worker productivity in 2003 in 40 major global regions.

Figure 5 – Labour Productivity, 2003



Source: Robert Huggins Associates

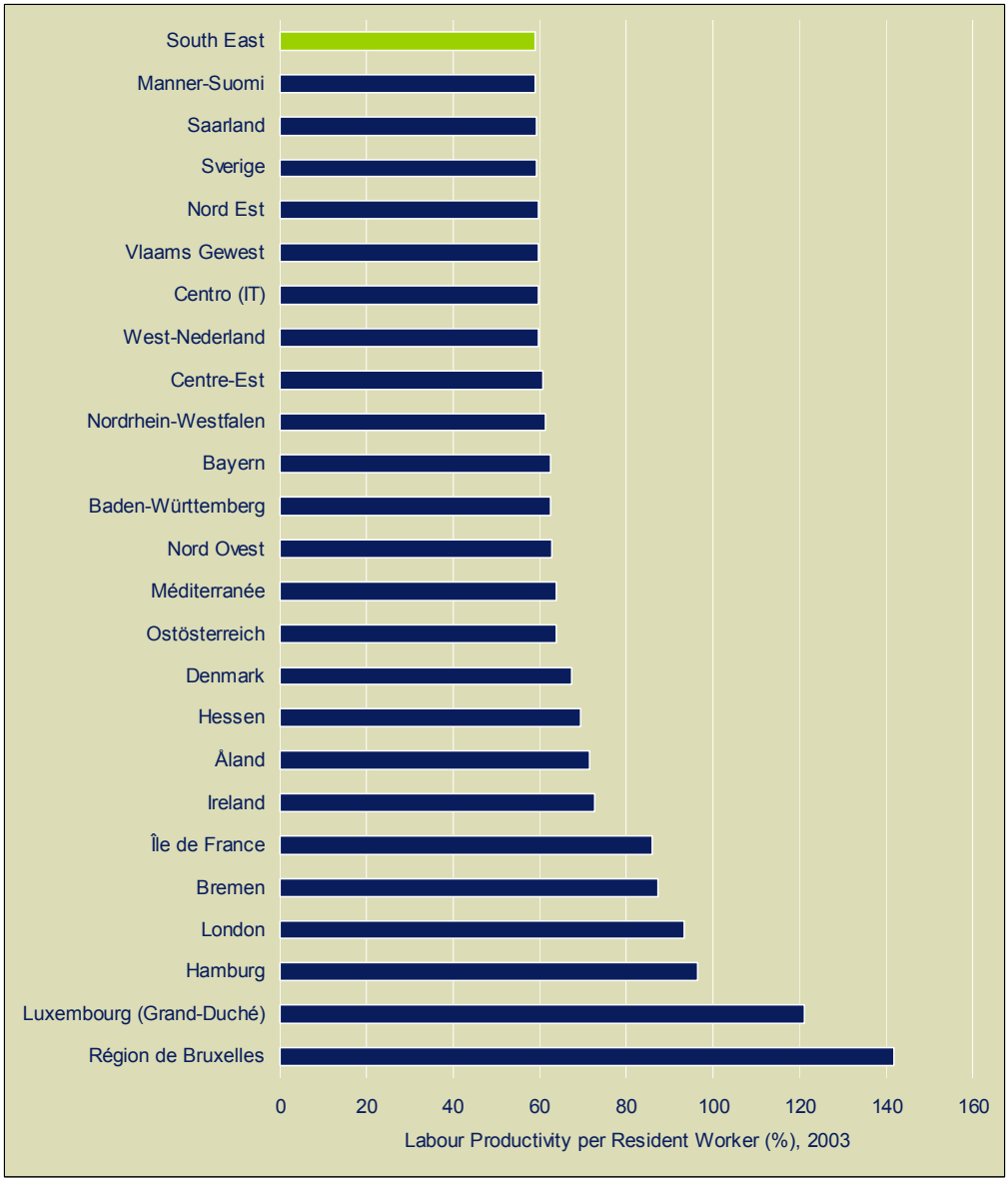
3.30 There are a number of problems with per worker productivity in that it treats both full-time and part-time employees as equally productive. This may not be the case and can have a significant impact on overall productivity per employee. The South East is a particular example here since it has a much greater proportion of its workforce employed on a part time basis than most of its competitors in the UK and Europe. The ABI suggests that only the South West and Wales more part-time workers as a proportion of all workers than the South East, in which 32 per cent of all employees are part-time.

3.31 The South East of England trails many of the 40 global regions identified by Robert Huggins Associates when assessed on labour productivity. It is currently ranked 34th, second lowest of all the European areas featured.

3.32 The measure employed here is a workplace based output measure on resident population and as such is biased downward somewhat by the fact that the South East is part of London's hinterland and many residents commute to London to add value there. Nonetheless, the performance is reasonably poor in global terms.

3.33 Analysing European areas using Eurostat data gives a similar result.

Figure 6 – Euro-regions Labour Productivity, 2003



Source: Eurostat, 2005.

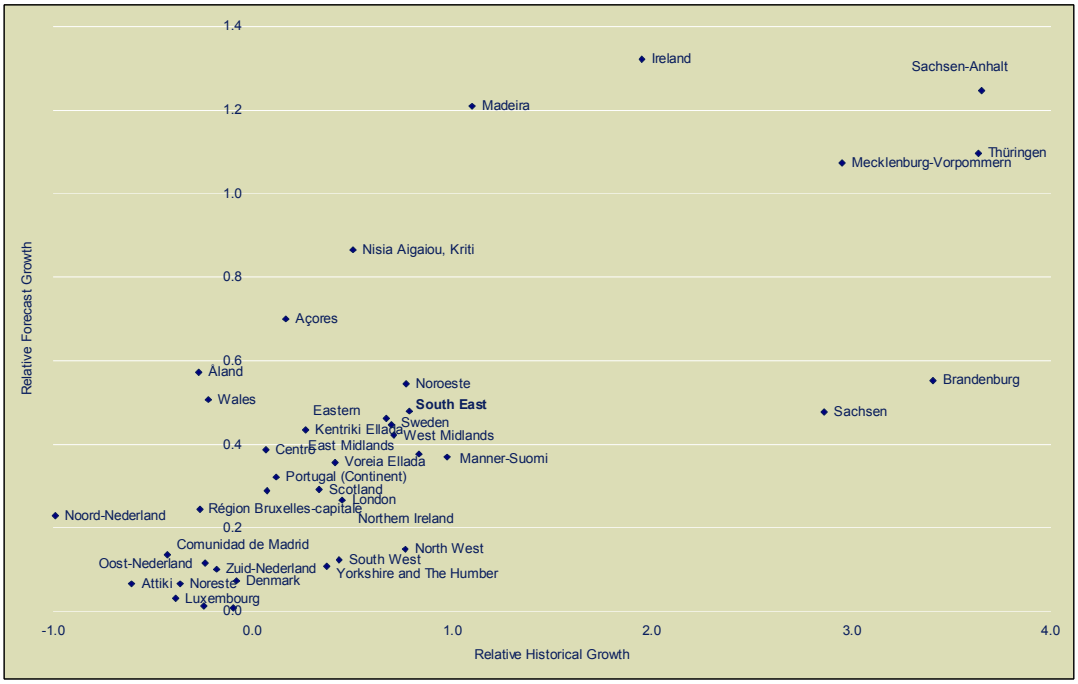
3.34 The South East ranks 25th of all 77 European NUTS1 regions but again this measure is biased downward by commuting flows.

EXPERIAN PRODUCTIVITY GROWTH ESTIMATES

3.35 Whilst the current level of productivity per worker is contributing to a relatively poor performance from the South East in global terms, it appears that future prospects for productivity are better.

3.36 Experian NUTS1 estimates of historical and forecast productivity growth suggest that the South East of England is better placed than most of the European regions in the Huggins top 40. The chart below shows historical productivity growth and forecast productivity growth to 2020 relative to the EU15 average. Those regions forecast to realise a fall in relative productivity over the coming years are omitted from the chart.

Figure 7 – Euro-regions Labour Productivity Growth, Historical & Forecast



Source: Experian European Regional Service, 2005

3.37 Ireland, Crete, the Portuguese islands and the regions of the former East Germany, who are continuing to blaze a trail due to economic catch-up, are forecast to realise the fastest growth.

3.38 This forecast is noteworthy for the South East: productivity growth is likely to be higher amongst those regions and countries that are catching up on technology and/or market maturity. There are implications for comparisons and policy conclusions drawn from high growth regions who are displaying catch up.

3.39 If these forecasts become reality this is good news for the South East as it will improve in productivity terms in relation to the EU15 average, whilst productivity growth amongst its major rivals will be slower than the EU15 average. The gap will close.

INNOVATION

3.40 Innovation encompasses the invention of new products, technology and processes that contribute to economic.

3.41 Certain definitions stretch to include the application of new technologies, but for the purposes of this study this definition would come under investment. Again this highlights the potential for crossover between indicators as well as the way in which drivers work together, rather than in isolation, to determine output.

3.42 In terms of the breadth of coverage innovation is the most data-rich area of all five drivers for European comparisons. International comparisons of innovation are available through a variety of patent application and R&D statistics.

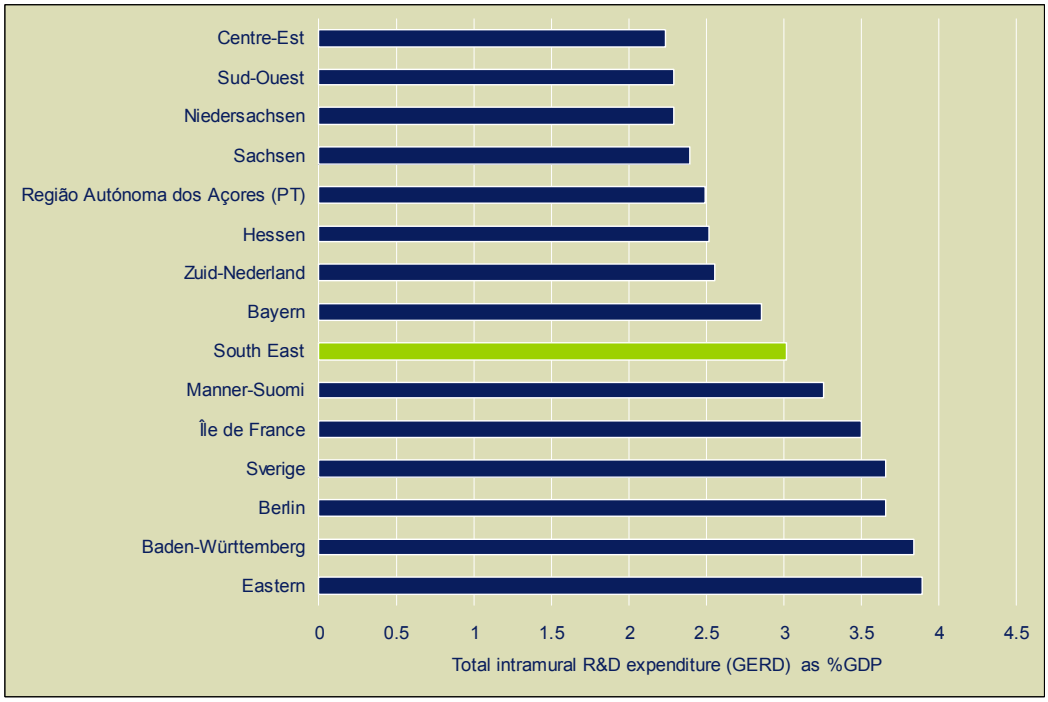
3.43 Technically, both prospective measures suffer from flaws as indicators of innovation because neither measure accounts for the final output from the innovative cycle. R&D expenditure is an input, and whilst a patent application is an output of sorts it is no guarantee of successful innovation.

3.44 This section benchmarks the South East against available indicators such as R&D employment, R&D expenditure and patent applications.

THE EUROPEAN PERSPECTIVE

3.45 As a measure of innovation, intramural R&D expenditure[1] as a percentage of GDP covers data for selected NUTS1 geographies across Europe.

Figure 8 – Euro-regions R&D Expenditure as % GDP, 1999



Source: Eurostat 2005

3.46 Unfortunately the last feasible point for pan-European comparison is 1999 on this measure. The South East performs well relative to most European regions – coming 7th from 62 regions with available data.

3.47 South East business expenditure on intramural R&D in 2003 contributed 84 per cent towards all intramural R&D, some 14 per cent higher than the equivalent contribution at UK level[2].

3.48 Employment in R&D related activities is also a much used inter-regional comparator. This paints a more subdued picture of innovation in the South East.

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[1] Intramural R&D expenditure is defined as all expenditures for R&D performed within a statistical unit or sector of the economy, whatever the source of funds. Expenditures made outside the statistical unit or sector but in support of intramural R&D (e.g. purchase of supplies for R&D) are included. Both current and capital expenditures are included

[2] Economic Trends 621

http://www.statistics.gov.uk/articles/economic_trends/ET621_Owen.pdf TABLE 14

3.49 Eurostat's 2001 UK estimates[3] show a lower percentage of R&D personnel in the labour force (1.3 per cent) than the EU15 average (1.4 per cent). The highest ranked region was Uusimaa, Finland where 3.8 per cent of the labour force was employed in an R&D role. The top-10 regions were exclusively Scandinavian or Central European. Although UK regions were omitted from this particular analysis, subsequent figures from ONS[4] confirm that none were likely to have reached the top-10 had they been included. Whilst excluding higher education related R&D, the data suggests that just 1.1 per cent of South East's labour force is employed in R&D.

3.50 It is easy to question the validity of this R&D data, especially given that each source is looking at a different point in time and there is little time series data to work with to ascertain trends. The expenditure data appears at odds with the employment data. The former suggests the South East is well placed in Europe whilst the latter suggests that it isn't.

3.51 This could be as a result of the way expenditure is focused in the UK and the way R&D employees are contained and hidden within organisations. One feasible explanation is the R&D conducted in the South East of England tends to be both high-value added and costly, and that limited staffing is required to carry out the research function.

3.52 Another prospective measure of innovation is patent applications per million population (PAPMP). Whilst applying for a patent does not imply an innovation will be successful, over time it will indicate whether propensity to innovate is on the increase or decrease.

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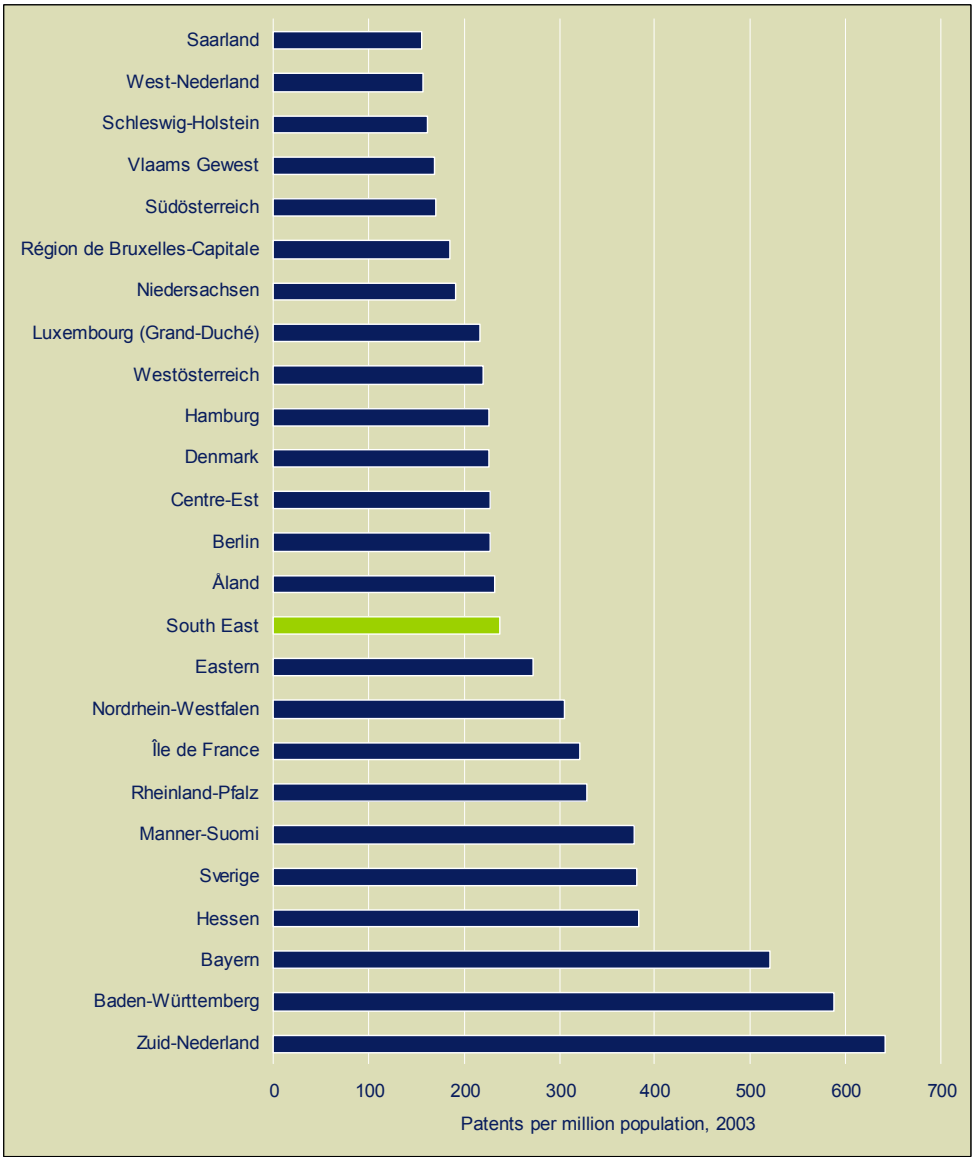
[3] Eurostat, Statistics in Focus, Science & Technology, Theme 9 – 4/2004

[4] ET 621, ibid.

Figure 9 – Patent Applications per Million Population, 2003



Source: Eurostat 2005

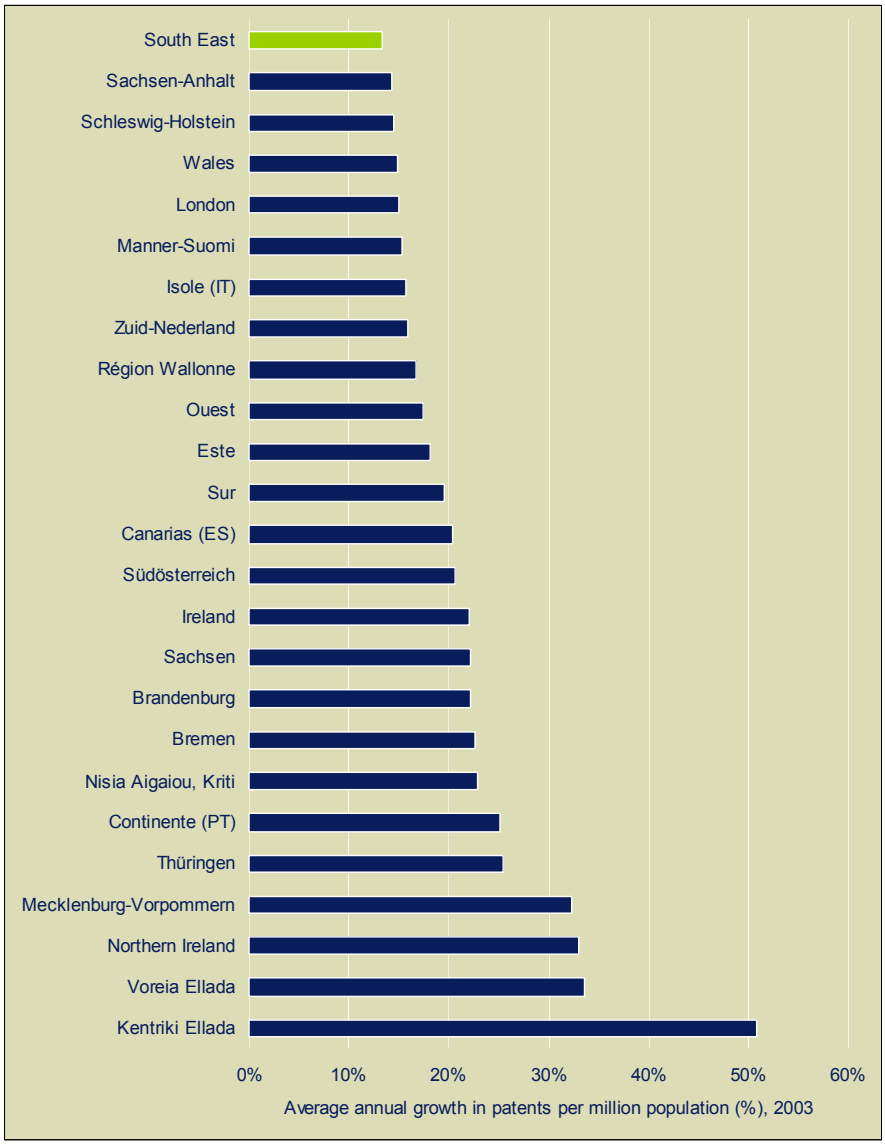
3.53 Of the 72 regions of the EU where data was available the South East was placed in 11th position in 2003, with 238 patent applications per million population. The highest placed UK region, the East of England was ranked one place higher in 10th position. Eight of the top 10 ranked regions are those identified in the Huggins Study.

3.54 PAPMP is one of the few series useful in identifying drivers of productivity that offers some form of consistent time series. Annual data is available over the period 1999-2003 for the above mentioned European regions. A growth in PAPMP of 13 per cent per annum in the South East places the region in 25th place. The growth results are less encouraging for the South East in the sense

that a rank of 25th place is lower than the 2003 rank of 11th for absolute levels.

3.55 What is encouraging for the South East is that of those regions placed higher in growth terms, only three are identified by Robert Huggins Associates as productivity leaders, namely: London, Uusimaa (Manner-Suomi) and Zuid Nederland. In fact the majority of regions showing high growth in the chart are from the Southern Europe and the former East Germany. This represents an element of catch-up in that the majority of these regions are starting from a less prosperous base. That the South East is represented in the top third of regions by PAPMP growth from a relatively mature economic base is encouraging.

Figure 10 – Growth in Patent Applications per Million Population, 1998-2003

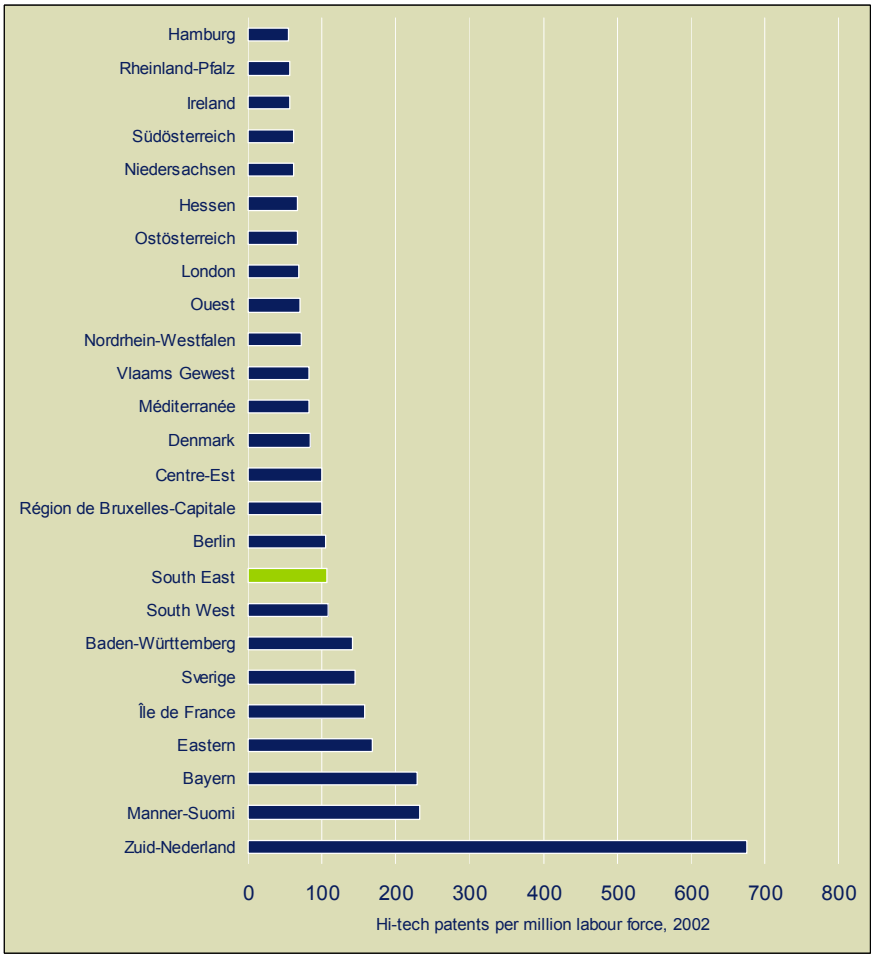


Source: Eurostat 2005

3.56 Zuid Nederland, Manner-Suomi, and London are all realising faster growth in patent applications. Uusimaa represents a real concentration of R&D activity in Finland, in 2000 accounting for almost half of all hi-tech[5] patent applications in the country as a whole. The South East cannot lay claim to having such a monopoly on innovative activity in the UK, although nationally it is undoubtedly well placed. There is also more likely than not some capital city effect in the data.

3.57 Hi-tech patents data is also available from Eurostat. Here patents are referenced to the size of the local labour force as a benchmark. On this measure the South East ranks 9th from the NUTS1 regions.

Figure 11 – Hi-tech Patent Applications per Million Labour Force, 2002



Source: Eurostat 2005

[5] Source: Eurostat Press Release No 31/2002 - 13 March 2002. Hi-tech defined as aviation, computers and automated business equipment, communication technology, lasers, micro-organism and genetic engineering, and semi-conductors.

3.58 Although patent rankings show the South East to be doing well relative to most European regions, the scale of the gap between the South East and leading areas such as Zuid Nederland, Manner-Suomi, and Bayern is significant.

OTHER INTERNATIONAL DATA

3.59 Robert Huggins Associates data provides some extra-EU comparisons. Per capita government R&D expenditure in the South East is ranked 22nd from the full list of 128 regions. Uusimaa is the highest placed European region, whilst Washington tops the list. This data is limited in its value as it fails to include private sector R&D.

3.60 Business Expenditure on Research and development in the South East fares slightly worse ranking 32nd from 128.

3.61 In terms of the Robert Huggins patent measure the South East is placed 57th from 128 regions and appears short of the very best innovative regions.

CONCLUSIONS

3.62 The South East is no doubt behind global and European leaders when it comes to innovation. The data is inconclusive as to the extent of the problem as different measures place the South East at different places on the ladder.

3.63 Productivity is ranked 25th of NUTS 1 regions in the EU and 17th from the 18 European areas in the global top 40. Only proxies for innovation growth from Eurostat rank the South East this lowly. Even in this case, almost all of the regions growing faster than the South East are not ranked above the South East in absolute measures.

3.64 Neither of the two main sources identified as proxies for innovation - R&D expenditure and Patent Applications - is perfect. Superior rankings in R&D expenditure relative to patent applications may suggest that the available resources for R&D are not being optimally allocated. It could also be indicative of multinationals conducting research in the South East and patenting elsewhere.

3.65 Manner-Suomi, the area of Finland containing Uusimaa, is the one region which features higher than the South East in every European indicator of innovation obtained. Zuid-Nederland, however, appears to have significant innovative capacity above both the South East and Manner-Suomi – especially so in terms of high-tech patents. Later in the report Zuid Nederland is a focus for good practice in innovation.

SKILLS

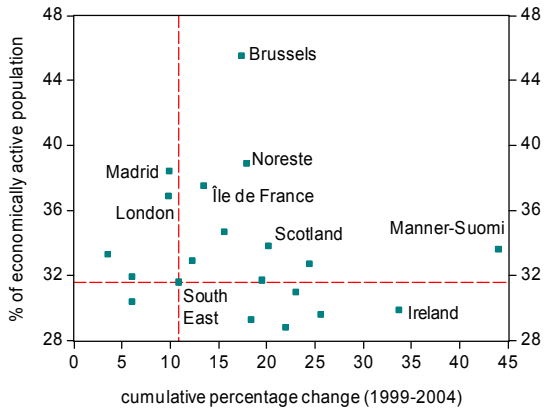
3.66 Although workforce qualifications do not translate directly to the skills required to carry out tasks, they offer the major statistical means of comparison between regions.

3.67 International comparisons are difficult to make as educational systems differ widely across national borders.

3.68 High-end skills are measured here by the proportion of the economically active educated to degree level. Higher level skills are associated with higher productivity and also contribute to the labour market: people with higher skills have a higher probability of finding and/or being in employment.

Figure 12 – Economically Active Population

Educated to tertiary or degree level



Source: Eurostat 2005

3.69 The South East performs well against its European neighbours when measuring skills using the proportion of the economically active population educated to tertiary, or degree, level. Of the NUTS1 regions within the EU25 the South East is positioned well in 14th from the 78 regions with available data.

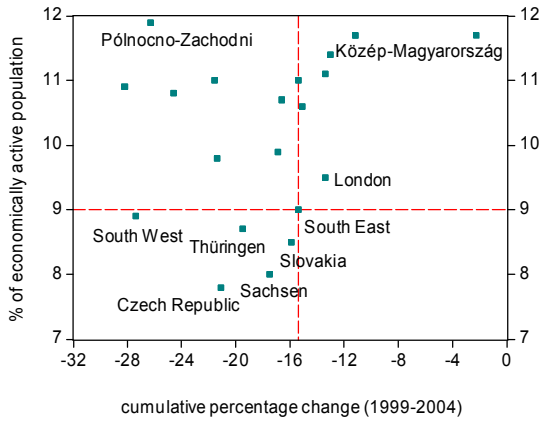
3.70 This performance appears all the more significant given that the majority of regions ahead of the South East are capital cities or countries in their own right. In this context the South East has a well qualified workforce.

3.71 Examining how things have changed over the period 1999-2004, the South East has realised some growth in the proportion of its workforce educated to degree level. It occupies a middle-of-the-road position amongst its European peers on this measure. Many of the top ranked regions are Italian or Spanish. The German Länder occupy almost exclusively the basement positions (this may have been caused by an influx of relatively unskilled migrants, rather than a fall in the number of graduates). This could equally be as a result of international variations in education systems and/or surveying, and serves to highlight again the problems associated with international comparisons.

3.72 At the opposite end of the skills spectrum, the following chart ranks NUTS1 regions on the proportion of population who are only educated only to lower secondary level standard or below. The data does not permit the calculation of the proportion of population with no qualifications so as an alternative to this measure is presented here.

Figure 13 – Economically Active Population

Educated ONLY to lower secondary level



3.73 Of the NUTS1 regions benchmarked the South East ranks 6th best. Whilst many of the regional leaders have a labour force showing more high-end educational experience than the South East, none can claim to have a lower proportion of their respective labour forces educated only to a minimum standard.

3.74 Huggins' expenditure on Higher Education measure gives the impression that the South East performs badly. This measure misses the point though, as it concentrates on sustainability of knowledge rather than current endowments.

3.75 For example Hartford is ranked as the top US metro area on a wide range of indicators; it has the highest level of labour productivity in the world and is referred to as the "Knowledge Corridor". A glance at the statistics would suggest that the South East has a higher skilled workforce than Hartford, with 32 per cent of the workforce educated to degree level – the Hartford equivalent is 29 per cent. Softer evidence such as the highest concentration of higher education in the US suggests otherwise and this shows the perils in comparing educational attainment across countries, when standards differ.

CONCLUSIONS

3.76 Qualifications are not a perfect measure of skills. Recent evidence from the National Employers Skills Survey (NESS) suggests that although the South East has one of the highest qualified workforces in the UK, the extent of skills gaps – the gap between what employers demand and workers offer – is just as pronounced in the South East as in other areas of the UK.

3.77 That said the South East performs very well in terms of qualifications in Europe. It has a high proportion of workers educated to tertiary level and a

small proportion of workers only educated to a minimum level. It is hard to see how this would contribute to the South East's low productivity showing but as noted there is a difference between qualifications and skills.

ENTERPRISE & INVESTMENT

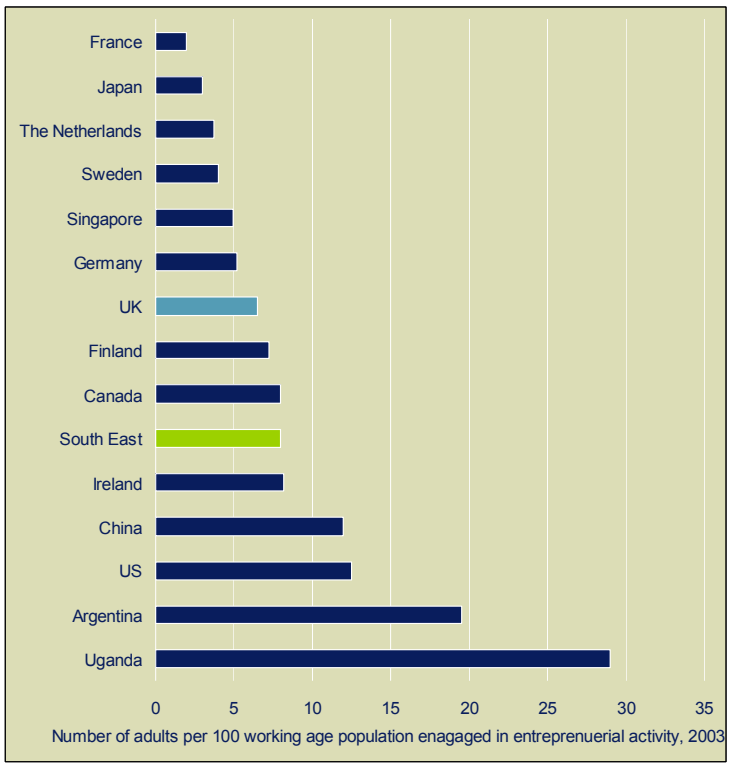
3.78 There is little information easily available for enterprise and investment comparisons. Some data exists to facilitate the comparison of UK regions and nations as a whole.

3.79 This section presents relevant international comparisons by country rather than region, and relates the South East to the UK's performance accordingly.

Enterprise

3.80 Business start-up rates are a good example of issues around international comparisons. Start-up rates in the South East of England, available through VAT registrations, were 3.7 per 1000 inhabitants in 2004 – significantly higher than the UK average. On the other hand start-up rates in Connecticut were equivalently just 2.6 per 1000 inhabitants. At first glance the South East appears better in this respect but the US statistic only includes new firms that employ people. It excludes new business run by the self-employed. UK estimates are based on VAT registrations and so long as the firm exceeds the VAT threshold it is counted as a new business. Each indicator is measuring different things, and as such it is impossible to tell which region is more entrepreneurial.

Figure 14 – Global Entrepreneurship Monitor, 2003



Source: Global Entrepreneurship Monitor, 2003

3.81 The Global Entrepreneurial Monitor suggests that the percentage of adult population engaged in entrepreneurial activity in the UK is around half that seen in the US. On the back of this measure the UK and the South East appear to be trailing the global leaders in enterprise, although the region outperforms major European economies and Japan.

Investment

3.82 Within the UK, the South East accounts for a significant proportion of investment. Gross Fixed Capital Formation in the South East stood at 21 per cent of workplace-based GVA in 2000.

Figure 15 – International Investment Indicators, 2003

	GFCF as % GDP	5-yr average growth in GFCF	Inward FDI Flows as % GDP	Outward FDI Flows as % GDP
1 Korea	30.0	6.1	0.6	0.6
2 Czech Republic	29.3	2.9	2.9	0.3
3 Spain	26.9	5.5	2.9	2.7
4 Greece	26.7	9.0	0.4	0.0
5 Australia	26.2	6.3	1.6	3.1
6 Slovak Republic	25.5	-3.6	2.2	0.0
7 Hungary	25.2	6.2	2.8	2.0
8 Japan	24.4	-1.1	0.4	0.8
9 Portugal	23.9	-1.0	0.7	0.1
10 New Zealand	23.3	8.2	2.8	0.9
11 Austria	22.2	1.8	2.9	2.8
12 Ireland	22.1	5.4	17.7	2.3
13 Switzerland	21.9	0.4	5.1	4.7
14 Denmark	21.1	3.2	1.3	0.6
15 Netherlands	20.5	0.5	3.8	7.4
16 Euro Zone	20.3	2.0	-	-
17 Canada	20.2	4.7	0.8	2.5
18 Belgium	19.8	0.9	10.3	12.0
19 Iceland	19.8	-0.8	3.6	3.3
20 Luxembourg	19.8	2.4	-	-
21 Mexico	19.7	2.5	1.6	0.3
22 Italy	19.6	2.6	1.1	0.6
23 France	19.3	3.7	2.6	3.2
24 Poland	18.9	-1.3	2.0	0.1
25 Germany	18.8	-0.8	0.5	0.1
26 US	18.6	2.6	0.3	1.4
27 Finland	18.6	1.1	2.0	1.6
28 Norway	17.2	-2.6	1.2	1.0
29 UK	**17.2**	**2.6**	**0.8**	**3.1**
30 Sweden	16.1	1.6	0.8	5.5
31 Turkey	15.8	-6.0	0.7	0.2

Source: OECD Basic Structural Statistics, August 2005

3.83 Of the 31 OECD nations presented in the table above, the UK performs rather badly. In 2003 just 17.3 per cent of GVA was attributable to investment. This is low but many of the leading nations in the table see such high levels of investment due to the nature of their economies – many may be viewed as less developed and are expected to be investing heavily.

3.84 The South East would sit somewhere in the middle of this table on the basis of the 2000 estimate of GFCF. On this benchmark the South East would be a middle of the road region in investment terms, but without more timely statistics and available comparisons it is hard to ascertain the extent to which the South East trails leading global regions in investment terms.

COMPETITION

3.85 Competitive pressure creates growth as businesses are forced to constantly adapt and innovate to ensure survival. Ascertaining the level of competition apparent in a particular region is a difficult one. One could argue that productivity growth is the best measure of competition, for if there were no competition then enterprise, innovation, and to some extent investment would not be necessary as the reason for improving is removed.

3.86 Taking this to the other extreme, it may be the case that in international comparisons measures of Gross Value Added per worker are distorted by competition. If competition is fierce in a sector of vital importance to the South East, it is feasible that margins are reduced relative to other global regions and productivity per worker (which is effectively a measure of profitability) is lower in comparison.

3.87 Another determinant of competition is the regulatory framework adopted at national level. Levels of competition are not as high in the UK as the US, but in comparison to Germany our markets are more flexible. If the South East does lack a competitive edge relative to American metropolitan areas, much of this may be due to national factors rather than anything specific to the South East.

3.88 Traditional methods of measuring competition concentrate on indices of firm market share at industry level. This methodology is inappropriate at the local level as competitive forces are not hindered by regional boundaries, except in a few localised sectors such as retail.

3.89 Import penetration is a good example of the openness of an economy - an economy restricting imports is, in effect, stifling competitive forces. Equally the ability of a region to export infers the ability to compete on a global scale.

3.90 As it turns out the South East of England sees more import penetration per unit of output than any other UK region. Imports represented 40 per cent of regional GVA in 2001 and 36 per cent in 2002[6]. This is unsurprising given the South East's proximity to continental Europe and its role as a gateway to the UK and Europe.

3.91 The South East exports less as a percentage of GVA, 18 per cent in 2002, than many other regions of the UK, the average amount being 20 per cent. London suffers the same fate. This represents both the industrial structure of the UK and the sectoral structure of exports. Much service sector activity is concentrated in the Greater South East, and trade in visible goods (manufactured items) account for the a significant proportion of UK exports.

3.92 In an increasingly global market, competitiveness can be determined as much by exchange rates as by fundamental competition amongst local entities. The measures presented here are too broad to be of much use in comparing competition across countries as exchange rate fluctuations influence trade patterns.

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[6] Source: ONS

3.93 A measure of the size of the business sector relative to the public sector would at least give some indication as to potential for competition. This particular measure has its flaws as a regional comparator as it is determined largely by national policy.

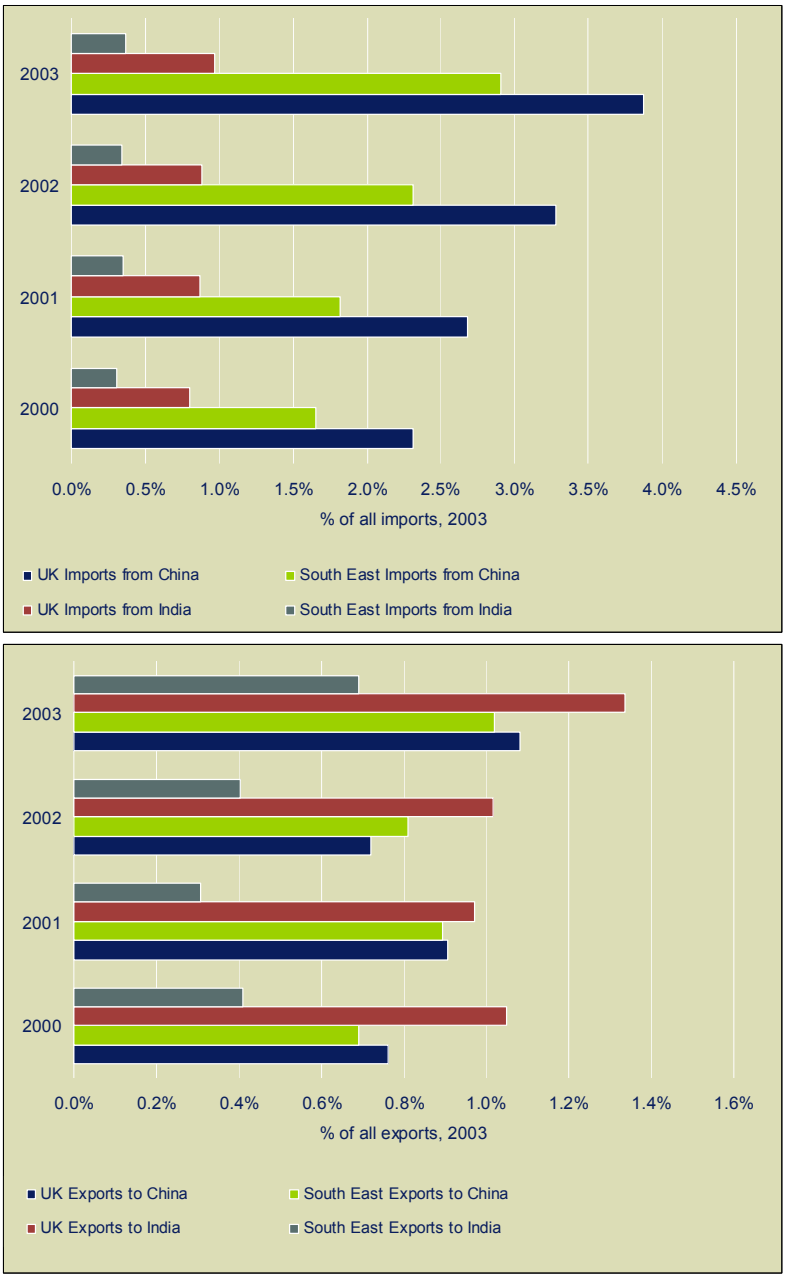
3.94 2003 data suggest Scandinavian countries typically see up to 40 per cent of total employment in the Public Sector, whilst Mediterranean and Eastern European countries see something nearer 25 per cent. Thus regions tend to be bunched together with their national cohorts. The South East employs 29 per cent of its resident workforce in the public sector. This compares favourably with the UK average of 32 per cent and the worst performing UK region on this measure the North East with 37 per cent.

3.95 It would be false to suggest that areas of Sweden are less competitive than areas of Greece without ascertaining the intensity rather than scope for competition within the business sector.

3.96 A measure that specifically looks into competition in the business sector is perhaps beyond the scope of this study. A healthily competitive economy would expect to see a degree of "creative destruction" as new blood drives out inefficient operators. Any measure focussing solely on business failures would be susceptible to variation in the business cycle. A measure would have to include business failures adjusted for the economic cycle. Such an international comparison is not easily offered by the available data and a statistical measure of local competitiveness remains elusive.

3.97 The changing global marketplace means that competition is only likely to increase. The following chart highlights the direction of change by showing imports to the South East from China and India.

Figure 16 – Trade between the South East, China & India, 2000-2003



Source: HMRC, 2005

3.98 Initially increased competition will manifest itself in the trade of visibles but in time trade in services with China and India will increase leading to heightened competition.

3.99 On the basis of what information is available, competition is unlikely to be a major reason as to why the South East trails leading regions in productivity terms.

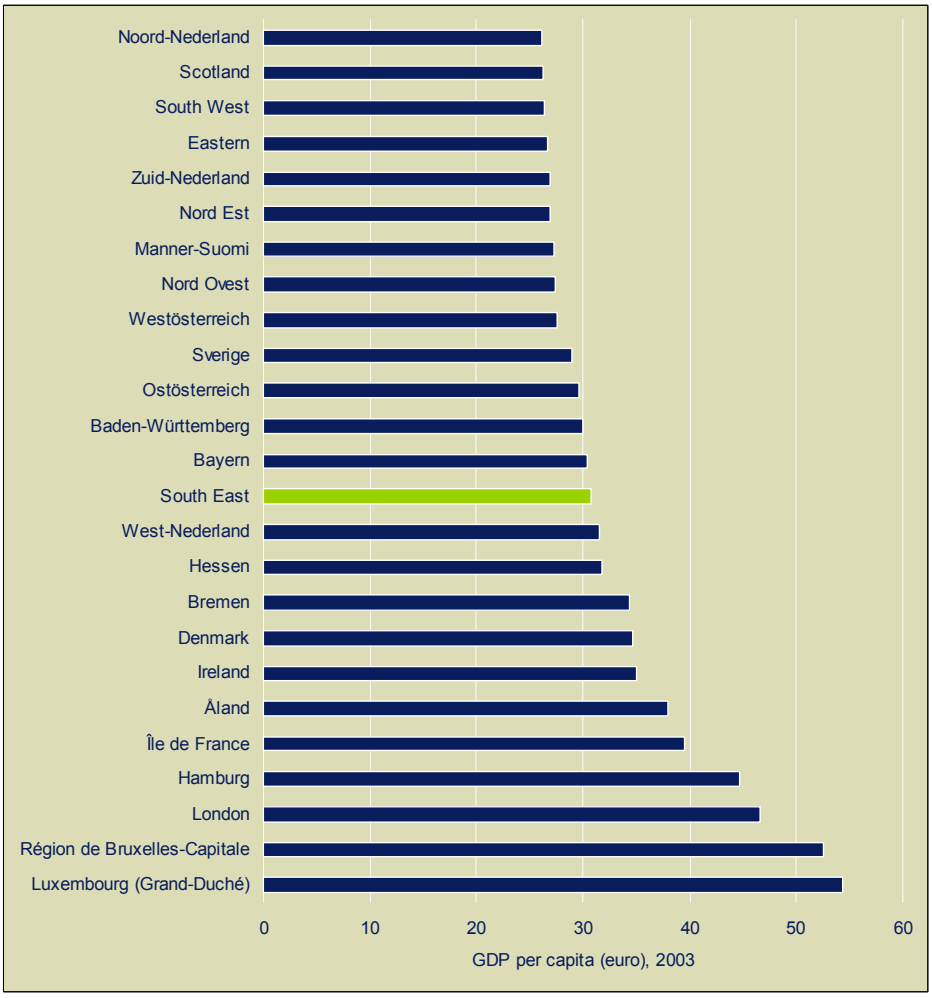
GDP PER CAPITA

3.100 Gross Domestic Product (GDP) is the measure of economic output most commonly used to assess a regions performance. It is a value added measure, which ensures that only value added by the region is included in the figure – i.e. it excludes the cost of intermediate inputs.

3.101 In the long-term model of growth highlighted earlier, GDP was shown to be the result of demographics, labour utilisation (the employment rate), and per worker productivity. Essentially more people, higher economic participation and higher efficiency will lead in the long-run to higher GDP.

3.102 Comparisons of GDP are best made on a per capita basis when comparing regions, although the measure is not free from problems. The primary problem is that output is a workplace based measure whilst population is a residence based measure – the same problem highlighted in the productivity section of the report.

Figure 17 – Regional GDP per capita, 2003



Source: Eurostat, 2005

3.103 In European terms, the South East economy performs reasonably well using GDP per capita, ranking 12th among all NUTS1 regions. Other GDP measures from Huggins Associates place the South East 31st from 40 top global regions.

3.104 This suggests that the South East is performing relatively well, especially given its relation to London, and the fact that many high ranking regions are countries, capital cities or major centres in their own right. That said it still trails the world leaders, particularly major US regions by some distance.

3.105 There are two possible factors contributing to why the South East trails world leaders in GDP per capita. Either a higher proportion of the population are not contributing to GDP through labour market participation, or those that are adding value are not contributing in as efficient way as other leading global regions. As productivity per worker data testifies it appears that the latter factor is the problem.

3.106 The statistical nuance created by commuting between the South East and London does contribute in a small way towards this global underachievement As a result of this the gap between the South East and other major regions is likely to be overstated.

3.107 A crude extrapolation of UK residence and workplace based GVA per capita estimates suggest that the South East would rise above Osaka into 30th position, and London would drop 2 places into 20th if residence based measures were used in Huggins measures rather than workplace based information[7].

[7] 2003 current price estimates from ONS suggest that residence based GVA per capita in the South East is 5 per cent higher than the workplace based equivalent. London's residence based GVA per capita on the other hand is 10 per cent lower than the workplace based equivalent.

OTHER POTENTIAL DRIVERS OF PRODUCTIVITY

MANAGERIAL SKILLS

3.108 Total factor productivity is a measure of productivity disaggregated to include the individual contributors to productivity. As well as the productivity accruing from the use of labour and capital there is a residual element of productivity that cannot be attributed to other inputs. This often referred to as the "X-factor". It accounts for the art of obtaining more out of each worker given exactly the same capital resources and working time.

3.109 Assessing total factor productivity or multi factor productivity at regional level, rather than labour productivity, is beyond the scope of the study, but national level studies have been carried out. There is no data at regional level, and even much of the data at national level is rather poor.

3.110 According to one study, productivity levels in the US are 40 per cent higher than the UK. Although the productivity gap differs according to the measure used there is a broad consensus that the UK trails the US by some margin.

3.111 Less than 10 per cent of the aforementioned 40 per cent is attributable to lower capital intensity (low investment per worker) and just over 30 per cent is attributable to Total Factor Productivity[8].

3.112 This gap is more apparent in certain sectors, one of which – financial and business services – is a key sector for the South East Total Factor Productivity analysis does not suggest the sector is not profitable, rather that the labour and capital resources available to it are not deployed as efficiently as elsewhere in the world.

3.113 Recent studies have postulated a number of reasons as to why the UK lags the US and other industrial nations in terms of (total factor) productivity including[9]:

- larger markets and organisations in the USA, and the economies of scale that thereby become available
- different regulatory regimes. For instance the ease with which companies can increase and reduce labour costs?
- different cultures regarding innovation and entrepreneurship
- differential commitment to, and spend on, Research and Development
- different patterns of economic clusters of activity

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[8] Source: Porter, M.E., and Ketels, C.H.M. (2003). *UK Competitiveness: Moving to the Next Stage*. DTI Economics Paper No.3 (May).

[9] Source: Aickelin, U., Battisti G., Clegg, C., and Fu, X. (2005) , *The role of management practices in closing the productivity gap – Case Study Proposal*

- lack of co-ordination between universities and the private sector

3.114 These reasons are familiar in terms of the drivers discussed elsewhere in this report. One additional reason put forward to explain the gap with the US is in the field of management: through both skill levels of managers and the application of techniques to increase efficiency.

3.115 Though this may be thought of as a skills and innovation issue, tentative evidence suggests the UK is slow to adopt management techniques such as Just In Time.

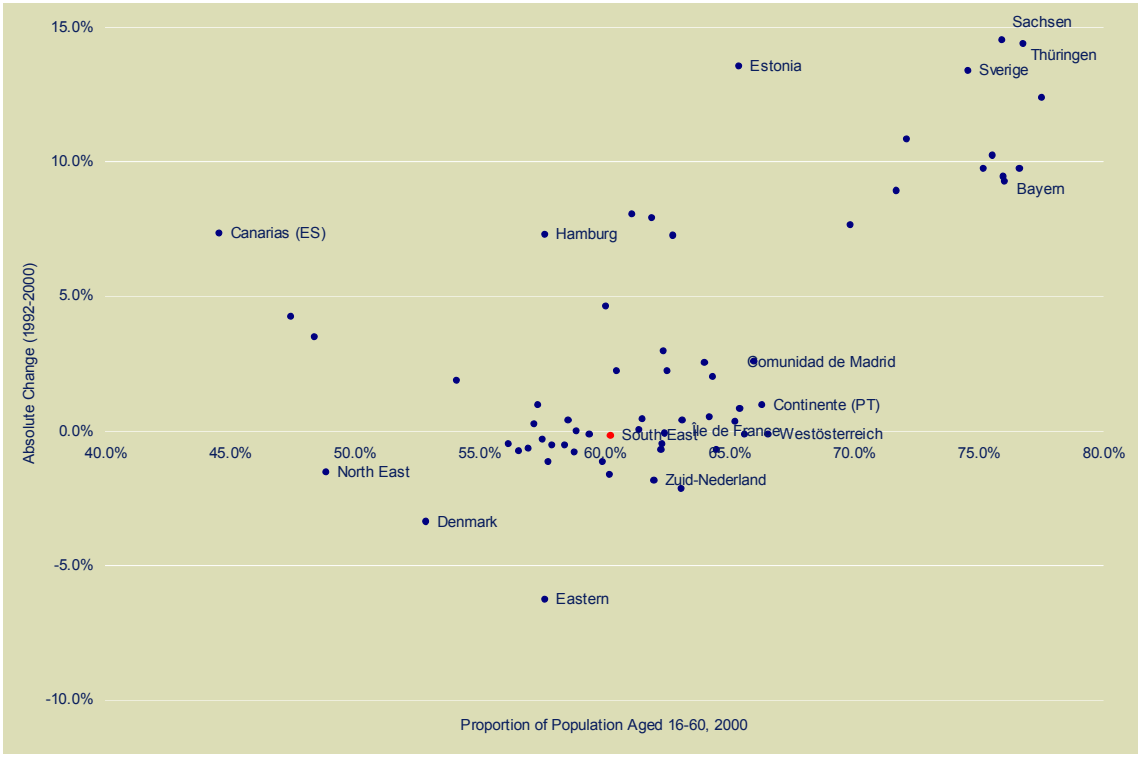
3.116 A major study began in October 2005 to assess the role of management practices in closing the productivity gap with the US. This may in time shed more light on managerial inefficiencies and their role in the productivity gap with the US.

LONG RUN DEMOGRAPHICS

3.117 Although it may seem counterintuitive at first, a relatively abundant pool of labour and strong inward migration could potentially act as a drag on productivity growth relative to those global regions, such as Japan, who are undergoing significant demographic change.

3.118 In European terms the South East has an average sized and stable working-age population relative to the total population.

Figure 18 – Eurozone Regions, Population aged 16-60, 2000



Source: Eurostat

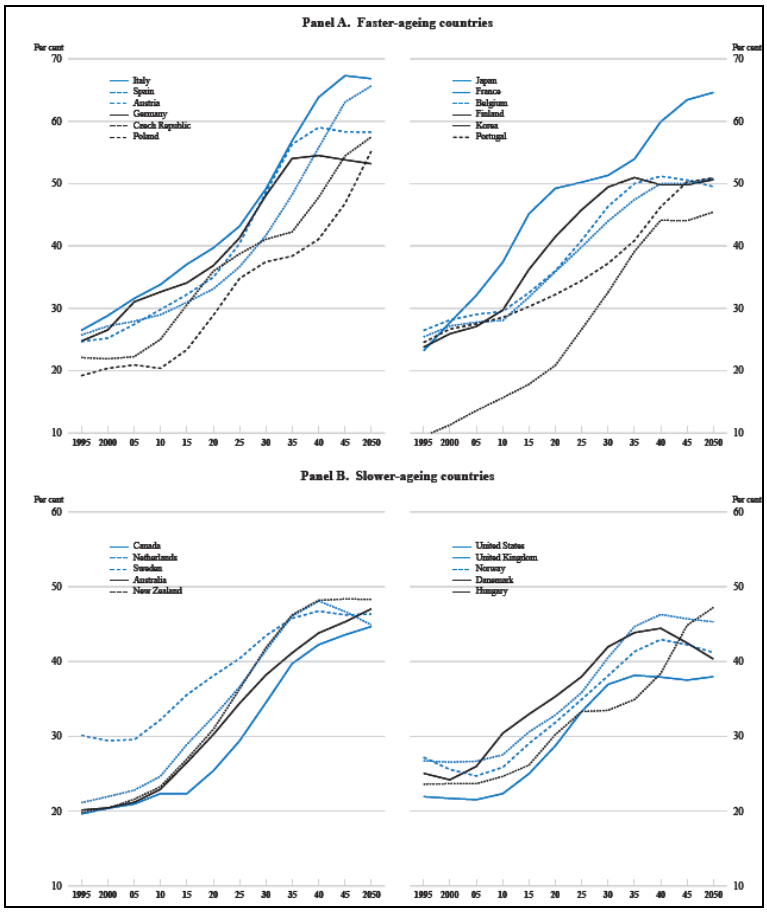
3.119 The working age population of the South East is forecast to increase based upon latest sub-national population projections, although the non-working age population is forecast to increase at a faster pace. By 2028, 39 per cent of the population will be above 65 or below 16 – the current proportion is 35 per cent.

3.120 Trends in old age dependency ratios[10] in the South East are also increasing. The current figure is around 28 per cent. In other words for every 100 people between the ages of 20 and 65, there are 28 people above 65. This figure is set to increase to 40 per cent by 2028.

3.121 However Japan and many Eurozone countries are forecast to see a more marked demographic shift over the next few decades. The following chart shows projected trends in old age dependency ratios for selected OECD countries.

[10] SOURCE: OECD (2001) FISCAL IMPLICATIONS OF AGEING: PROJECTIONS OF AGE-RELATED SPENDING, OECD Economic Outlook 69 pp145-167

Figure 19 – Projected Old Age Dependency Ratios, 2005-2050



Source: OECD

3.122 Much higher proportions of their respective populations will not contribute to economic output. In Japan there will be 65 residents above the age of 65 for every 100 people of working age. The situation is not so severe in Europe although France, Belgium, Finland and Portugal will have ratios in excess of 50 per cent by 2028, a full 10 per cent above that in the South East and 5 per cent higher than the equivalent UK figure.

3.123 In other words, the above mentioned nations will have to increase per worker productivity simply to maintain standards of living as measured by output per capita. Abundant labour may lead to the use of labour rather than developing new technology. Of course any new technology will be taken on by regions with abundant labour; the problem may come from the incentive to develop such technologies which may lead to first mover advantage for countries such as Japan.

4. Best practice case studies

INNOVATION – UUSIMAA, FINLAND

4.1 In the field of innovation there are two clear leaders within Europe: Zuid Nederland (Holland) and Uusimaa (Helsinki) in Finland. Both consistently outperform the South East.

4.2 Uusimaa represents a real concentration of R&D activity in Finland and the European Competitiveness Index 2004 rates the Uusimaa Province as the European leader in competitiveness and creativity. Uusimaa outperforms the South East on every measure of innovation as discussed in section 3 and summarised here:

- **R&D expenditure -** R&D expenditure in the Manner-Suomi region (Uusimaa) is approximately 3.25% of GDP in 1999 compared to 3% of GDP in the South East (figure 8) and, according to the Robert Huggins Associates data, Uusimaa has the highest per capita government R&D expenditure in Europe.
- **Labour force in R&D -** 3.8% of the labour force in Uusimaa is employed in an R&D role compared to the EU15 average of 1.4% and 1.3% of labour force personnel in the South East.
- **Patent Applications –** The number of patent applications in Uusimaa exceeds the number in the South East with Uusimaa ranked 6th across the 72 EU regions and the South East ranked 11th (Figure 9). Figure 10 shows that the growth of patent applications in Uusimaa is also exceeding growth in the South East and figure 11 highlights that Uusimaa ranks second of the EU regions in terms of the number of hi-tech patent applications. In comparison the South East ranks 9th and has over 100 less hi-tech patents per million labour force than Uusimaa. The scale of this gap is significant.

4.3 The Uusimaa region is the most densely populated area of Finland and is located on the southern coast at the Gulf of Finland, which is the easternmost part of the Baltic Sea. The Helsinki region encompasses the cities of Helsinki, Espoo, Vantaa and Kauniainen and had a population of 976,222 in 2004[11].

4.4 The region was home to 50,192 enterprises in 2003 (22% of enterprises in Finland) and 31,491 research personnel.

4.5 The region has been one of the fastest growing areas in Europe in recent years. Knowledge intensive industries, telecommunication and business-to-business services have been the engines of growth and the region's economy is dominated by the service sector. The growth of high-tech information industry sectors, in other terms the knowledge based information industry sectors, emerged after the recession about ten years ago.

[11] Culminatum, 'Helsinki Metropolitan Area Innovation Strategy', 2005.

4.6 A major strength in the Finnish business life is its strong competitiveness, due to good resources for the highly educated workforce. An active labour and income policy from the trade unions and employer organisations has contributed to the good competitiveness (European Foundation for the Improvement of Living and Working Conditions 2004).

4.7 The region is one of the top twenty regions in Biotechnology. The region is world leading in information and communications technologies. The magazine "Innovative city and Business Regions" published 2004, also mentions the logistics cluster and the environmental technology cluster being important.

Key Learning Point

4.8 **High education standards**, a firm grounding in **science and technology** and a long track record of **cooperation between the private and public sectors** have laid the foundations for developing innovative products and services in the Region. The active labour and highly educated workforce built the capacity to innovate new business strategy in different economic sectors like ICT and biotechnology.

4.9 Some of the main reasons of the success of the Finnish innovation system are **high investment in research and development, a high-quality university system and close interaction of private companies and other players**. That makes it easier to modify and modernize the system and maintain its **dynamism and flexibility.**

4.10 The most widely recognised strength of the Finnish innovation system lies in **advanced collaboration between the private and public sectors**. Some well-esteemed concepts for technology transfer and technology centre operation have been developed in the region.

Institutional framework

4.11 Firstly, it is important to appreciate the roles of national, regional and local agencies involved in Uusimaa's innovation success. At a national level:

- The **Ministry of Trade and Industry (MTI)** has been the most important ministry level actor. The Ministries of Education and Transport and Communication are also important actors but MTI is directly more active in the sector. The pillar of MTI's mission is to take care of competitiveness of companies especially that of SMEs.

- **Tekes, the National Technology Agency** founded in 1983 finances R&D projects of companies and universities in Finland. The funds are awarded from state budget via the Ministry of Trade and Industry. In 2001, Tekes funded 2261 research and development projects to a total value of 387 million euros. Two thirds of this funding was aimed in the form of grants and loans at company research and development projects and one third at university and research institute projects. Of all the funding the share of Uusimaa province is about 40 %. Thus Tekes is by far the largest funding provider in the region. The central idea in funding is to give companies and research institutes incentives to co-operate. Co-operation between other companies or research

institutes is required to receive funding. Another objective is to promote new entrepreneurship.

- **Employment and Economic Development Centres (TE-centres)** provide a comprehensive range of advisory and development services for businesses, entrepreneurs, and private individuals. Their aim is to support and advise small and medium-sized enterprises at the various stages of their life cycles, to promote technological development in enterprises and assist in matters associated with export activities and internationalisation, to implement regional labour policies, to plan and organise adult training within the official labour policy framework and to promote and develop farming and rural enterprise activities, to develop fisheries and to influence and participate in regional development in general.

- Another important national actor in the sector is **Sitra, the Finnish National Fund for Research and Development.** It is an independent public foundation under the supervision of the Finnish Parliament. The Fund aims to promote Finland's economic prosperity by encouraging research, backing innovative projects, organising training programmes and providing venture capital. Sitra aims to further economic prosperity in Finland by developing new and successful business operations, by financing the commercial exploitation of expertise and by promoting international competitiveness and co-operation. The focus of Sitra's corporate funding is directed towards enterprises that are at the start-up stage. Sitra cooperates with public -sector bodies such as the Finnish National Technology Agency (Tekes), the Finnish Industry Investment Ltd., Finnvera, the Academy of Finland, and Employment and Economic Development Centres (TE-centres).

- There are six **technology-transfer companies** in university cities in Finland. These form a close-knit circle cooperating in the task of commercialising research results. They help companies and people thinking of going into business to identify, assess, protect and commercialise different technologies. Sitra owns about a third of these technology transfer companies.

4.12 At a regional level the key actors are:

- A Regional partnership has been established, **Culminatum Ltd**, to improve local innovation. Culminatum Ltd was established to combine the resources of the local authorities, universities, and the business sector to improve the innovation environment in the Helsinki Region. The shareholders of Culminatum are local universities and polytechnics, the chambers of commerce of the Helsinki Metropolitan Area, local science park organisations, the cities of Helsinki, Espoo and Vantaa and Uusimaa Regional Council. The vision is to develop Helsinki as an "Ideopolis", a world-class innovation centre based on creativity in arts and science. Its main function is to manage the National Centre of Expertise Program within the Helsinki region and to promote utilisation of the highest international standard of knowledge and expertise in business, job creation and regional development.

The strategy of Culminatum has two pillars:

I. To implement regional cluster programmes (centre of expertise programmes) together with science parks; and

II. To strengthen the knowledge potential and the local innovation environment.

One focus area of Culminatum is Digital Media, Content Production and Learning Services. This area is based on the innovative co-operation with companies, universities, polytechnics and public administration and aims to assist the creation and development of new entrepreneurship in the field.

- **Innopoli Ltd, City of Espoo** where there is a concentration of high-tech research, training and business facilities including Helsinki University of Technology. This was established by companies and local universities.

- **The Helsinki Metropolitan Area Council (YTV)** has a special position in certain planning and co-operation activities in the region, being unique of its kind in Finland. The operational jurisdiction of the Council includes the municipalities of Helsinki, Espoo, Vantaa and Kauniainen, and its main task is to promote the development of the metropolitan area by providing services for public transport, waste management, air quality management and development planning. In planning the role of the Council is not binding, but rather limited to cooperation and research work. To promote regional cooperation and safeguard balanced development in the region the Council prepares so-called Cooperation Plans (YTO) approximately every five years.

4.13 In general, the Region's long-run innovative success has been perceived to depend on education, science and research. In addition, cultural and environmental factors were seen as important.

4.14 However, technology or science parks have been established in the Helsinki Metropolitan Area since 1984. The technology centres are exchange organisations that operate at the interface between science and the users of expertise. The technology centres have been located in the immediate vicinity of universities in Finland in order to support commercialisation of research-based expertise, particularly by creating new start-up enterprises.

4.15 An important step for regional co-operation was been taken in the **Urban programme for the Helsinki Metropolitan Area** competence and cohesion accepted in April 2002. The aim was to strengthen competitiveness, knowledge and citizen participation in the region. Three priorities were chosen: strengthening of high competence and multidimensional knowledge base, strengthening of individual competence through social means, and strengthening of social inclusion, participation and social cohesion.

4.16 The Helsinki Region has now produced its first innovation strategy (published in 2005). The four pillars of the strategy are:

I. Improving the international appeal of research and expertise;

II. Reinforcing knowledge-based clusters and creating common development platforms;

III. Reform and innovation in public services;

IV. Support for innovative activities.

4.17 One of the key aims of the strategy is to generate wealth. Despite its high rankings in many recent assessments of competitiveness, the Helsinki Region remains a medium-range generator of wealth by the standards of European regions. It is questioned why so little added value has emerged from such an excellent platform.

4.18 The strategy therefore hopes to improve the international appeal of research and expertise by encouraging a joint effort to marketing the Helsinki Region internationally as an integrated region; through international student recruitment; collaboration on the degrees and courses to be offered in English; the launch of the Helsinki School of Creative Entrepreneurship; providing better service to foreign students and researchers; financing annual invitations to world-class researchers to work at the Universities and research institutes; and jointly supporting career opportunities in the region for students completing their degrees.

4.19 The reinforcement of knowledge-based clusters and creation of common development platforms will be achieved through actions such as a high level steering group to direct further evolution of existing development platforms and establishing a Forum to serve as an open idea platform and co-ordinating body.

INNOVATION – ZUID NEDERLAND

4.20 Whilst Uusimaa outperforms the South East on every measure of innovation, Zuid Nederland leads the way in patent registrations and high-technology patent registrations in Europe by some margin, and so becomes the focus of our attention here.

4.21 Zuid-Holland is the largest province of the Netherlands situated in the western part of the country and is the most densely populated region in Europe. It is the most important Dutch province in terms of economic activity. The region has major cities such as Rotterdam; the Hague (the centre of national government and the provincial capital) and the university towns of Leiden and Delft.

4.22 The region is home to the largest port (in terms of tonnage) in the world - the port of Rotterdam. This is a key feature of the region's economy. However, the city of Rotterdam has boosted competitiveness by promoting non-port-related industries, including ICT, multimedia and biotechnology.

4.23 The region sits within the wider Randstad, an urban region that spans across four provinces: Noord-Holland, Zuid-Holland, Utrecht and Flevoland, forming the backbone of economic development for the whole country. Realising they faced common problems, the urban areas in this wider region have joined together to increase competitiveness of the Randstad and the quality of life for its residents. In this way the region has embraced the new regionalism of the EU and allowed economic development of a region irrespective of national boundaries. The principle aims of the Board of Provincial Executives of the Randstad are to embrace the knowledge economy and the development of sustainable rural land.

Innovation

4.24 The Dutch R&D sector relies on clusters of academic institutions, research institutes and hi-tech companies. These have received considerable public backing, and real buy in to foster co-operation between the public and private sectors. SenterNovem is the national body charged with implementing policies on innovation in the Netherlands and its tasks include;

- financial support;
- the development of (international) knowledge networks;
- knowledge dissemination;
- setting up and guiding transition processes; and
- policy development advice;

4.25 It is concerned primarily with networks and collaborative practices and the area therefore has many higher education institutes with significant industry links including:

- Center for Mathematics and Information Science (CWI) (Amsterdam);
- Center for Atomic and Molecular Physics (Amsterdam); and the

- Delft Institute of Microelectronics and Submicron Technology.

4.26 In 1997 the Dutch government introduced ' Centers of Excellence' for key manufacturing industries. These centres are jointly funded by the government and a consortium of companies. The centres are comprised of a network of specialists from universities and respective industries working on pre-competitive industrial research.

4.27 An overarching strategy priority is in harnessing the knowledge economy potential provided by hosting most of the Netherlands' research centres and the complementary profiles of the four main cities of the Randstad:

- Amsterdam as an international service centre;
- Rotterdam as a global logistics hub;
- The Hague as the centre of the Dutch government; and
- Utrecht as a gateway linking the Ranstad to the rest of Holland.

4.28 In addition there are a number of tech-based incentive schemes operating in the Netherlands to attract potential investors, including:

- The Incentive for Research and Development Costs in the Netherlands Program promotes corporate R&D by deducting tax from R&D wage costs; and
- The Technological Partnership scheme aims to increase corporate R&D investment in the Netherlands and to improve the returns of these investments by partnering relevant organisations.

4.29 The most interesting development from the South East's perspective is innovation collaboration between Pudong province (Shanghai) in China and Zuid Nederland. A memorandum of understanding was signed in November 2004 and came into effect on January 1st 2005. The agreement purpose is:

The People's Government of Pudong New Area of Shanghai, China, and the Province of South Holland, The Netherlands agree to stimulate innovation processes through international cooperation between their companies and research institutes and their counterparts in their respective regions. This cooperation will include exchange of researchers, establishments of business and research units in each others region or the organization of research alliances.

4.30 The partners of the Program can be divided in three categories:

- First, there are the governmental partners who are interested in attracting scientific activity and science based businesses to their area.
- Second, we have scientific partners, in whose interest it is to combine different specific knowledge and competencies and to serve and attract researchers and scientific projects of international standing.
- Third, there are the business partners, interested in having access to high quality personnel, good infrastructure and profitable economic circumstances.

4.31 The Chinese side offers research services in key industries such as Life Sciences, ICT and alternative medicines and operational support relating to new markets and other factors. The Dutch reciprocate this in similar industries, particularly focusing on high skilled surgical expertise.

4.32 The programme is facilitated by two programme bureaus, situated in The Hague and Pudong. The bureaus serve the executive part of the programme and will not participate in the programme activities. The support consists of matchmaking for interested parties, help with regulations, funds and employees, as well as recruitment of researchers, students and institutions. Furthermore, the bureaus put effort in initiating new plans and make the partners aware of unknown possibilities. The Program bureaus coordinate the offer and demand of the partners and support the services offered. They will manage the services to fit the demands of partners and businesses.

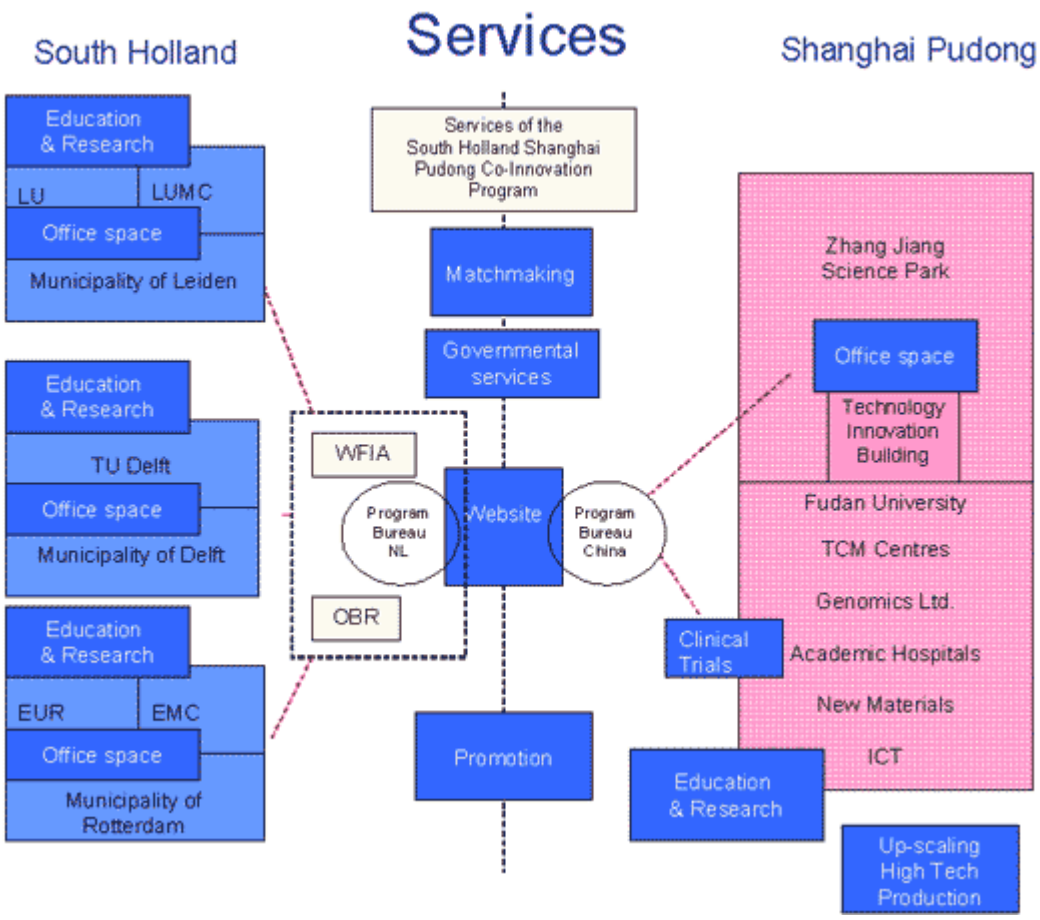
4.33 The main activities of the bureaux are to:

- Set up and manage the organisation of Program activities and an interactive platform;
- Work out plans for co-operation by the partners of the Program;
- Find partners and parties to take part or set up new activities for the Program; and
- Maintain contacts between the Dutch and Chinese side.

4.34 The expected results are stated to be better qualified researchers in Shanghai and South Holland; research and production alliances in Shanghai Pudong and South Holland; and, welcoming high-tech businesses in South Holland and Shanghai Pudong.

4.35 Services on both sides are coordinated by a "service centre". These services centres are in existence to facilitate links between all sub-regional partners.

4.36 In China the "service centre" is guided by the Shanghai Pudong Productivity Centre (SPPC), whilst in Zuid Nederland it is guided by the West Holland Foreign Investment Agency (WFIA) and Rotterdam Development Corporation (OBR) as shown on the diagram below.



Source: South Holland – Shanghai Pudong Co-innovation Programme website. 2006.

4.37 The Programme offers several activities to support the co-innovation process. The circumstances to make contacts, discuss innovative ideas and set up new activities in new areas are established through the organisation of seminars, matchmaking events and start ups. Current activities include:

- Cooperation in the field of **Traditional Chinese Medicine**. The cooperation will include the establishment of business and research units in each others' region and the exchange of students, researchers and medicine.
- A **virtual gaming website** on co-innovation which is being developed with Tam (Delft) and Hotsales (Shanghai). The game will start with a pilot which will, for example, focus on developing a drinking water system in Shanghai and is oriented at both Dutch and Chinese students. The eventual winners of the game will be greatly rewarded.
- They are also working on a Dutch-Chinese **website for the recruitment** of research trainees and postgraduates.
- In order to make it more attractive for MSc students to start their own business, a **business plan contest** is being developed. MSc students

who come up with the most feasible and innovative plan, will receive extensive help from different experts in starting up their own business in the Province of South Holland.

- **China Innovation Tour 2006,** following on from the successful 2005 Tour, will focus on ICT, composites and new materials. The delegation members will pay visits to research institutes and hi-tech companies in the field of their interests in both Beijing and Shanghai, and have the opportunity to meet their potential Chinese partners during the seminar and the matchmaking event.

4.38 Even if the degree of co-operation and synergy leveraged from joint working fails to significantly increase innovation, it promises to afford a mutually beneficial outcome to both Pudong and Zuid Nederland by further opening up respective markets.

4.39 The key messages from the Zuid-Holland case are that joint working between the public and private sectors, and between otherwise unrelated global regions can bring great benefits to their wider area. The region is now collaborating with a region of the fastest growing nation in the World on innovation, which in turn will open up new markets.

INNOVATION AND INVESTMENT – RHONE ALPES

4.40 The Rhone-Alpes region is the second largest in France. Out of the 22 regions, Rhone-Alpes has the second largest population (9.8%, after Paris-Ile De France 18.7%). It is also in the top 3 regions in terms of working population.

4.41 The region has the second highest regional GDP due to its well-developed industrial base (ranks 14th and 48th among European regions in terms of GDP and GDP per head respectively). Moreover, the region is well positioned in terms of international trade:

- **Accounts for 11.1% of the total French exports (2nd highest);**
- **Biggest recipient of foreign direct investment in 2002; and**
- **868 companies with foreign capital (employing more than 50 people and having more than 30 % foreign capital).**

4.42 The region benefits from its location at the heart of fundamental pan-European trading axes: connecting the most dynamic regions in Europe such as North of Italy, Switzerland, Western Germany and Benelux. It is well connected by extensive and modern pan-European rail and road networks and act as a major air traffic hub (Lyon-St Exupery airport).

4.43 It is also well positioned in terms of availability of highly skilled labour force. The network of universities and Grandes Ecoles as well as other forms of education and professional training is particularly well developed and the region works at ensuring close links between educational institutions and firms.

4.44 There seems to be a concerted effort in the region to re-structure the economy by supporting emerging high-tech and growth sectors and clusters. In addition, the region is investing in a very active international positioning not only to facilitate trading (export and foreign direct investment) but also to encourage local companies to 'go global'.

4.45 In relation to innovation and enterprise the region is undertaking a systematic facilitation of networking, bringing together not only direct but also indirect economic agents (companies, consumers, schools, universities and regional agencies) which is central to the innovation and enterprise agenda in the region. The specific initiatives include business incubation, clusters, specialist organisations for key sectors and the creation of Regional Innovation and Development Agency. This facilitates:

- knowledge sharing across the region; and
- the concentration of resources and leverage of synergies.

Innovation

4.46 The region has substantial innovation assets. For instance, the region accounts for 10% of the French scientific publications, 15% of patents created in France and 20% of French engineers are from the Rhone-Alpes universities and Grandes Ecoles. Moreover, there are more than 600 R&D labs and a total of 25,000 researchers and engineers (2nd highest after Paris-Ile De France).

4.47 The innovation agenda in the region has the following two objectives:

- Enable the firms in more "traditional industries" to innovate and build competitive position especially against competitors from low cost regions; and
- Enable to build and gain competitive advantage in emerging high-tech sectors.

4.48 Innovation is supported by specific measures including:

- **Enterprise incubation**: The region has two organisations supporting enterprise incubation (Crealys and GRAIN). They mainly provide technical, business and entrepreneurship expertises as well as training;
- Large number of **universities** and Grandes Ecoles specialise in scientific and high-tech sectors and are involved in helping companies, notably offering expertise through student internships;
- **Organisation of congresses** bringing together researchers, scientist and other specialists from all over the world;
- **Specialised organisations**: These are groups specialised in one specific technological sector (new materials, automation, test & measure, design, biotechnology and ICT & electronics) providing specific expertise about their specialist industry. In addition to these sector-oriented organisations, there are the Fond d'Expertise and the Fonds Consultants. These organisations provide Technological development project feasibility study, business, project and technical consulting;
- **Organised clusters**;
- Creation of the **Regional Graduate Education & R&D Plan** ((SRESR)): This plan focuses on:
- Creating networks and clusters of scientific and R&D organisations scattered around the region;
- Helping finance specific projects selected specially for their leading edge character;
- Enabling cooperation between Rhone-Alpes universities, Grandes Ecoles and other scientific organisations and international counter-parts;
- Promoting scientific, technological and industrial knowledge to a large proportion of the population; and

- Creating the **Regional Innovation and Development Agency** which will be responsible for facilitating technological and scientific transfer (notably between universities, labs and firms) helping SMEs innovate and facilitating clusters.

Investment

4.49 Under the new Regional Economic Development Plan investment will take place to maintain and develop sectors generating high quality jobs and generating substantial added value including:

- **Support for enterprise creation and transfer** (in case of retirement of owner or bankruptcy): The support includes financial aids (from loans at good conditions to grants) and specific training such as business management.
- **Creation of clusters**: The region is helping to create networks bringing together different organisations such as businesses, universities and support organisation involved in similar high-tech sectors. The following have been identified as priority clusters:
    - Aerospace;
    - New energy;
    - Rolling stocks (automotive, rail);
    - Digital entertainment;
    - ski and other snow-related industry; and
    - biological industry.
- **Support to 'go global'**: The region provides financial aids to firms which have projects to expand their activities abroad. They also provide support to be present at international conferences and exhibitions. The region has created the Enterprise Rhone-Alpes International (ERAI) which has representative offices in 10 countries (Spain, Italy, Germany, Benelux, Poland, USA, Canada, China, Japan and Sweden) supporting Rhone-Alpes firms to develop their activities in these countries and find local partners. ERAI also promotes the region in these countries encouraging inward investment.
- **Develop further the educational system not only in terms of initial education but also professional education:** In order to support the industrial restructuring, the region aims to create an educational system which will:
    - provide the skills adaptable to the new sectors;
    - provide an updating of these skills throughout the professional life time of individuals; and
    - be recognised beyond the regional boundaries.

- **To develop further international exposure:** Develop and sustain economic development in an international context (e.g., helping exports, encouraging foreign investment).

INVESTMENT – The Republic of Ireland

4.50 Here the need is to identify a region that is "mature" yet maintains a high level of investment relative to GDP or high inward flows of FDI. Given a lack of comparability at regional level this task is particularly difficult.

4.51 Ireland is a clear candidate. FDI accounted for some 17.7 per cent of GDP in 2003, easily the highest amongst OECD nations. U.S. FDI has included multi-billion dollar investments by Intel, Dell and IBM. There are more than 600 U.S. subsidiaries operating in Ireland, employing in excess of 100,000 people.[12] The economy as a whole has enjoyed a period of strong economic performance in recent years, showing the strongest growth in GDP over the period 1999 – 2003 of all the EU15 member states (on average over the past decade. This is shown in GDP per head figures, in 1986 it had GDP per capita of 30% below the EU 15 average, today its GDP per capita is 30% above the EU average).

4.52 Irelands' economic strategy documents (Ahead of the Curve and Transforming Ireland) aim to enhance enterprise in Ireland through providing the conditions for Ireland's firms to develop expertise in innovation, technology and research to support the development of high value products and services. There is a strong emphasis on enabling Ireland's businesses to compete successfully in international markets. The strategies identify Ireland's competitive advantages as being: expertise in development of technology; world class skills, education and training; an attractive taxation regime; and a single minded national consensus on the enterprise agenda combined with governance systems that enable swift decision-making and execution.

4.53 Achieving competitiveness at national, regional and local levels, in an open and globally integrated economy such as Ireland's is central to balanced regional development. Future living standards and capacity for progress will be determined by Ireland's ability to trade successfully in international markets and to capture an adequate share of mobile investment with its associated high productivity jobs. To this end the Irish Industrial Development Agency (IDA) is charged with attracting inward investment to the country.

4.54 As a relatively less populous nation Ireland has a very small domestic market. This has been recognised by strategy makers in Ireland for some time, with strategies from the 1950's onwards focusing on inward investment as a key aspect of policy. Inward Investment is covered by the DETEs executive agency IDA having been particularly prominent.

Investment Strategy

4.55 The Ida's Ireland's strategy is targeted at investors seeking appropriate locations for advanced manufacturing or office based activities depending on highly skilled processes in high value added activities.

4.56 IDAs current strategy is based on the following objectives:

[12] Source: Wikipedia.

- To continue to attract suitable, high quality, knowledge and skills based Foreign Direct Investment (FDI) to Ireland. And in doing this to place Ireland at the leading edge of the global economy in relevant and specific niches.
- To achieve a better, more equitable regional balance in investment across Ireland. To mobilise regions rather than local areas to compete actively with regions internationally.
- To develop clusters of excellence in which a range of companies and R&D centres operate to create a climate of innovation and entrepreneurship.
- To work with current inward investors to move up the value chain and utilise the ever-expanding skills base of the Irish workforce.
- To encourage companies to move towards more advanced technological processes with a greater focus on R&D.

4.57 Ireland has managed to buck the trend across Western Europe by retaining a significant presence in manufacturing. Manufacturing output in Ireland is now two and a half times what it was in 1995 and employment in manufacturing companies in Ireland in 2005 is 5% higher than it was in 1995. Contrast this with the South East where manufacturing continues to slide.

4.58 The extent to which this high level of investment is as a result of good practice in attracting FDI rather than financial incentives - capital grants and favourable tax treatment is unknown.

4.59 Irelands key investment sectors in terms of FDI are:

- e-Business;
- engineering;
- information communications technologies;
- pharmaceuticals;
- medical technologies;
- financial and international services;

4.60 Many of these are manufacturing industries, but are also high value added, as borne out in the above statistics. Employment has changed comparatively little over the last decade but output has more than doubled.

4.61 Enterprise development is a key feature of economic development in Ireland, with an emphasis both on the development of SMEs and the creation of world-class Irish companies. The key economic strategy documents (*Ahead of the Curve* and *Transforming Ireland*) aim to enhance enterprise in Ireland through providing the conditions for Ireland's firms to develop expertise in innovation, technology and research to support the development of high value products and services. Moreover, there is a strong emphasis on enabling Ireland's businesses to compete successfully in international markets. The strategies

identify Ireland's competitive advantages as being: expertise in development of technology; world class skills, education and training; an attractive taxation regime; and a single minded national consensus on the enterprise agenda combined with governance systems that enable swift decision-making and execution.

4.62 The South East can never hope to compete on tax breaks or wage costs, but can more than compete on the rest of the package as wage costs in Ireland inevitably rise. There is a future for manufacturing, albeit at the very highest value added end of the scale.

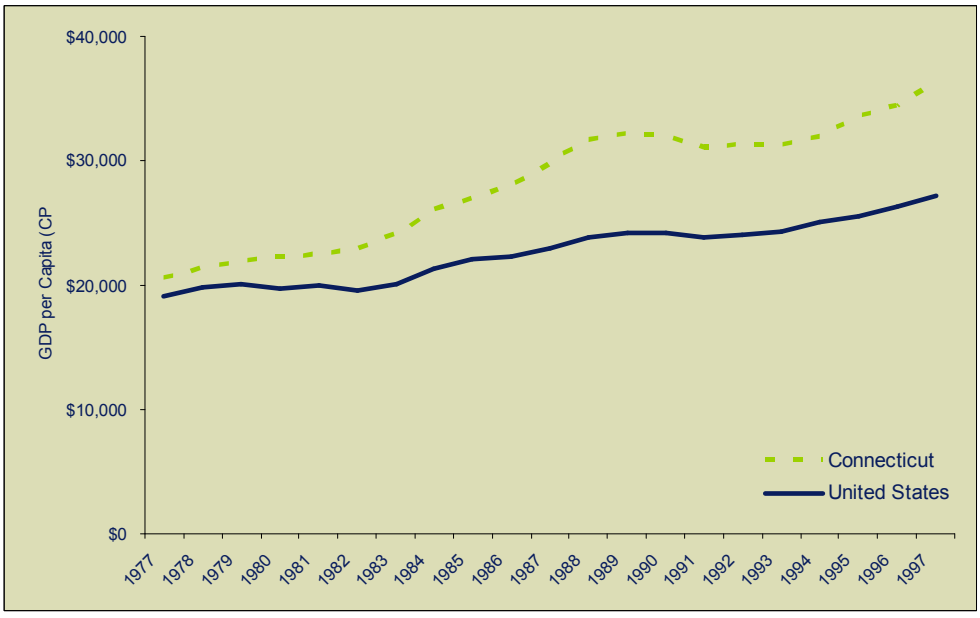
PRODUCTIVTY & SKILLS - Hartford

4.63 Hartford is a standout region in the US for per worker productivity. It is consistently ranked top US area in labour productivity terms, and 2nd in GDP per capita terms.

4.64 Part of the "New England knowledge corridor". Local students top the US league table in terms of results on standardised test scores and high school completion rates. This is a major metropolitan region with close to 800,000 skilled and educated workers, 40,000 businesses, an international airport, three Interstate highways, outstanding quality of life and a concentration of Universities and Colleges that is over 10 times the national average.

4.65 To heed best practice it is worth noting that the area has not always been a global leader. Until the late 1970s the area performed at or around the US average in terms of GDP per capita. The state of Connecticut, of which Hartford is a major part, saw unprecedented growth in GDP per capita between the late 70s and late 90s, as shown in the chart below.

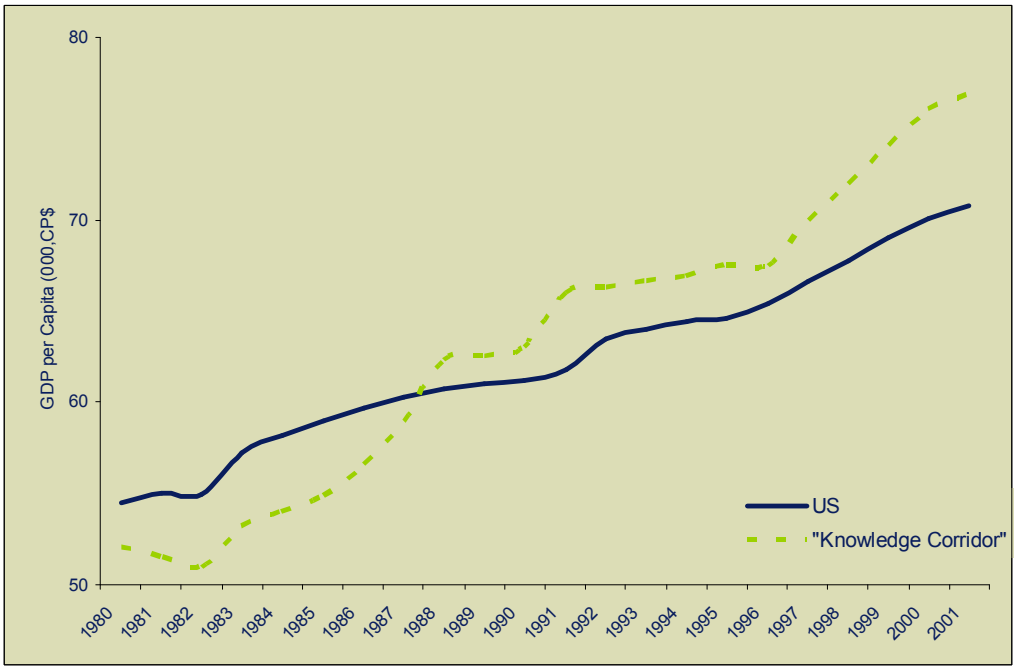
Figure 20 – GDP per capita, 1977 – 1997.



Source: US Bureau of Statistics

4.66 With only a small decline in population or participation in the knowledge corridor, productivity grew at a fast pace to provide this increase in wealth – increasing from well below US average in 1980 to the national leader by 2001.

Figure 21 – Per worker productivity, 1980-2001.



Source: Economy.com, Hartfordsprigfield.com

4.67 The key question to ask of Hartford and the knowledge corridor is why is it in such a strong position today? The concentration of knowledge in the area is one amongst a number of key factors, including location.

4.68 The knowledge corridor has 32 colleges and universities and 120,000 students, these measures are 11 times the US average concentration. Coupled with this is the high level of collaboration between these centres of learning and the local business community. Equally, Local universities foster links with the wider business community through partnerships with major local employers as well as SMEs. These mutually beneficial schemes give start-ups access to higher skills than those otherwise available and help students turn academic knowledge into business acumen.

4.69 Despite the concentration of education the area views graduate retention as a problem and has an active program to retain gradates from the many educational establishments in the area.

4.70 The area also specialises in a number of key industries including:

- Insurance;
- High-value added manufacturing; and
- Education;

4.71 It has benefited from growth in demand for Insurance over the last two decades, but also retains a manufacturing presence to give a balanced economy.

Key Success Factors

4.72 Workers in the region have long been the best educated in the world, thanks to the strong public schools. Industries that have flourished in the region for decades, such as financial services, insurance and precision manufacturing, are knowledge-based, so have created a critical mass of **skilled, knowledgeable workers**.

4.73 The brightest jewel in the Knowledge Corridor Crown[13] is the **number and quality of its colleges and universities**. Every year 108,000 students attend those colleges and universities, enrolling in a comprehensive range of programmes leading to bachelors' masters' and doctoral degrees. Those students and the faculty that educate them, represent an unparalleled opportunity for business. As manufacturing receded, a new knowledge-based economy emerged and even in manufacturing the region's workforce has changed with proportionately more managers, engineers and technicians employed.

4.74 **Technology transfer**. The area has a history of technical advances which were patented, fabricated and exported to entrepreneurs. This success has resulted in a pool of engineers, machine operators and technical experts thus further contributing to the area's skilled workforce. Incubated companies and laboratories also transfer information, and exchange and develop their skills

4.75 Success has also been aided by the establishment in 2000 of the **Hartford-Springfield Economic Partnership (HSEP)**. HSEP was established to market the combined areas as a single region. It is a collaborative initiative of 16 public and private economic-development organisations and educational institutions across state borders. The group's aim was to enhance economic development across the combined region through joint planning and cooperation to capitalise on the region's shared history, workforce, educational institutions and other assets.

4.76 The impetus behind 'New England's Knowledge Corridor' presumes that its **sum will be larger than its component parts**. In aggregated form, the four counties constitute 85 cities and towns with a total population of 1.6 million (U.S. Census, 2000). This makes the 'Knowledge Corridor' the second most populated region in New England, accounting for 39,405 businesses and an approximate $2.3 billion in annual business-to-business trade flows (UMass and UConn, 2001).

4.77 A new **"built" landscape** also emerged to accommodate this expansion of the knowledge-based economy. Modern office towers, R&D facilities, and up-scale housing developments and retail malls emerged.

[13] CT Business Magazine, December 2000

4.78 A competitive **cost structure** which results from low industrial and commercial office and retail (rental and land) costs and relatively reasonable water costs due to the large supply of water (particularly in Springfield).

4.79 **Local programmes** such as the "Springfield Plugged-In City Technology Programme". This programme packages vacant low-cost office space with business support services (e.g., tax credits, rent abatements, special utility rates, employee credits, and fibre). The program markets the vacant retail and office space of a designated area as Internet-ready or "information district." These districts are envisioned, from a political economic perspective, as areas of desired urban regeneration that would potentially coincide with and respond to any real estate demands from the businesses trained at the Springfield Technical Community College (STCC). The programme coordinates with other actors across the region.

4.80 **Linkage between universities, colleges and business**. For example, STCC (1996) is one of only ten centres nationwide that is funded by the National Science Foundation (NSF), which meets the needs of telecommunications and information technology sectors; it is also sponsor of the STCC - Technology Park and the Springfield Enterprise Centre. The college received a $5 million grant from NSF in 1997—in participation with 20 Northeast colleges/universities and 14 high schools. Together with $500,000 of their own and $4.5 million in matching grants from private telecommunications companies, STCC has created the Northeast Centre for Telecommunications Technology (NCTT), which develops telecommunications education programs, textbooks and CD-ROMs, and monitors trends in the telecommunications industry. Both the Springfield Enterprise Centre and STCC – Technology Park and NCTT provide thousands of square feet to entrepreneurial businesses region wide, many of which remain in the Springfield area after taking advantage of the park's resources. NSF has also designated STCC as one of its nine National Centres of Excellence in Advanced Technological Education nationwide (Union New – Sunday Republican, September 3, 1997).

4.81 **Additional strategic initiatives**. Additional strategic initiatives include the Hartford Inner City Business Strategy Initiative (DECD and ICIC, 1999), which has assembled corporate, government and community leadership. The undertaking has produced a detailed analysis of Hartford's inner city economy—based on industry clusters that drive its growth and the strategies and action plans that facilitate it. An economic development and job creation strategy also has been initiated by the City of Springfield. It encompasses six programs: Fibre Optics – Telecommunications (i.e., Springfield 'Plugged-In City Technology Program'); Riverfront/Basketball Hall of Fame; Downtown Revitalization; Industrial Land Development; the UMass/Baystate Health System Springfield Initiative; and, the Economic Development Incentive Program (City of Springfield, 2001).

4.82 One of the important aspects behind strategic initiatives is **knowledge creation**. 'High-tech' incubators like STCC – Technology Park are essential to this process through the local and regional attraction, retention and training of a skilled work force. In fact, STCC has partnered with other education

institutions and private information technology (IT) vendors in the region to train workers at key IT companies through State and Federal levered finance.

4.83 **Workforce investment boards (WIBs)**. The region has three WIBs which were created by the new Federal Workforce Investment Act to oversee all federally funded workforce-training programs, training an estimated 966,000 workers who make their living in the 'Knowledge Corridor.' Funding from the Federal IT2 project and partnership working between the WIB, universities, colleges and various private IT vendors has led to the training of workers at key technology companies in the region.