SCOTTISH EXECUTIVE

Competitive Scottish Cities?

Local Government

social research

COMPETITIVE SCOTTISH CITIES?
PLACING SCOTLAND'S CITIES IN THE UK AND EUROPEAN CONTEXT

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EXECUTIVE SUMMARY

Urban Competitiveness – what really matters?

We define and measure urban competitiveness in terms of six characteristics: economic diversity; skilled workforce; connectivity; strategic capacity to implement long-term development strategies; innovation in firms and organisations; quality of life. Our original study for the Office of the Deputy Prime Minister collected evidence on these characteristics for the English Core Cities along with a number of successful continental European cities. This project adds the six Scottish Cities to the analysis.

Scottish Cities in the UK context

In terms of size and scale only Glasgow and Edinburgh are comparable to the English Core Cities. Edinburgh and Glasgow are also significant employment centres. These cities have been leading in terms of growth in employment between 1998 and 2002, with growth rates ahead of the Scottish average. The only English Core Cities with greater percentage growth in total number of employees are Manchester and Newcastle.

Edinburgh and Stirling are the two Scottish cities to have experienced increases in their residential population between 1996 and 2003. The only English Core Cities to experience population growth during the same period were Manchester, Bristol, and Leeds. Both Aberdeen and Dundee saw their residential population fall by more than any of the other English Core Cities.

Employment rates are generally high in Scotland, with a high proportion of the working age population in work. Aberdeen and Edinburgh have employment rates ahead of any of the English Core Cities. And these cities have high levels of GVA per capita, as does Glasgow. Across the board the Scottish cities have a well-qualified workforce and attainment levels at the end of compulsory education are good.

Scottish Cities in the European context

There is only limited data available at the city level. Again this shows that generally Scottish cities are smaller in terms of total numbers of residents and total employment than the successful European cities. The Scottish cities and their regions tend to perform well in terms of employment rates and well-qualified work force. However, productivity and innovation are lower than in many successful European cities.

Connectivity, in terms of air links, is improving. With low-cost carriers increasing connections between Scotland's cities and many English and European destinations.

Remaining Gaps

This report made use of readily available quantitative data. However, many gaps remain. For example innovation, strategic capacity and quality of life are areas that need to be explored further.

CHAPTER 1. INTRODUCTION

1.1 Cities are once again high on the UK government's policy agenda. In common with many European governments, the government no longer sees cities as problems or as a drain upon the nation's economy - but as current or potential drivers of improved regional and national economic performance. This has led to a growing concern to define and understand the nature and roots of urban economic competitiveness in the UK and abroad. In particular there is a belief amongst policy makers at many levels of government that UK provincial cities do not compare well with leading European cities – or indeed London - and that they lack the powers, resources and responsibilities to improve their economic performance. For example, during the past two years, the English Core Cities Working Group which includes the eight English, Regional Development Agencies and the economic departments of UK government has been exploring the position of UK cities in a European context and the potential policy implications. They commissioned the European Institute for Urban Affairs (EIUA) to undertake a review of the evidence of the comparative performance of a series of continental cities. That work was published in 2004 as *Competitive European Cities? Where Do the Core Cities Stand?* (Parkinson et al 2004)

1.2 The Scottish Executive commissioned the European Institute of Urban Affairs to extend its analytic work on European and English cities to the leading Scottish cities. Hence this project benchmarks the performance of the six Scottish cities – Edinburgh, Glasgow, Aberdeen, Dundee, Stirling and Inverness – against a number of successful European Cities and the English Core Cities. It makes the best possible use of readily available, quantitative data to track socio-economic change and compare the performance of these different cities over time.

WHAT IS URBAN COMPETITIVENESS?

1.3 The EIUA shares the definition of competitiveness developed by Michael Storper as "the ability of an economy to attract and maintain firms with stable or rising market shares in an activity while maintaining stable or increasing standards of living for those who participate in it" (Storper 1997). The competitiveness of cities is not just about the income of firms but also how that income goes to residents. Our work for the Competitive European Cities identified six critical characteristics that contribute to urban competitiveness; the first five of these are explored in this study:

- Innovation in firms and organisations
- Economic diversity
- A skilled workforce
- Connectivity – internal and external
- Quality of life – social, cultural and environmental
- Strategic capacity to mobilise and implement long-term development strategies

MEASURING PERFORMANCE

1.4 Comparative studies of city performance often highlight the lack of robust city level data that is comparable on a trans-national basis. As a result many studies have relied on regional or city-region data. These studies of competitiveness[1] tend to use very similar indicators of success. Often these are the best possible measures, but in some cases researchers have to balance what's desirable with what is possible and make effective use of the best available data. Consequently many of the factors most pertinent to competitiveness – including innovation, governance and connectedness – remain little quantified on a comparative basis.

1.5 The measures we used in this study are simple, transparent and accessible. They are designed to capture the big picture across a range of socio-economic factors and track the performance of urban areas over time across the drivers of competitiveness. The indicators included in this report have been selected since they:

- identify the extent to which the cities possess characteristics that contribute to competitiveness;
- provide a comparative overview of each of the cities;
- place the performance of Scotland's cities in the wider UK and European context;
- provide supporting evidence against which to interpret and assess other studies.

DEFINING THE CITY

1.6 Cities vary significantly in scope and scale and these differences are in part due their boundaries. "Under-bounding" occurs when the administrative of a city does not correspond with its real economic reach or influence. Others are "over-bounded", incorporating large areas of rural or semi-rural land along with the urban area. The cut off point for city boundaries can have a significant impact on their performance socio-economic indicators (Cheshire 1997). For example, cities in England tend to have high levels of deprivation concentrated in the inner-city areas with wealthier suburbs towards the edge of the area. Tightly drawn boundaries can exclude successful areas from citywide averages. The opposite can be seen in many French and Italian cities where deprivation is often concentrated on peripheral housing estates. There tightly drawn boundaries exclude less successful areas.

1.7 To ensure true comparability when evaluating city performance across Europe, city boundaries data would need to be standardised, ideally on a basis that reflected the functional reach of the urban area rather than administrative boundaries. However, data is not readily available for 'ideal' boundaries. Data presented in this report is for standard geographies – most usually the cities as defined by their current administrative boundaries. This has three advantages. First, this is the level of political accountability. Second, this is the functional level of most service delivery. And finally, this is the spatial level at which most readily available secondary data is published.

[1] See Technical Annex for details

WHERE DID WE LOOK AT AND WHY?

1.8 This project adds the six Scottish cities to the list of cities covered in the *Competitive European Cities Project.* These European cities were identified as competitive cities in the EU's Islands of Innovation report (Hilpert 1992). This initial list was expanded to include cities that had performed well since the early nineties – Barcelona, Helsinki, Toulouse and Lille. The eight English Core Cities are also included; these provided the main focus of the original work.

Table 1.1: Study Cities

Scottish Cities	English Core Cities	European Cities
Edinburgh	Newcastle	Copenhagen
Glasgow	Nottingham	Dortmund
Aberdeen	Leeds	Frankfurt
Dundee	Sheffield	Munich
Stirling	Manchester	Stuttgart
Inverness	Birmingham	Lille
	Liverpool	Lyon
	Bristol	Toulouse
		Helsinki
		Milan
		Turin
		Amsterdam
		Rotterdam
		Stockholm
		Barcelona

1.9 In the case of Inverness and Stirling it was inappropriate to use the relevant Local Authority boundary as these cover large areas of rural Scotland. Instead, wherever possible, the wards identified as 'Inverness' in Highland Council's Local Plan April 2003, and the wards which best-fit the 'Stirling City' area as defined by Stirling Local Authority were used. Population, employment, benefits and unemployment data are all available for these ward-based boundaries. Where data for these boundaries has not been available Local Authority data has been included, this is indicated in the text with the label 'Highland' or 'Stirling LA'.

1.10 Where data has not been available at the local authority level we have used data for larger spatial levels. The Nomenclature of Units for Territorial Statistics (NUTS) is a hierarchical classification of administrative areas, used across the European Union for statistical purposes. Much of the data produced by Eurostat is for these larger areas. Whilst this is not ideal NUTS 3 data for Edinburgh and Glasgow does correspond with local authority boundaries. The NUTS 2 and NUTS 3 areas for the Scottish cities are listed below.

Table 1.2: NUTS Areas

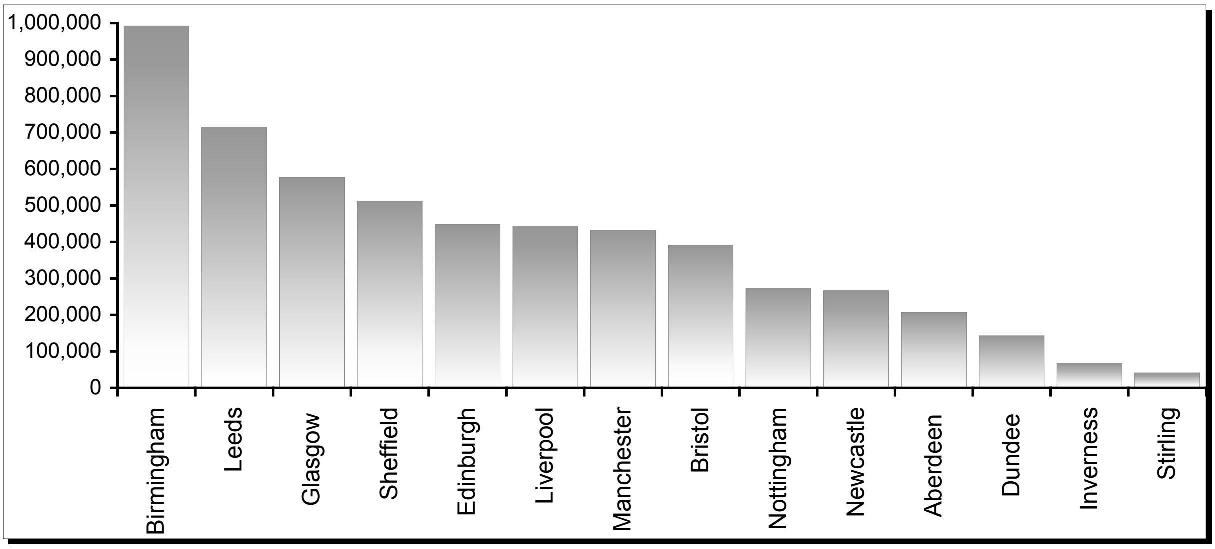
Scottish Cities	NUTS 3	NUTS 2
Edinburgh	Edinburgh	Eastern Scotland
Glasgow	Glasgow	South Western Scotland
Aberdeen	Aberdeen, Aberdeenshire and North East Moray	North Eastern Scotland
Dundee	Angus and Dundee	Eastern Scotland
Stirling	Perth & Kinross and Stirling	Eastern Scotland
Inverness	Inverness & Nairn and Moray, Badenoch & Strathspey	Highlands and Islands

CHAPTER 2. SCOTTISH AND ENGLISH CORE CITIES CURRENT POSITION

SIZE AND SCALE

2.1 Of the six Scottish cities included in this study only Glasgow and Edinburgh are similar in size to the English Core Cities. Aberdeen, Dundee, Inverness and Stirling are all significantly smaller in terms of residential population.

Figure 2.1: Total population 2003



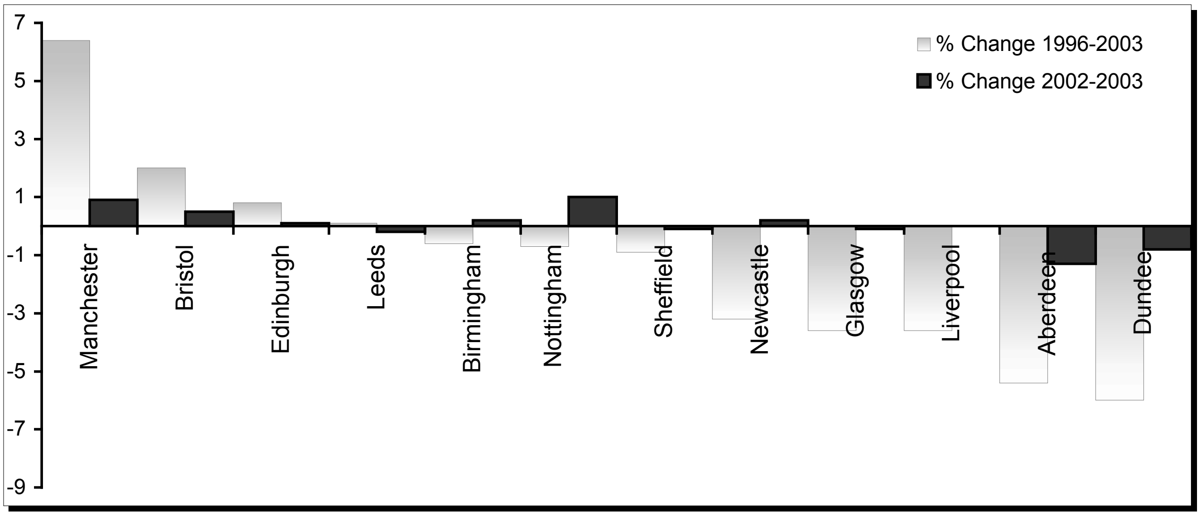
Source: ONS Mid-Year Population Estimates 2003

2.2 In this study we have used existing Local Authorities as the boundaries of cities. This approach allows us to use a wide range of readily available data sources. But it also has drawbacks – many UK cities are 'under-bounded'. Others are over- bounded and incorporate large areas of rural or semi-rural land along with the urban area. The cut off point for city boundaries can have a significant impact on socio-economic indicators. This is a particular problem in larger metropolitan areas where the built-up urban area is divided into a number of different Local Authorities.

INCREASINGLY ATTRACTIVE PLACES TO BE?

2.3 Cities across the UK have experienced significant falls in population over the last 30 years. Recently this trend has slowed and in some of the English Core Cities there has been modest population growth since 2001. However, between 1996 and 2003 the only cities to experience an increase in their residential population were Manchester, Bristol, Leeds and Edinburgh. By 2002/2003 there was a small increase in the population estimates for Nottingham, Manchester, Bristol, Birmingham and Newcastle. However Scottish cities, with the exception of Edinburgh, are continuing to experience low-level population decline, with Aberdeen and Dundee experiencing the largest population decreases.

Figure 2.2: Population change 1996-2003 and 2002-2003

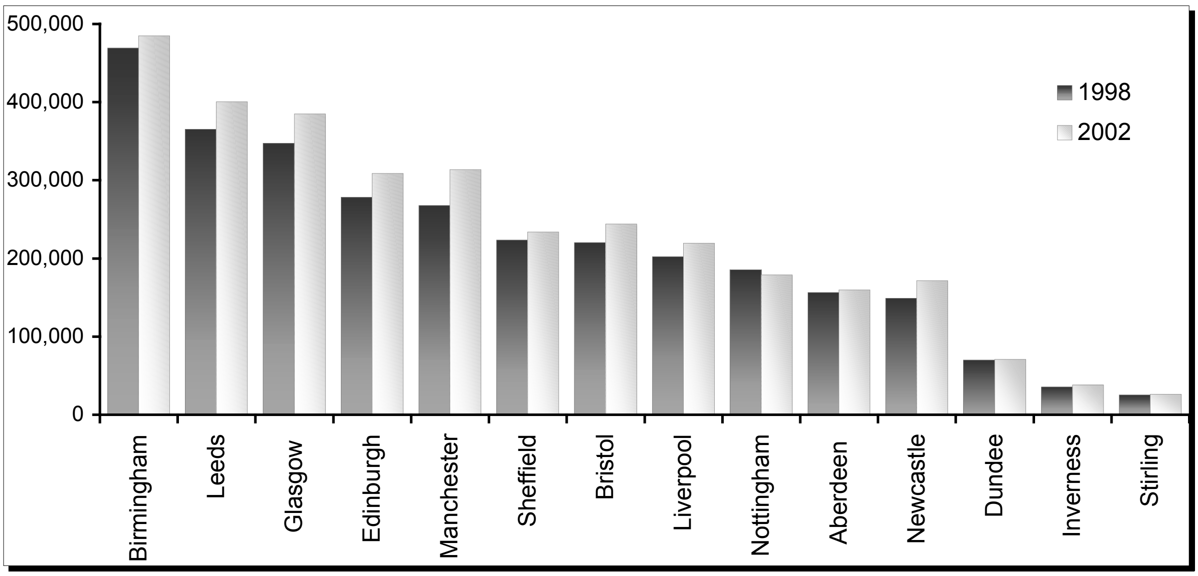


Source: ONS/NOMIS Mid-Year Population Estimates 1996, 2003
Estimated population for Inverness (2001) 66,600, for Stirling (2001) 41,000
Note: Population Estimates for Manchester have been revised upwards for 2001 by 26,200 following the Local Authority Population Studies conducted by the ONS see http://www.statistics.gov.uk/pdfdir/census0704.pdf

INCREASINGLY IMPORTANT CENTRES OF EMPLOYMENT

2.4 Some 43% of all employees in Scotland are working in the six Scottish cities. These employment centres dominate the Scottish economy. Employment increased in all the English Core and Scottish cities between 1998 and 2002, with the exception of Nottingham.

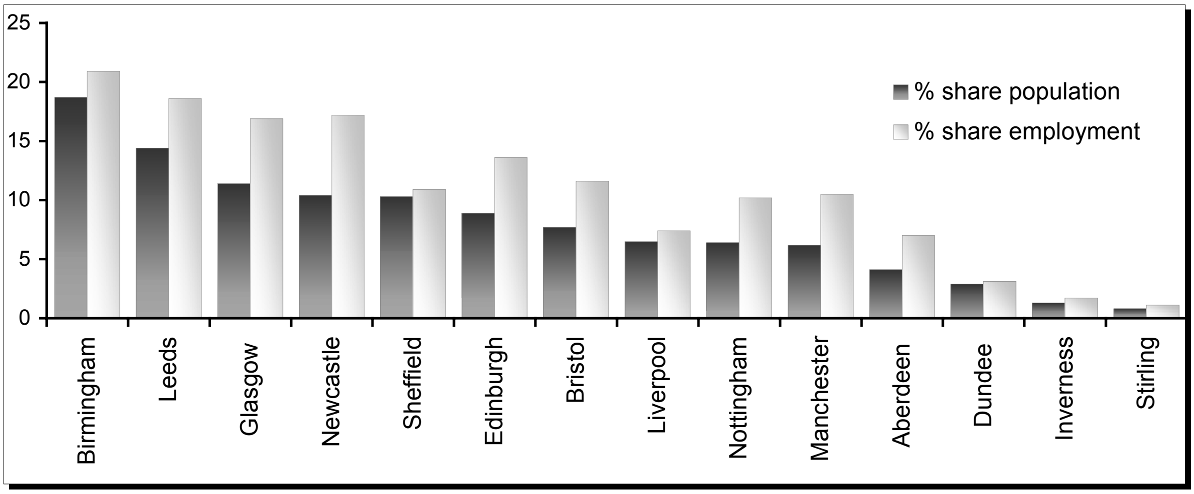
Figure 2.3: Total employment



Source: ONS/NOMIS Annual Business Inquiry 1998, 2002
Note: Data for Stirling based on 1991 Frozen wards of Argyll, Cornton, Gowanhill, Ballengeich, King's Park, Torbrex, Borestone, Whins, Ladywell, Logie

2.5 The English Core Cities and Scottish cities remain dominant regional employment markets, accounting for a higher share of regional employment than regional population.

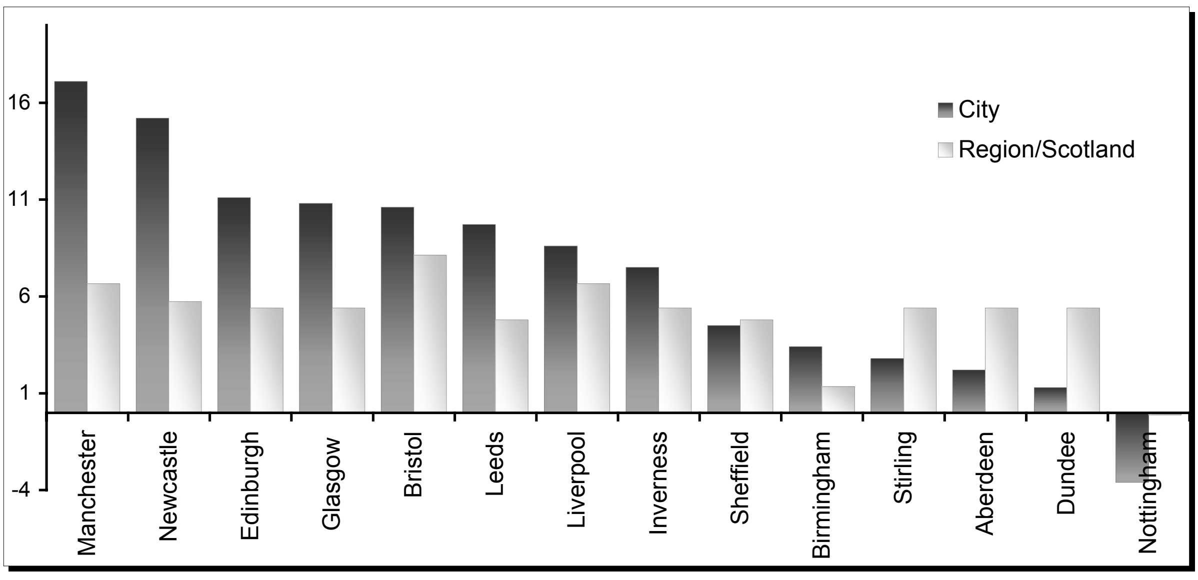
Figure 2.4: Percentage share of regional/ Scottish employment and population 2002



Source: ONS/NOMIS Annual Business Inquiry 2002

2.6 When taken as a whole, employment in the Scottish cities is growing at a faster rate than across Scotland. It was up 8.4% between 1998 and 2002, compared with a 5.4% increase for Scotland. However, the growth in employment in Scotland has been dominated by Edinburgh (11.1%) and Glasgow (10.8%). Aberdeen, Dundee and Stirling all have employment growth rates below the Scottish average. The English Core Cities have experienced a similar increase in the total number of employees: up 7.9% overall in the same time period. Again, employment growth is not evenly spread. The greatest increases have been in Manchester (17.1%) and Newcastle (15.2%) whilst employment in Nottingham fell by 3.6%.

Figure 2.5: Percentage change in total employment 1998-2002



Source: ONS/NOMIS Annual Business Inquiry 1998, 2002

2.7 Regional employment change varies across the UK. Between 1998 and 2002 there was growth of 8.1% in the South West and a fall of 0.1% in the East Midlands. The only English Core Cities to experience employment growth below their regional average are Sheffield and Nottingham.

Table 2.1: Percentage change in total employment 1998-2002

South East	7.3	West Midlands	1.3
London	4.2	East Midlands	-0.1
South West	8.1	Yorkshire and Humber	4.8
Eastern	4.1	Wales	5.5
North West	6.7	Scotland	5.4
North East	5.7	Great Britain	4.9

Source: ONS/NOMIS Annual Business Inquiry 1998 2002

2.8 The total employment data includes both full and part-time jobs. Across the UK employment growth has been significantly higher in part-time than full-time employment. In Nottingham, Aberdeen, Birmingham and Dundee the total number of full-time employees fell between 1998 and 2002. At the same time part-time employment has increased in all cities. When the growth of Full Time Equivalents (FTE) are analysed (where 2 part-time jobs are considered to be equivalent to one full time post) there is a similar pattern to that for total employment growth. Edinburgh and Glasgow perform most strongly in Scotland and Manchester and Newcastle show the greatest employment growth amongst the English Core Cities.

Table 2.2: Percentage change in total, FTE, full and part-time employment 1998-2002

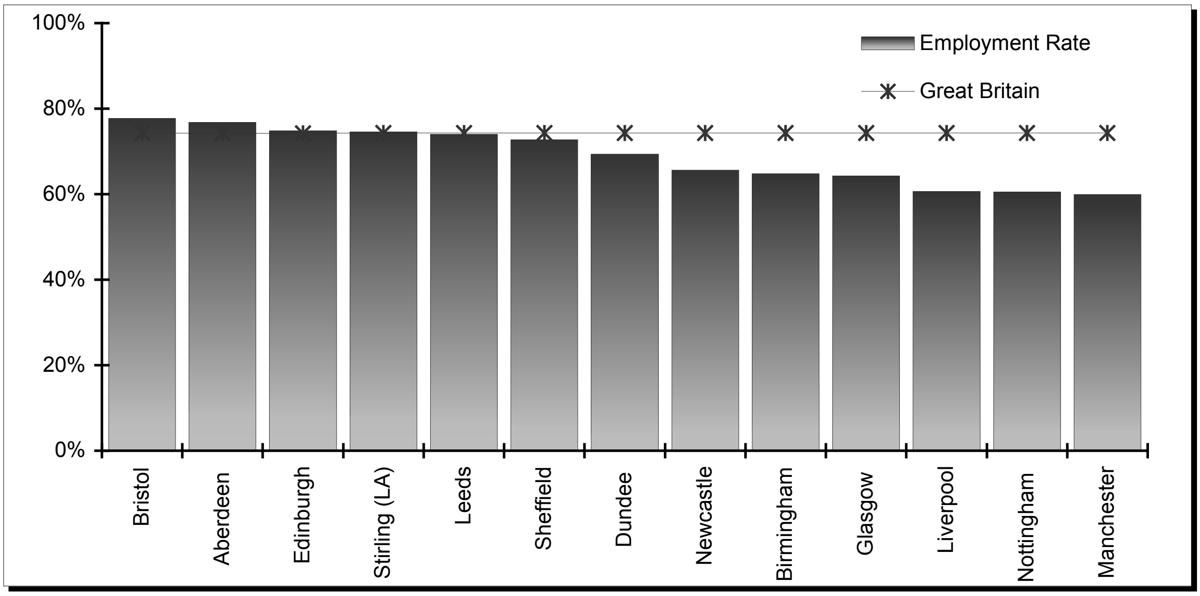
	Change total	**Change FTE**	**Change FT**	**Change PT**
Edinburgh	11.1%	9.3%	6.7%	22.5%
Glasgow	10.8%	8.8%	6.0%	23.7%
Highland	5.7%	8.7%	13.8%	-6.5%
Stirling	2.8%	1.6%	-0.1%	5.0%
Aberdeen	2.2%	0.8%	-1.0%	12.0%
Dundee	1.3%	-0.5%	-3.1%	10.6%
Scotland	**5.4%**	**3.8%**	**1.6%**	**14.5%**
Manchester	17.1%	15.1%	12.4%	29.7%
Newcastle-upon-Tyne	15.2%	16.2%	17.6%	10.4%
Bristol	10.6%	8.4%	5.1%	23.6%
Leeds	9.7%	10.2%	11.0%	6.3%
Liverpool	8.6%	8.7%	8.7%	8.4%
Sheffield	4.5%	3.7%	2.5%	8.7%
Birmingham	3.4%	1.8%	-0.4%	13.5%
Nottingham	-3.6%	-5.6%	-8.5%	7.6%
Great Britain	**4.9%**	**3.9%**	**2.5%**	**10.5%**

Source: ONS/NOMIS Annual Business Inquiry 1998, 2002

2.9 The employment data above relates to the number of people who are employed in each city. Commuters take many of these jobs, and total employment data does not tell us about the employment patterns of those living in each city. Instead, the employment rate can be used to get a feel for the employment patterns of local residents.

2.10 The employment rate is the proportion of working-age residents who are in work. A less encouraging picture emerges when this is analysed. Bristol, Aberdeen, Edinburgh, Stirling LA and Leeds have an employment rate higher than the GB average. Aberdeen, Edinburgh and Stirling LA are also the only Scottish cities with an employment rate higher than the Scottish average. The only English Core City to have employment rates above its regional average is Leeds. In Manchester only 59.9% of the working age population are in employment while in Glasgow the figure is 64.3%.

Figure 2.6: Employment rate 2003



Source: ONS/NOMIS Labour Force Survey Annual 2003

2.11 Across Scotland, the total employment rate increased by 3.2 percentage points between 1996 and 2003. The employment rate increased most in Glasgow – up 9.2 percentage points, however this is from a low base and the overall employment rate remains low in the city. Slowest growth in the employment rate was in Aberdeen and Stirling (LA).

Table 2.3: Employment rate 1996 and 2003

	1996	2003	Change in percentage points
Aberdeen	78.1%	79.5%	1.4
Edinburgh	71.9%	74.8%	2.9
Stirling (LA)	73.1%	74.5%	1.4
Dundee	64.0%	69.4%	5.4
Glasgow	55.1%	64.3%	9.2
Scotland	**70.2%**	**73.4%**	**3.2**

. . . /continued

Table 2.3 Cont.

	1996	2003	Change in percentage points
Bristol	72.2%	77.7%	5.5
Leeds	74.0%	74.0%	0.0
Sheffield	65.5%	72.7%	7.2
Newcastle-upon-Tyne	61.6%	65.6%	4.0
Birmingham	63.4%	64.8%	1.4
Liverpool	55.4%	60.6%	5.2
Nottingham	60.2%	60.5%	0.3
Manchester	55.8%	59.9%	4.1
Great Britain	**72.1%**	**74.3%**	**2.2**

Source: ONS/NOMIS Labour Force Survey Annual Database 1996, 2003

Note: Labour Force Survey Data, like all sample survey data is subject to Confidence Intervals. In 2003 the CI for the GB figure was 0.2 percentage points and 2.9 percentage points for Stirling.

ECONOMIC PERFORMANCE

2.12 Gross Value Added[2] data published by the Office for National Statistics shows Scotland's leading cities performing well both in terms of total GVA and GVA per capita. Between 1995 and 2001 the estimated total GVA for Edinburgh and Glasgow increased by 36.2% and 38.3% respectively, well ahead of Scottish trends (24.8%). However, Scotland as a whole does not perform well in comparison with England where total GVA increased by 37.5% between 1995 and 2001.

2.13 Glasgow and Edinburgh now account for 30.4% of Scotland's total GVA. The NUTS 3 area covering Aberdeen produces a further 14% of Scottish GVA. Scotland accounts for 7.9% of the UK's GVA.

2.14 In terms of GVA per capita the Scottish cities perform well: Edinburgh, Aberdeen and Glasgow have GVA per capita rates well above the UK average.

Table 2.4: Total headline GVA £Million

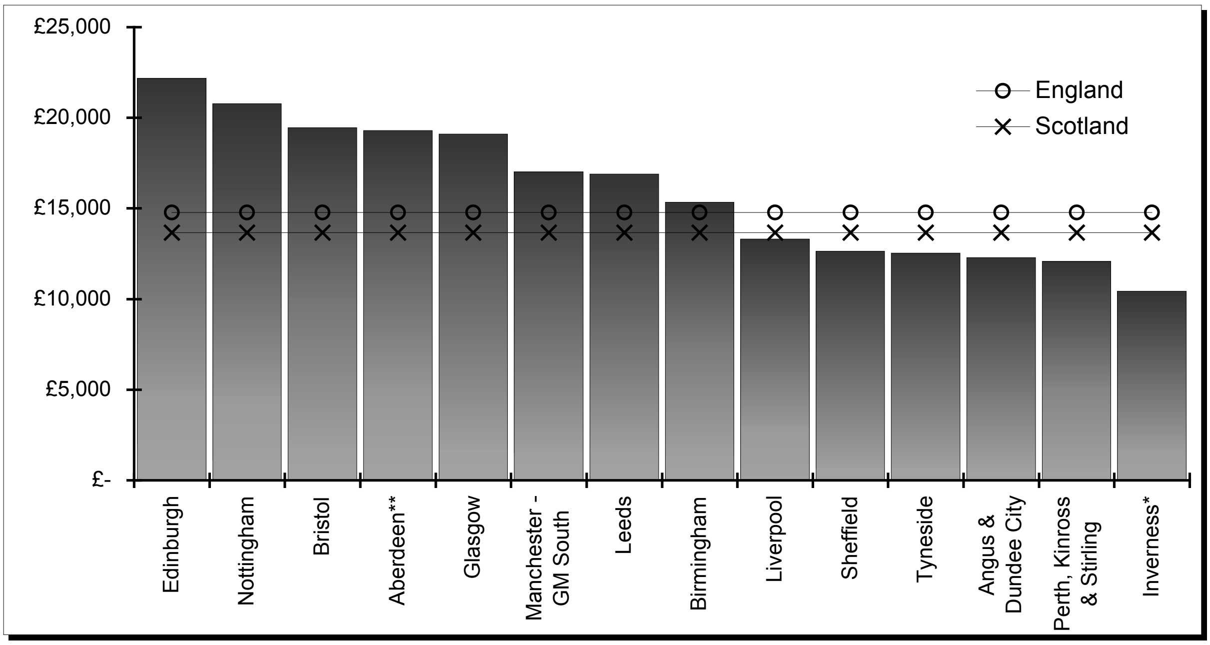
	1995	1996	1997	1998	1999	2000	2001	% Change 1995-2001
Aberdeen*	7683	8080	8474	8838	9056	9489	9711	26.4
Angus and Dundee	2758	2856	2933	2999	3019	3061	3119	13.1
Edinburgh	7308	7708	9183	8699	9066	9510	9954	36.2
Glasgow	7994	8460	9081	9681	10135	10595	11059	38.3
Inverness**	948	982	1013	1046	1081	1130	1170	23.4
Perth, Kinross and Stirling	2225	2339	2444	2530	2568	2609	2673	20.1
Scotland	55431	58079	60828	63285	64932	67150	69179	24.8
England	530971	562669	600474	639772	668598	698684	730036	37.5

NUTS3 areas *Aberdeenshire and NE Moray, **Nairn & Moray, Badenoch & Strathspey

Source: ONS

[2] Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom. Approximate GVA represents the income generated by businesses out of which is paid wages and salaries, the cost of capital investment and financial charges, before arriving at a figure for profit. It includes taxes on production (eg business rates), net of subsidies but excludes subsidies and taxes on products (eg VAT and excise duty). GVA + taxes on products - subsidies on products = GDP.

Figure 2.7: GVA per capita 2001



Source: ONS NUTS 3 areas *Inverness & Nairn and Moray, Badenoch & Strathspey, **Aberdeenshire and NE Moray.

INNOVATION – R&D EXPENDITURE UP BUT STILL LAGGING

2.15 Expenditure on Research and Development increased by 97% across Scotland between 1994 and 2002. This is ahead of the rest of the UK where expenditure increased by 18% during the same period. 4.9% of the UK's expenditure on R&D is now located in Scotland, up from 3% in 1994. Despite this increase, per capita expenditure on R&D is still notably less in Scotland than in the rest of the UK. Expenditure on R&D is concentrated in the South Eastern and Eastern regions of England, these two regions account for 52% of the UK's R&D expenditure in 2001.[3]

Table 2.5: Expenditure on R&D - real terms (2002 Prices)

	1994 £thousands	2002 £thousands	% Change	% Share UK's R&D Expenditure 2002	Per Capita R&D Expenditure 2002
Scotland	324,429	640,073	97%	4.9%	126.63
England, Wales, NI	10,566,571	12,469,927	18%	95.1%	228.81
UK	10,891,000	13,110,000	20%	100%	220.14

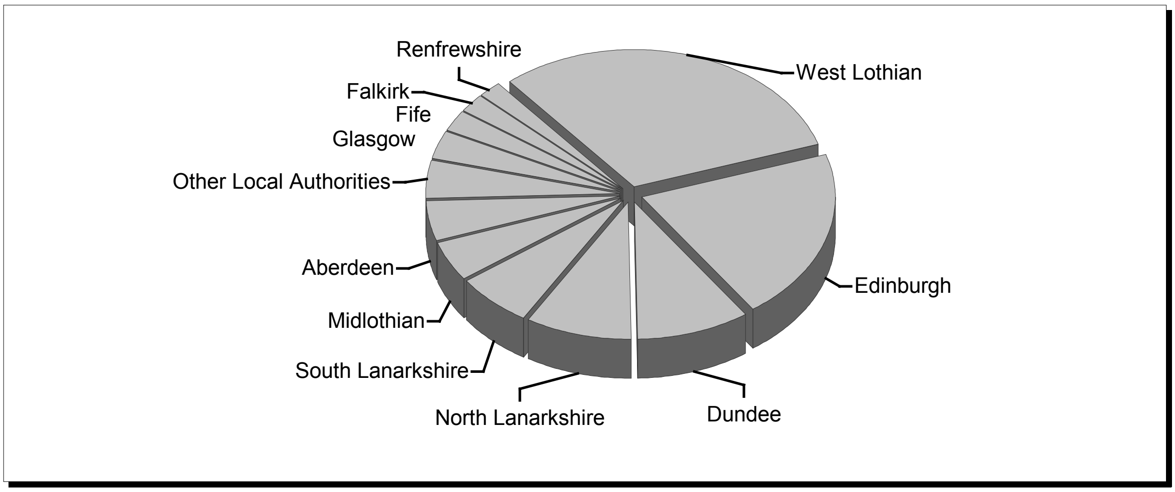
Source: Scottish Executive "Business Enterprise Research and Development in Scotland 2002"

2.16 Expenditure on R&D in Scotland in concentrated in a few key Local Authorities. West Lothian accounts for 29.8% of Scottish R&D expenditure, Edinburgh for 19.7% and Dundee for 9%. Increases in expenditure on R&D are not evenly distributed across the Scottish Local Authorities, often the greatest percentage increases are seen in areas with the lowest total expenditure on R&D. Amongst those Local Authority areas that account for 2%

[3] Office of Science and Technology SET Statistics http://www.ost.gov.uk/setstats/4/t4_10.htm

or more of Scotland's R&D expenditure Midlothian, South Lanarkshire and West Lothian had increases of over 100% between 2000 and 2002.

Figure 2.8 % Share R&D expenditure 2002



Source: Scottish Executive "Business Enterprise Research and Development in Scotland 2002"

Table 2.6: Expenditure on R&D - real terms (2002 Prices)

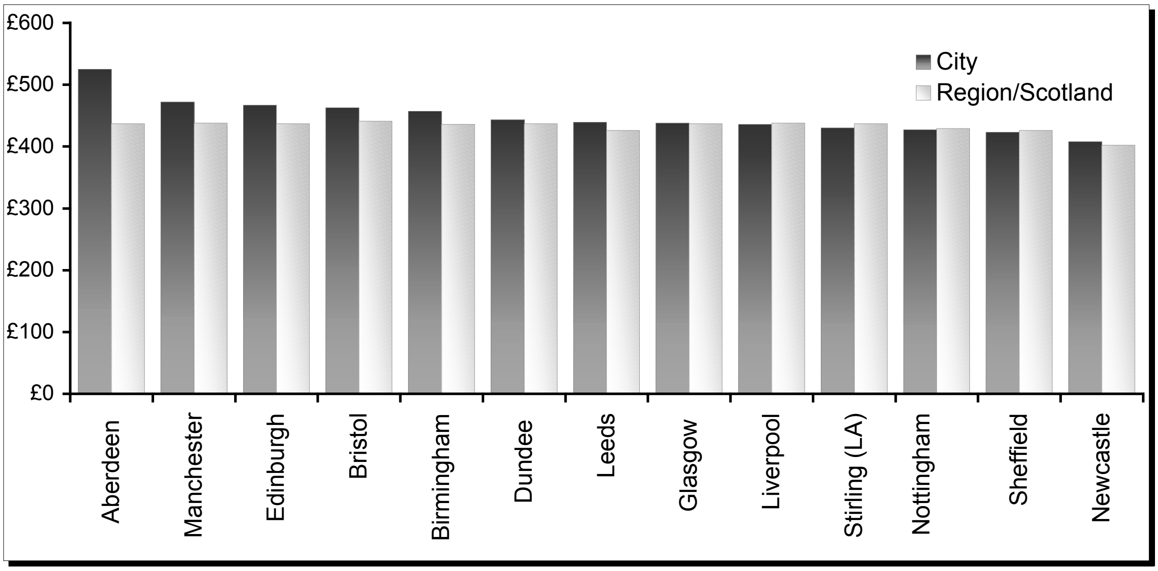
	2000 £thousands	2001 £thousands	2002 £thousands	% Change 2000-2002	% share 2002
Aberdeen	19448	19114	28819	48.2%	4.5%
Dundee	39582	45682	57816	46.1%	9.0%
Edinburgh	121204	203008	125910	3.9%	19.7%
Falkirk	9731		12700	30.5%	2.0%
Fife	15393	10719	15047	-2.2%	2.4%
Glasgow	18883	10231	19531	3.4%	3.1%
Midlothian	4584	6391	30234	559.6%	4.7%
North Lanarkshire	39700	43035	55272	39.2%	8.6%
Renfrewshire	12865	12993	12512	-2.7%	2.0%
South Lanarkshire	10405	14442	38147	266.6%	6.0%
West Lothian	79644	82356	190729	139.5%	29.8%
Other Local Authorities	28149	64405	53356	87.7%	8.3%
Scotland	399858	512376	640073	60.1%	

Source: Scottish Executive "Business Enterprise Research and Development in Scotland 2002"

WAGES RISING AHEAD OF REGIONAL TRENDS

2.17 In many of the Scottish and English Core Cities mean full-time weekly wages are higher than their regional average, but only Aberdeen has mean earnings higher than the GB average. The GB average is influenced by significantly higher wages in London (£637) and the South East (£505). The only Scottish city to have average mean-full time weekly earnings below the Scottish average is Stirling, although Stirling has experienced the biggest percentage increase in full time weekly wages between 1999 and 2003.

Figure 2.9: Mean full-time weekly wages 2003



Source: ONS/NOMIS New Earnings Survey 2003

Table 2.7: Mean full time earnings 1999-2003

	1999	2000	2001	2002	2003	% Change 1999-2003
Aberdeen	£432	£461	£477	£506	£525	21.4
Manchester	£403	£426	£453	£466	£472	17.1
Edinburgh	£398	£410	£447	£480	£467	17.3
Bristol	£396	£410	£433	£453	£463	16.9
Birmingham	£399	£410	£453	£459	£457	14.4
Dundee	£359	£365	£392	£413	£443	23.3
Leeds	£377	£393	£414	£429	£439	16.6
Glasgow	£382	£393	£418	£421	£438	14.5
Liverpool	£378	£397	£411	£425	£436	15.5
Stirling LA	£332	£360	£417	£442	£430	29.4
Nottingham	£361	£381	£407	£419	£427	18.3
Sheffield	£361	£370	£398	£412	£423	17.2
Newcastle	£358	£392	£398	£404	£408	13.9
London	£525	£562	£595	£624	£637	21.3
England	£407	£426	£451	£472	£483	18.7
Scotland	£370	£383	£405	£427	£437	18.0
G.B	£402	£420	£444	£465	£476	18.5

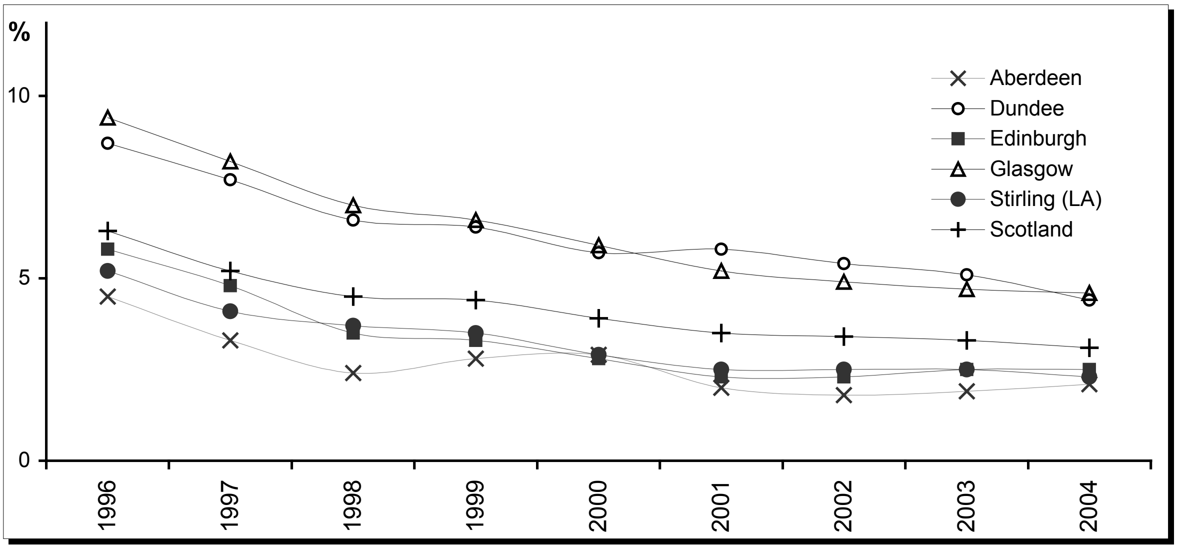
Source: ONS/NOMIS New Earnings Survey

2.18 Preliminary analysis of residence-based New Earnings Survey data indicates that those who live within the city boundaries are earning slightly less than those who work within the city boundaries. This suggests that higher paid jobs are, to some degree, taken by in-commuters.

UNEMPLOYMENT FALLING BUT SOME DISPARITIES REMAIN

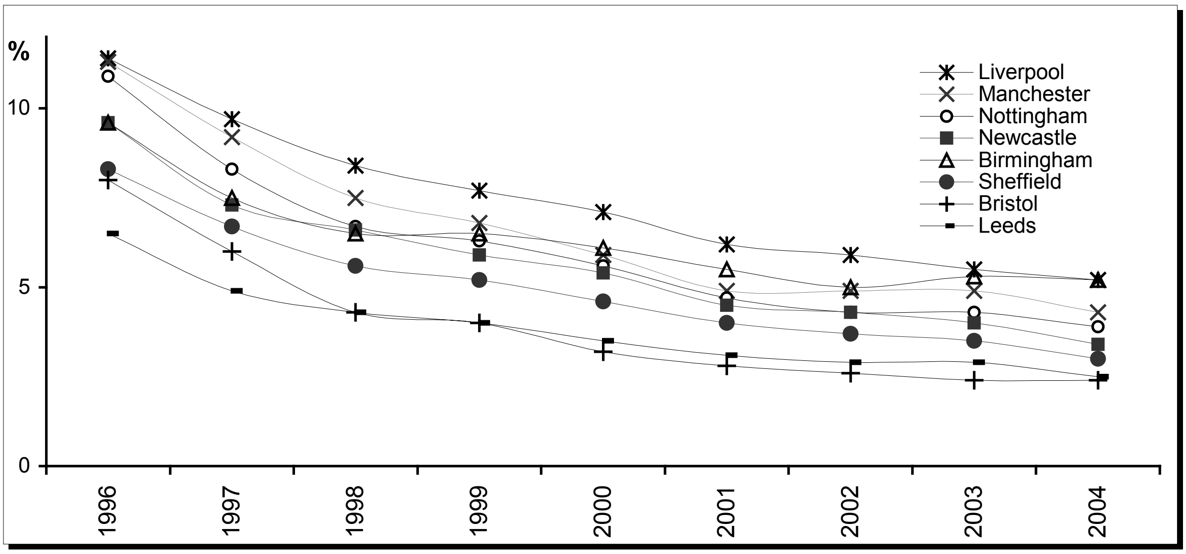
2.19 Unemployment has fallen significantly over the last eight years, down 3.7 percentage points across Great Britain, to just 2.5% in 2004. In Glasgow the claimant count unemployment rate fell by 4.8 percentage points from 9.4% in 1996 to 4.6% in 2004. And in Stirling, Edinburgh and Dundee the claimant count unemployment rate is now below the Scottish average. Scottish cities perform well in comparison to the English Core Cities where, despite significant falls, the claimant count unemployment rate remains stubbornly above the national average in all cities except Bristol.

Figure 2.10: Claimant count unemployment rate 1996-2004



Source: ONS/NOMIS Claimant Count

Figure 2.11: Claimant count unemployment rate 1996-2004



Source: ONS/NOMIS Claimant Count

2.20 The ILO unemployment rate taken from the Labour Force Survey is generally considered to provide a more robust indication of unemployment levels. The broader definition on the ILO measure results in higher unemployment rates for the Scottish cities. However the trend is still downwards. Overall falls mark considerable variation between the Scottish and English Core Cities.

2.21 In terms of ILO unemployment rates, Aberdeen and Edinburgh perform well. Glasgow and Dundee have unemployment patterns more in line with the Northern English Core Cities.

Table 2.8: ILO unemployment rate 1996-2003

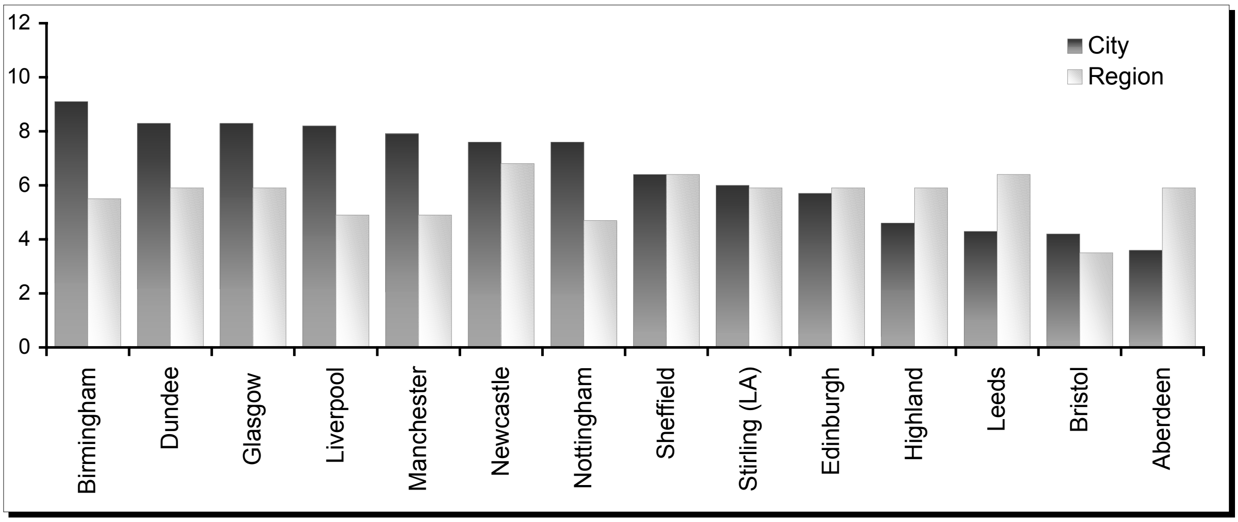
	1996/7	1999/2000	2000/1	2001/2	2002/3	2003/4	% Change
Aberdeen	5.0	6.2	#	6.1	#	3.6	-28.0
Dundee	14.5	13.4	12.7	9.4	11.1	8.3	-42.8
Edinburgh	6.9	5.1	5.2	3.8	4.3	5.7	-17.4
Glasgow	15.2	14.4	10.4	11.3	9.3	8.3	-45.4
Newcastle-upon-Tyne	11.4	10.5	11.0	8.3	6.7	7.6	-33.3
Birmingham	13.5	10.1	10.6	8.5	9.9	9.1	-32.6
Nottingham	11.9	10.1	8.5	7.9	6.6	7.6	-36.1
Bristol	8.7	5.8	4.6	3.3	4.6	4.2	-51.7
Leeds	7.8	5.3	4.9	3.7	4.9	4.3	-44.9
Sheffield	11.0	7.5	6.4	5.3	5.6	6.4	-41.8
Liverpool	16.0	10.9	10.8	10.8	10.1	8.2	-48.8
Manchester	12.2	11.8	8.6	9.1	9.7	7.9	-35.2
England	7.8	5.8	5.2	4.9	5.1	4.9	-37.2
Great Britain	7.9	6.0	5.3	5.1	5.2	5.0	-34.2
Scotland	8.7	7.3	6.4	6.8	6.5	5.9	-25.3

Data not released due to small sample

Source: ONS/NOMIS Annual Labour Force Survey

2.22 In Scotland ILO unemployment rates vary from 8.3% in Dundee and Glasgow to just 3.6% in Aberdeen, significantly below the Scottish average. Leeds is the only English Core City to have an ILO unemployment rate that is lower than the regional rate.

Figure 2.12: ILO unemployment rate 2003/04

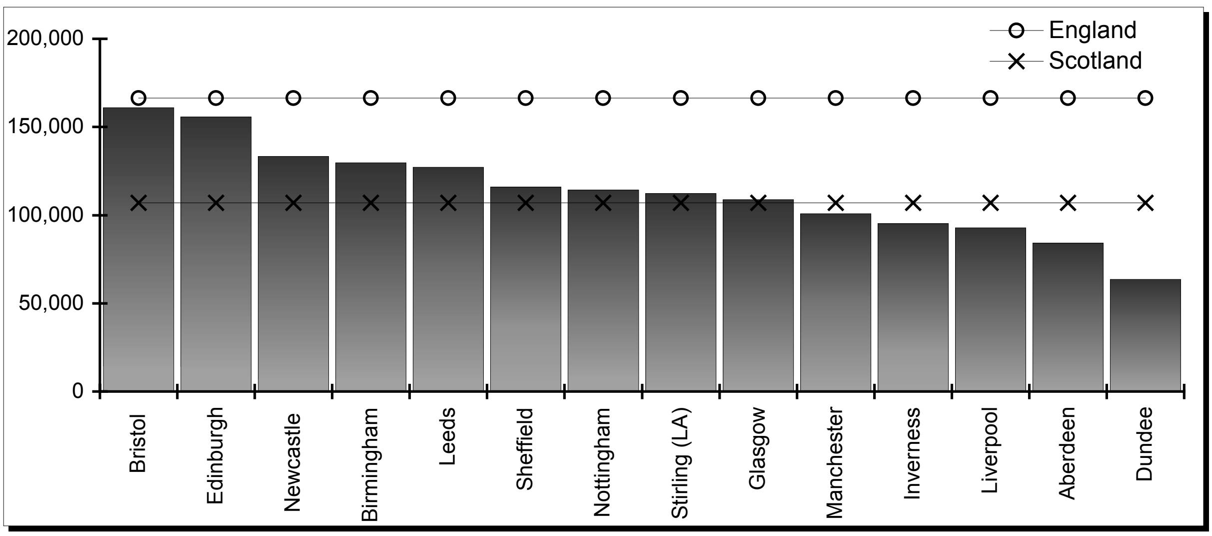


Source: ONS/NOMIS Annual Labour Force Survey

HOUSE PRICES

2.23 The average price of all residential property sold in the first quarter of 2004 is shown in Figure 2.13. The average price of property sold in Scotland during quarter one of 2004 was, at £106,900, lower than in England where the average was £166,404. Amongst the Scottish cities, Edinburgh had the highest average price for property sold in the first quarter of 2004 - £155,700. House prices in the other Scottish cities are below those in the English Core Cities with the exception of Manchester and Liverpool.

Figure 2.13: Average house prices Quarter 1 2004



Source: HM Land Registry/ Registers of Scotland Executive Agency

2.24 House prices across the Scottish cities are up by 44.1% since 2001. However, these increases are not evenly distributed. For example, the average price of residential property sold and registered in Edinburgh was up by 55.4% between the first quarter of 2001 and 2004.

2.25 This house price data comes with health warnings. The data here includes all types of properties, and the type of property sold can impact on the average price. These figures are based on the actual properties sold, and in the case of the Scottish data registered with the Registers of Scotland. The type of property sold varies by quarter; one quarter could be dominated by high-end semi-detached property the next by low-end terraced homes. The data for some of the Scottish cities is also based on relatively few sales. This helps to explain the fall in house prices in Dundee and Aberdeen between 2001 and 2003 and in Stirling 2002 to 2003.

2.26 Despite these limitations the data suggests that there is higher demand for property in Edinburgh, Glasgow and Inverness than in the other Scottish cities.

Table 2.9: Average price of residential property sold Q1 of each year 2001-2004

	2001	2002	2003	2004	% Change 2001-2004	Scottish/ regional % Change 2001-2004
Edinburgh	100,193	115,611	131,405	155,666	55.4	44.1
Glasgow	73,687	78,773	81,361	108,897	47.8	44.1
Dundee	62,557	58,864	52,780	63,545	1.6	44.1
Inverness	68,539	72,269	80,684	95,163	38.8	44.1
Stirling (LA)	94,493	97,095	88,089	112,346	18.9	44.1
Aberdeen	76,873	72,180	69,540	84,148	9.5	44.1
Birmingham	78,889	87,229	114,765	129,748	64.5	89.2
Leeds	77,635	89,446	108,056	127,211	63.9	85.2
Sheffield	70,041	78,380	97,238	115,902	65.5	85.2
Liverpool	61,274	63,755	73,247	92,898	51.6	71.9
Manchester	60,966	70,102	84,078	100,742	65.2	71.9
Bristol	106,849	123,153	151,284	160,866	50.6	72.9
Newcastle	71,727	87,570	106,524	133,293	85.8	83.1
Nottingham	61,543	75,346	96,793	114,213	85.6	82.1

Source: HM Land Registry/ Registers of Scotland

Note: Average house price data excludes properties sold for under £20,000 and those sold for more than £1million

Data for Inverness based on Inverness Postal District

Data for the other Scottish cities based on approximations of Local Authority Boundaries

Scottish data is based on sales where ROS have received an application for registration.

EDUCATIONAL ATTAINMENT – SCOTLAND'S WELL-QUALIFIED WORKFORCE

2.27 The educational attainment of young people living in urban areas across the UK is relatively poor. Historically the number of young people living in cities and attaining qualifications is lower than the national and regional average. As the Scottish qualifications system is different from that in the rest of the UK, direct comparisons with English cities cannot be made. However it appears that Scottish cities do not underachieve to the same extent as their English counterparts. In 2004, only Dundee and Glasgow had attainment levels below the Scottish average. However, staying on rates are lower in the six Scottish cities than the Scottish average.

Table 2.10: Examination results and staying on rates 2004

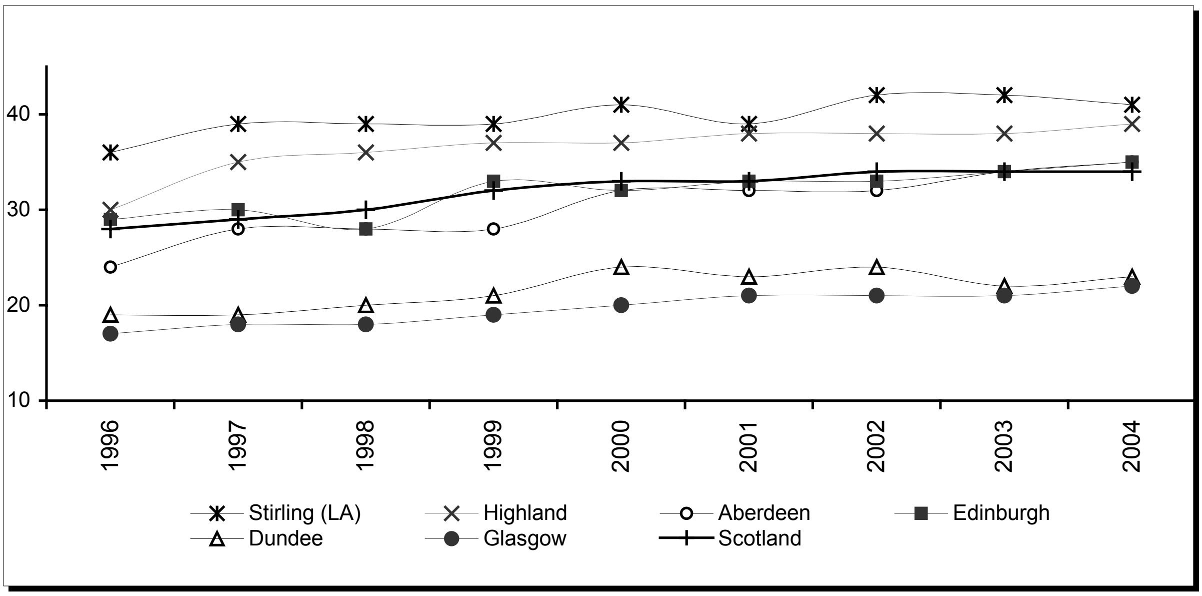
	% S4 roll gaining 5+ awards at level 5 or better by end of S4	Staying on Rates to S5	% S4 Roll gaining 5+ awards at level 6 or better by end of S5	% S4 Roll gaining 5+ awards at level 7 or better by end of S6
Aberdeen	35	60	10	14
Dundee	23	56	5	9
Edinburgh	35	62	10	14
Glasgow	22	55	4	5
Highland	39	70	10	13
Stirling (LA)	41	73	13	17
Scotland	34	64	9	12

Source: SEED Statistical publication notice "SQA Examination results in Scottish schools: 2003/4"
Note: Data not available for Inverness

2.28 Scottish examination results data is available at school and Local Education Authority level. However, this data only relates to publicly funded schools and this can distort the overall picture. For example, across Scotland 7% of pupils are educated privately, although in Edinburgh the figure is 25%. Examination results can only give part of the picture in respect of pupil attainment. The data does not provide a measure of the value added by schools or the final destinations of pupils.

2.29 Examination results at years S4, S5 and S6 have been improving slightly year on year, although the performance of Glasgow and Dundee remain well below the national average.

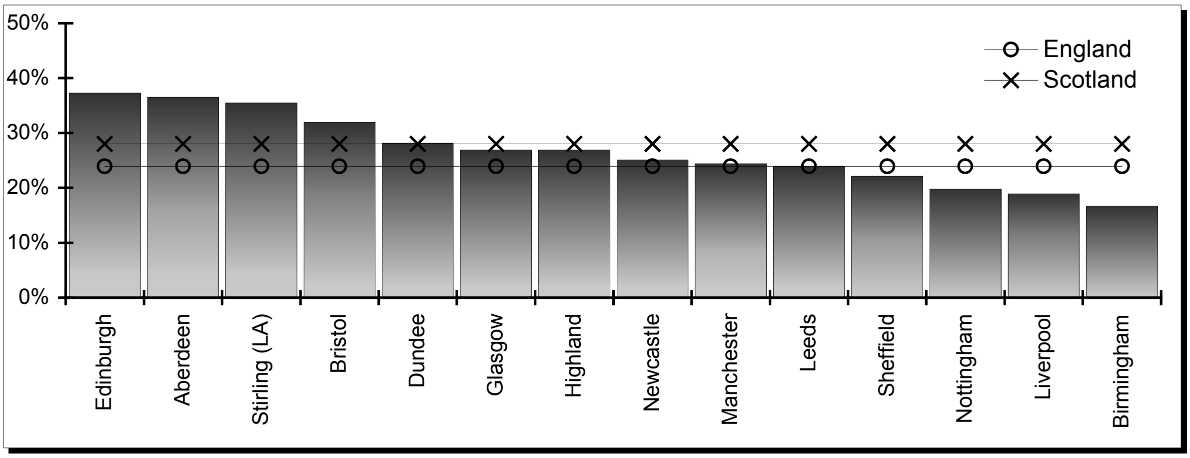
Figure 2.14: Percentage of Yr 4 achieving 5+ awards at level 5 or better



Source: SEED Statistical publication notice "SQA Examination results in Scottish schools: 2003
Note: Data not available for Inverness

2.30 Scotland has a well-qualified workforce: 28% of working age residents are qualified to NVQ level 4 or above (equivalent to degree level). The proportion of working age residents qualified to this level is notably higher in Edinburgh (37.3%), Aberdeen (36.5%) and Stirling (35.5%). In terms of a well-qualified workforce the Scottish cities out perform all the English Core Cities, with the exception of Bristol.

Figure 2.15: Proportion of working age population qualified to NVQ level 4+ 2002

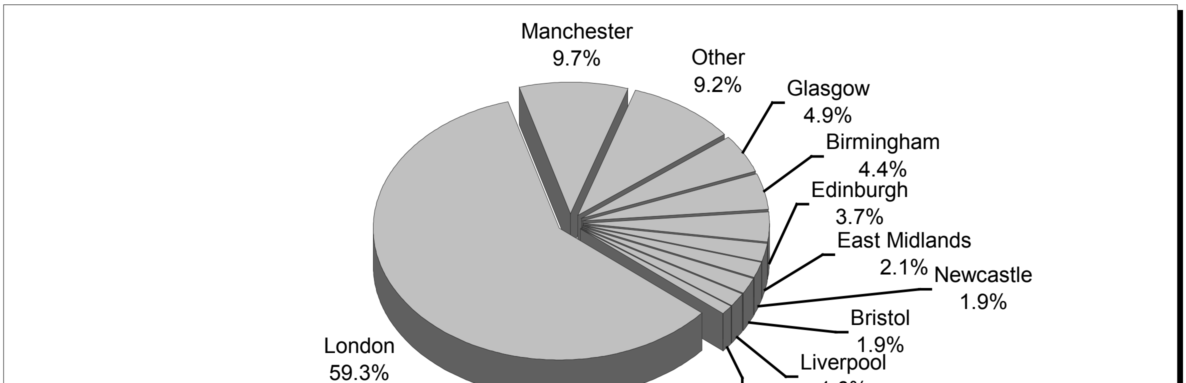


Source: ONS/NOMIS Annual Labour Force Survey 2002
Note: Data not available for Inverness

CONNECTIVITY

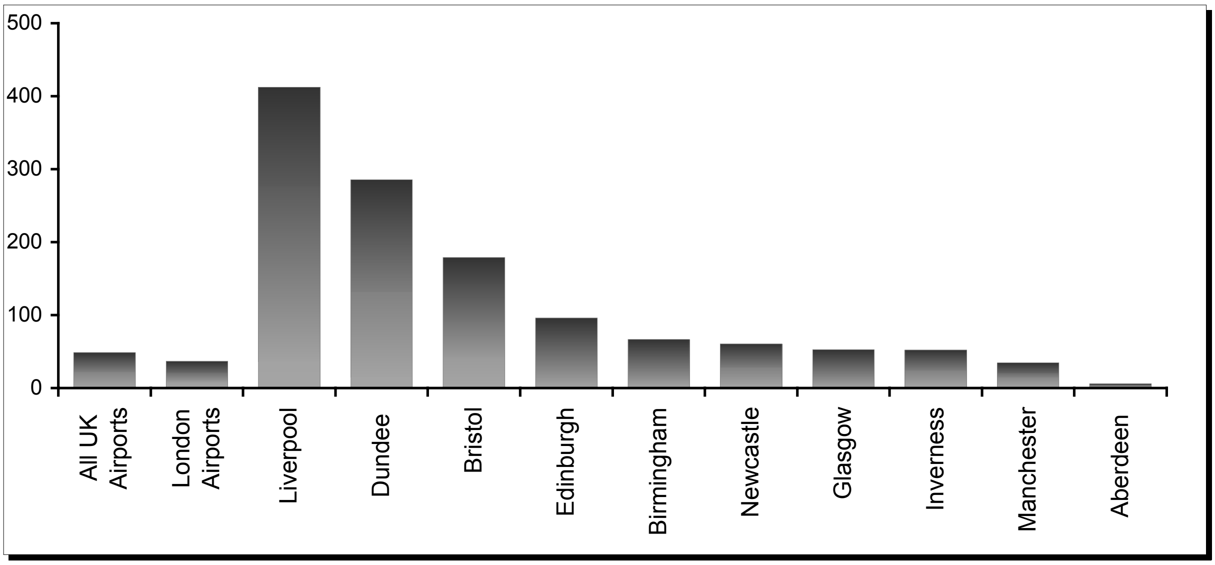
2.31 Air travel in the UK is dominated by the London Airports. These accounted for 59.3% of all passenger traffic in 2003. However, recent investment by low cost air carriers has a period of unprecedented growth for the UK's regional airports. Outside London, passenger numbers were up 70.7% between 1996 and 2003. The greatest growth in terms of passenger numbers has been at some of the smaller airports – Liverpool up 412%, Dundee up 285% and Prestwick up 255% between 1996 and 2003, although it should be noted that these increases are from a very small base.

Figure 2.16: Percentage share terminal passengers 2003



Source: Civil Aviation Authority. Data for Glasgow based on Prestwick and Glasgow International Airports combined

Figure 2.17: Percentage change in the number of terminal passengers at selected airports 1996-2003



Source: Civil Aviation Authority. Data for Glasgow based on Prestwick and Glasgow Airports combined

2.32 The Scottish cities are connected to one another by train, however the frequency and directness of the service varies by route. The longest journey is 3hrs 44mins between Inverness and Dundee. Edinburgh and Glasgow are the Scottish cities best served by train services with a regular service to London and direct services to many destinations throughout Great Britain. The lack of frequent direct trains to London and other leading cities in England from other Scottish cities mean that journey times to cities across the border are long. This contributes to a reliance on air travel.

Table 2.12: Journey time: fastest train midweek morning autumn 2004

	A'deen	Dundee	E'burgh	Glasgow	Inverness	Stirling	London	Newc'tle	B'ham	N'ham	Bristol	Leeds	Sheffield	L'pool	Mcr.
Aberdeen		1.12	2.27	2.36	2.21	2.04	7.04	4.00	7.11	7.11	8.45	6.13	6.13	6.30	6.20
Dundee	1.12		1.16	1.24	3.44	0.51	5.48	2.49	5.57	6.22	7.31	4.38	5.12	5.16	5.44
Edinburgh	2.27	1.16		0.48	3.37	0.49	4.43	1.28	4.48	4.54	6.3	2.58	3.41	3.59	3.09
Glasgow	2.36	1.24	0.48		3.27	0.25	4.43	2.39	5.52	6.04	5.35	4.08	4.51	3.37	3.27
Inverness	2.21	3.44	3.37	3.27		2.47	9.24	6.11	8.46	9.25	10.27	7.48	8.21	8.05	8.05
Stirling	2.04	0.51	0.49	0.25	2.47		5.29	2.28	5.53	5.59	7.35	4.03	4.46	4.36	5.20
London	7.04	5.48	4.43	5.27	9.24	5.29		2.56	1.42	1.41	1.22	2.25	2.08	2.52	2.44
Newcastle	4.00	2.49	1.28	2.39	6.11	2.28	2.56		3.01	2.53	4.36	1.33	1.45	3.24	2.39
Birmingham	7.11	5.57	4.48	5.52	8.46	5.53	1.42	3.01		3.34	1.28	1.59	1.15	1.45	1.44
Nottingham	7.11	6.22	4.54	6.04	9.25	5.59	1.41	2.53	3.34		3.00	1.59	0.57	2.45	1.58
Bristol	8.45	7.31	6.3	7.40	10.27	7.35	1.22	4.36	1.28	3.00		4.04	2.52	3.20	3.16
Leeds	6.13	4.38	2.58	4.08	7.48	4.03	2.25	1.33	1.59	1.59	4.04		0.41	1.45	1.02
Sheffield	6.13	5.12	3.41	4.51	8.21	4.46	2.08	1.45	1.15	0.57	2.52	0.41		1.43	0.57
Liverpool	6.30	5.16	3.59	3.37	8.05	4.36	2.30	3.24	1.45	2.45	3.20	1.45	1.43		0.49
Manchester	6.20	5.44	3.09	3.27	8.05	5.20	2.16	2.39	1.44	1.58	3.16	1.02	0.57	0.49	

Source: National Rail Timetable

RECORDED CRIME

2.33 This data comes with a health warning as recorded crime data can only ever show part of the picture; many crimes go unrecorded and reporting and recording practice varies. Recent changes in the way English and Welsh crime data are recorded means that time-series data is limited.

2.34 Scottish cities are becoming safer. Violent crime and crimes of dishonesty are falling almost across the board, although Edinburgh saw a 1.9% increase in crimes of dishonesty between 1997 and 2003. Total recorded crime figures vary: Aberdeen, Dundee and Glasgow all experienced a fall in total recorded crime figures between 1997 and 2003, while the other council areas experienced increases. Recorded crime was up 10.5% in Edinburgh, with most of this increase accounted for by a rise in 'fire-raising and vandalism' and 'other' crimes. In Highland and Stirling the number of recorded crimes were up by a fifth, although from a relatively low base and crimes per head of population are still notably lower here than in Scotland as a whole.

Figure 2.18: Number of non-sexual violent crimes recorded per 1,000 population

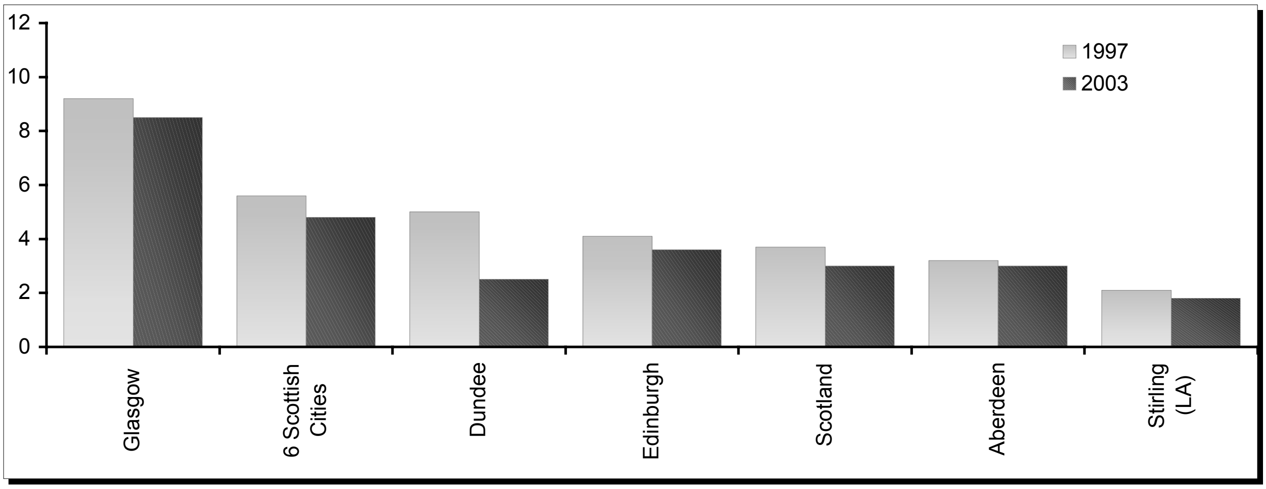
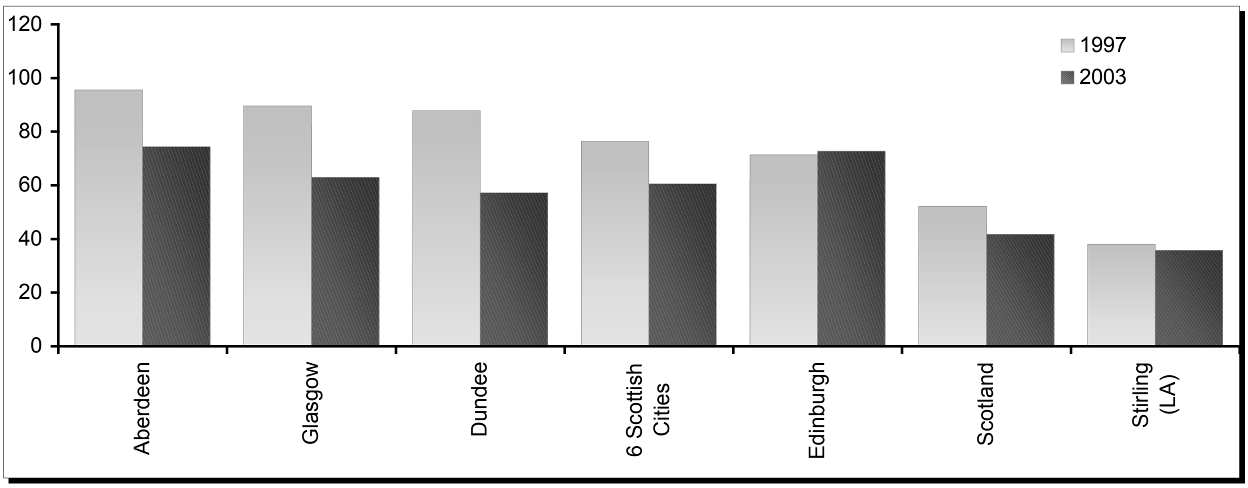


Figure 2.19: Number of crimes of dishonesty recorded per 1,000 population



Source: Scottish Executive Statistical Bulletin Criminal Justice Series

2.35 Despite the recent improvements Glasgow, Edinburgh, Aberdeen and Dundee all have recorded crime rates above the Scottish average.

Figure 2.20
Number of fire-raising, vandalism etc. crimes recorded per 1,000 population

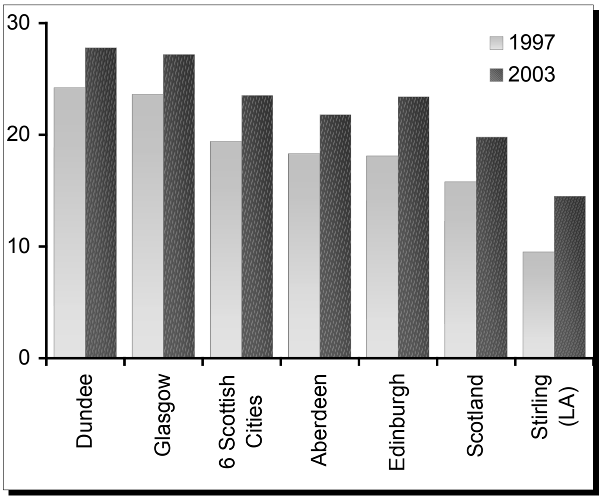
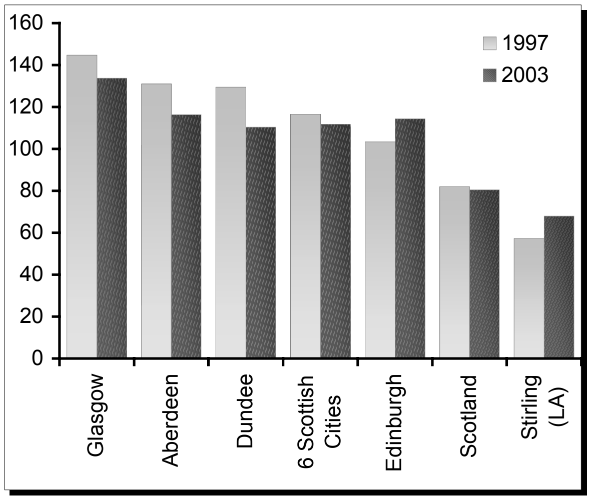


Figure 2.21
Total number of recorded crimes per 1,000 population



Source: Scottish Executive Statistical Bulletin Criminal Justice Series

2.36 Recorded crime data for English cities is not directly comparable with the Scottish data due to differences in recording and categorisation methodologies.

RECIPIENTS OF INCOME SUPPORT AND INCOME BASED JSA

2.37 Income-based benefits data have been used here to identify those residents who are living on a very low income. Many of those in receipt of income-based benefits are pensioners. Income Support (IS) and Income Based Job Seekers Allowance (IBJSA) are paid to claimants to bring their income up to 'the applicable amount' [4].

2.38 Poverty remains concentrated in urban areas. In 2003, 21% of those living in Scotland who were in receipt of income based benefits were residents of Glasgow, whilst only 11.4% of Scotland's population live in the city.

2.39 The proportion of households in receipt of income-based benefits varies across Scotland's cities. In 2003 35.6% of Glasgow's households were in receipt of income-based benefits[5] compared to just 17.8% of households in Edinburgh and 17.9% in Inverness.

[4] The applicable amount depends on the number of people in the claimant's family, and their circumstances. It is made up of a personal allowance, certain premiums to which the claimant may be entitled and an element for housing costs in some cases.

[5] Household numbers have been taken from the 2001 Census, this is a crude but consistent denominator which enables comparisons between places to be made.

2.40 Across Scotland as a whole the number of IS and IBJSA recipients increased by 0.6% between 2001 and 2003. Larger increases were experienced in Aberdeen and Inverness where the number of claimants were up 3.4% and 4.1% respectively. In Glasgow the number of recipients fell by 0.9% and in Edinburgh it remained constant. Dundee experienced the largest decrease in the number of IS and IB JSA recipients, down 1.4%.

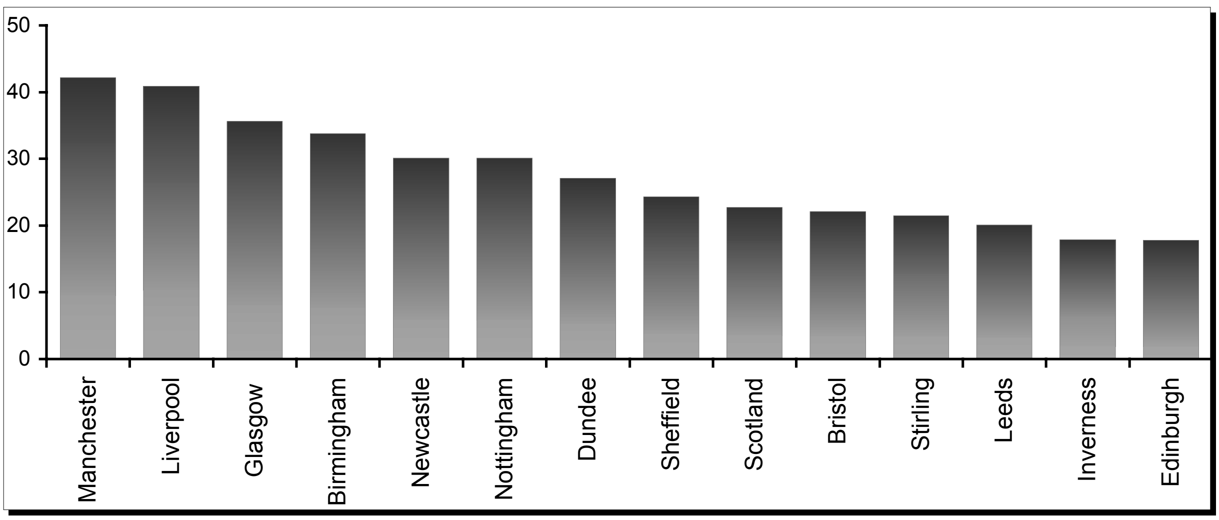
Table 2.13: IS and IB JSA recipients 2001 and 2003

	IS and IBJSA 2001	IS and IBJSA 2003	% Change 2001-2003	% Households in receipt of IS IBJSA 2003
Aberdeen	15,515	16,050	3.4	18.6
Dundee	19,455	19,175	-1.4	27.1
Edinburgh	35,230	35,225	0.0	17.8
Glasgow	105,770	104,815	-0.9	35.6
Inverness	4,930	5,130	4.1	17.9
Stirling	3,750	3,720	-0.8	21.5
Scotland	495,115	498,167	0.6	22.7

Source: DWP SCROL/Census 2001

2.41 In terms of the proportion of households in receipt of IS and IBJSA several of the Scottish Cities perform well, with a lower proportion of households in receipt of benefits than in many of the English Core Cities. Edinburgh, Stirling and Inverness have claimant rates below the Scottish average. However, Glasgow continues to have a high proportion of households in receipt of benefits.

Figure 2.22 Percentage of households in receipt of IS and IB JSA 2003



Source: DWP SCROL/Census 2001

CHAPTER 3. HOW DO SCOTTISH CITIES MATCH UP TO EUROPEAN COMPETITORS?

3.1 The quantitative analysis in this section of the report focuses on a variety of indicators identified as potentially important to competitive cities. It reviews the evidence on the key characteristics of competitiveness identified in the Competitiveness European Cities study (Parkinson et al 2004): productivity; innovation; connectivity and a skilled workforce. It also provides evidence about social cohesion and the private sector's views of the relative attractiveness of different European cities.

3.2 This remains a complex and rather messy area; experts disagree about the relative merits of indicators, very little comparative data is available on a trans-national basis, and boundaries are not consistent. This section makes best use of the data available. There is never a perfect indicator, instead we have collected and used the most robust available evidence from the most reliable sources. And where urban data was not available we have used data for the wider region.

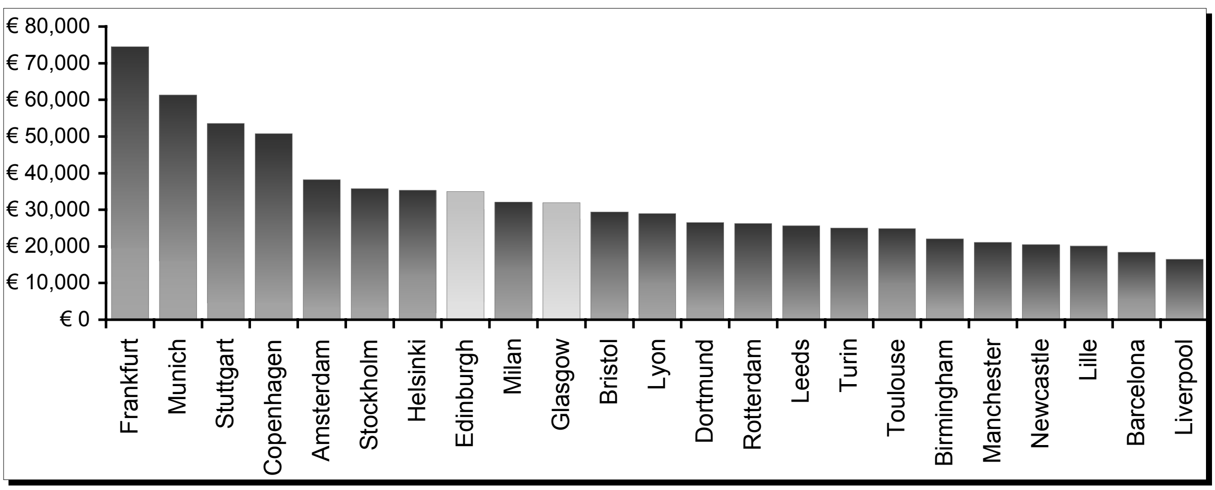
3.3 Wherever possible data for the six Scottish cities has been added to the data for 15 continental and the eight English Core Cities included in the original study. Unfortunately many of the data sources have limited coverage of Scotland and often data for only Glasgow and/or Edinburgh is available. In repeating the data collection exercise statistics have been updated where possible and in some cases improved sources have been found.

3.4 For further details on the selection of indicators of competitiveness, the challenges faced during data collection and the solutions adopted see the technical annex.

PRODUCTIVITY

3.5 Capital cities tend to be at the top of the league table for GDP. Large cities tend to do well. German cities, despite the country's current economic difficulties, perform very well. Edinburgh and Glasgow perform better than any of the English Core Cities, which do not perform as strongly.

Figure 3.1: GDP per capita: A sample of European cities 2001



Source: Barclays Private Clients 2003

Table 3.1: GDP per capita – for 61 leading European Cities 2001

Rank	City	Euros per capita	Rank	City	Euros per capita
1	Frankfurt am Main	74,465	32	The Hague	30,110
2	Karlsruhe	70,097	33	Essen	29,760
3	Paris	67,200	34	Bristol	29,437
4	Munich	61,360	35	Lyon	28,960
5	Düsseldorf	54,053	36	Bologna	28,282
6	Stuttgart	53,570	37	Bochum	27,900
7	Brussels	51,106	38	Parma	27,491
8	Copenhagen	50,775	39	Dortmund	26,548
9	Hanover	47,223	40	Rotterdam	26,217
10	Hamburg	43,098	41	Strasbourg	26,015
11	Mannheim	41,674	42	Florence	25,693
12	Nuremburg	41,456	43	Leeds	25,619
13	Augsburg	39,360	44	Duisburg	25,259
14	Cologne	39,108	45	Eindhoven	25,226
15	Amsterdam	38,203	46	Turin	25,042
16	Münster	38,139	47	Toulouse	24,852
17	Wiesbaden	37,454	48	Rome	24,766
18	Dublin	36,591	49	Bordeaux	24,252
19	Vienna	36,572	50	Malmo	24,233
20	Stockholm	35,733	51	Gothenberg	24,065
21	Gelsenkirchen	35,688	52	Grenoble	24,026
22	Helsinki	35,321	53	Verona	23,954
23	London	35,072	54	Berlin	23,428
24	Bremen	35,022	55	Marseilles	22,809
25	Edinburgh	35,018	56	Birmingham	22,069
26	Bonn	34,112	57	Manchester	21,099
27	Antwerp	33,090	58	Newcastle-upon-Tyne	20,499
28	Milan	32,122	59	Lille	20,191
29	Glasgow	31,893	60	Barcelona	18,449
30	Utrecht	31,712	61	Liverpool	16,466
31	Saarbrücken	30,368			

Source: Barclays Private Clients 2003

Note: The European Competitive Cities, English Core Cities and Scottish cities are shaded

3.6 Business Strategies Limited used three measures of regional prosperity in their report ‘What makes Euro Regions Prosper?’:

- GDP per head of working age population adjusted for commuting
- employment rates – FTE divided by working age population adjusted for commuting)
- productivity – GDP per head of working age population adjusted for commuting divided by FTE employment at purchasing power standard

3.7 Their analysis shows that, as expected, those regional cities with high levels of productivity tend to have high GDP. Many of the Scottish cities perform better than their English counterparts. North East Scotland (which includes Aberdeen) with its high employment rate and GDP per capita performs particularly well. Eastern Scotland (Edinburgh, Dundee and Stirling) performs better than the English Core Cities, but behind many other European cities.

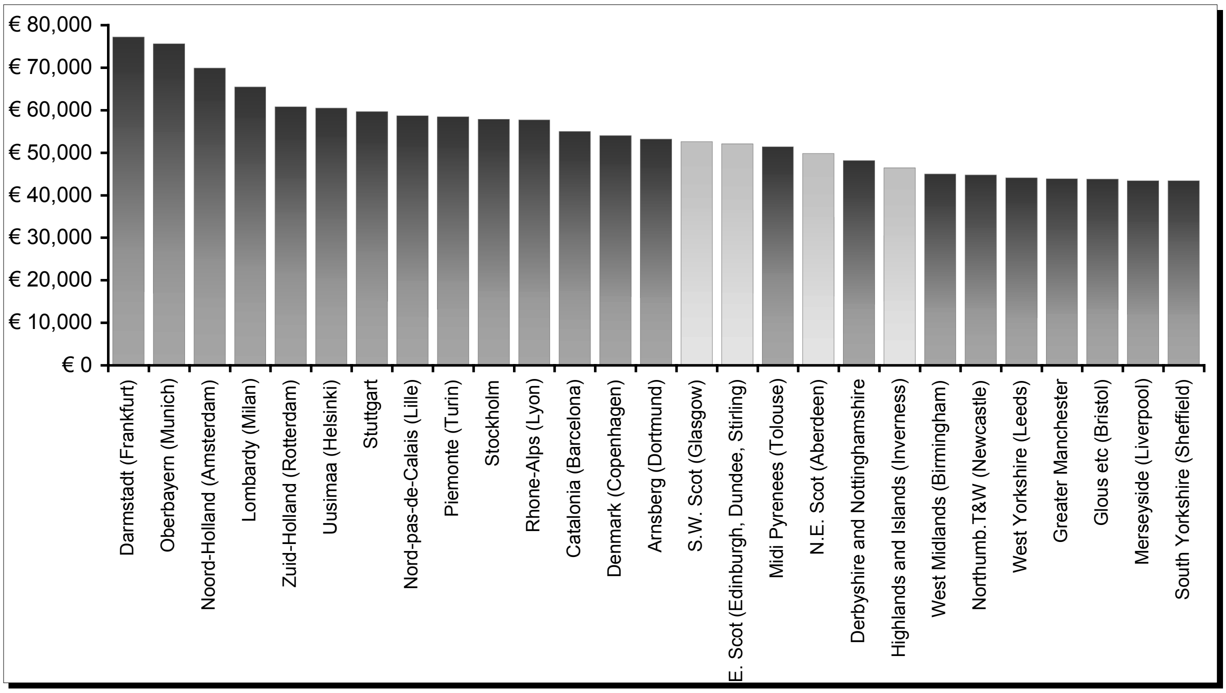
Table 3.2: Measures of regional prosperity 2001

Region	City	GDP per head (000 Euros)	Employment Rate	Productivity (000 Euros)
Luxembourg	Luxembourg	57.4	58.5	98.2
Oberbayern	Munich	49.6	65.6	75.6
Hamburg	Hamburg	49.1	63.6	77.1
Darmstadt	Frankfurt	47.1	61.0	77.2
Brussels	Brussels	45.3	83.1	54.6
Ile de France	Paris	45.1	58.6	76.9
Picardie		44.2	83.1	53.2
North Eastern Scotland	**Aberdeen**	**43.5**	**87.5**	**49.8**
Berks, Bucks, Oxford		41.8	81.9	51.0
Uusimaa	Helsinki	41.5	68.6	60.5
Stockholm	Stockholm	40.4	69.8	57.9
Stuttgart	Stuttgart	38.5	64.5	59.7
Lombardy	Milan	38.4	58.6	65.5
Bedfordshire and Herts		37.2	80.2	46.3
Denmark	Copenhagen	36.7	68.1	54.0
Zuid-Holland	Rotterdam	36.7	60.4	60.8
Noord-Holland	Amsterdam	34.3	49.1	69.9
Piemonte	Turin	33.2	56.8	58.5
Catalonia	Barcelona	32.1	58.3	55.0
Eastern Scotland	**Edinburgh, Dundee Stirling**	**31.7**	**60.8**	**52.1**
Rhone-Alps	Lyon	30.2	52.4	57.7
Derbyshire Nottinghamshire	Nottingham	30.0	62.4	48.2
Glous, Wiltshire, N. Somerset	Bristol	29.8	68.0	43.8
Arnsberg	Dortmund	29.7	55.9	53.2
Nord-pas-de-Calais	Lille	28.9	49.3	58.7
Highlands and Islands	**Inverness**	**28.7**	**62.0**	**46.4**
South Western Scotland	**Glasgow**	**28.2**	**53.6**	**52.6**
Midi Pyrenees	Toulouse	27.9	54.3	51.4
West Yorkshire	Leeds	26.7	60.5	44.1
Greater Manchester	Manchester	25.5	58	43.9
West Midlands	Birmingham	25.1	55.9	45.0
Northumberland Tyne Wear	Newcastle	23.9	53.3	44.8
South Yorkshire	Sheffield	23.9	55.0	43.4
Merseyside	Liverpool	21.2	48.7	43.4

Source: Business Strategies Ltd. (2001) *What makes Euro regions prosper?* London: BSL

3.8 Figure 3.2 develops the productivity analysis and provides data about a smaller sample of cities. It shows productivity in terms of GDP per head of working age population adjusted for commuting divided by FTE employment at purchasing power standard. The Scottish regions perform ahead of the English regions but behind many European cities.

Figure 3.2: Productivity 2001 ('000 Euros per head)



Source: Business Strategies Ltd.

HOW INNOVATIVE ARE SCOTTISH CITIES

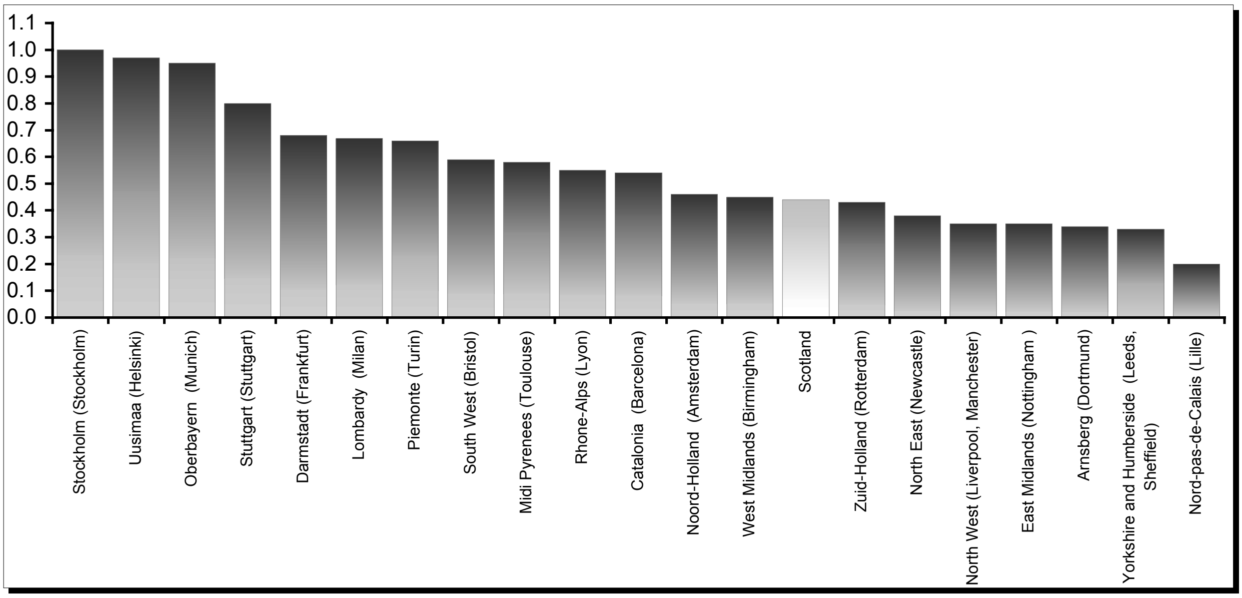
3.9 The European Innovation Scoreboard[6] uses measures of a number of factors that contribute to innovation to generate a score at regional level. The 2003 scoreboard incorporates a number of new measures from the Community Innovation Survey; due to small sample numbers the index is calculated at NUTS2 level. The Scoreboard now has 13 measures:

- Population with tertiary education
- Participation in lifelong learning
- Employment in medium/high-tech manufacturing
- Employment in high-tech services
- Public R&D expenditure
- Business R&D expenditure
- European Patent Office (EPO) High-tech patent applications
- All EPO applications
- Plus five measures from unpublished Community Innovation Survey 2 data.

[6] European Innovation Scoreboard 2003 Technical paper No. 3. EU Regions

3.10 These are used to generate a Revealed Regional Summary Innovation Index, which can be used to compare the performance of European regions. This shows that Scotland performs ahead of many of the other UK regions, but behind the leading European regions and the South West (Bristol). Scotland's well-educated workforce contributes to its placing in the innovation index.

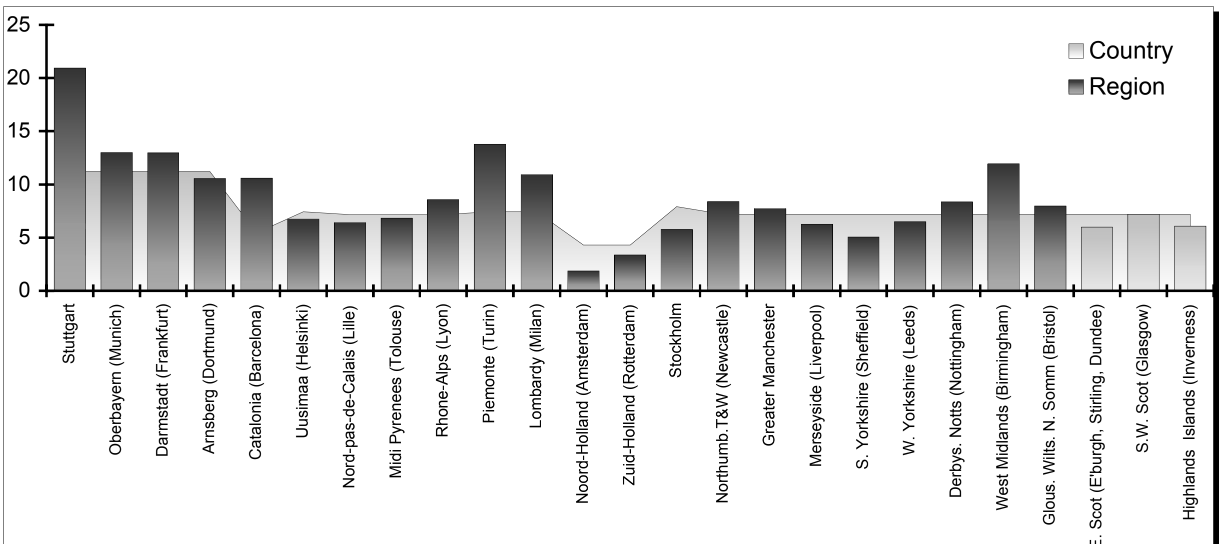
Figure 3.3: European Innovation Scoreboard 2003 Revealed Regional Summary Innovation Index (RRSII)



Source: 2003 European Innovation Scoreboard. Technical paper No. 3. EU Regions

3.11 UK cities have relatively low levels of employment in high tech manufacturing sectors. None of the Scottish cites have employment in these sectors ahead of the UK average. The German and Italian study cities perform particularly well in this area.

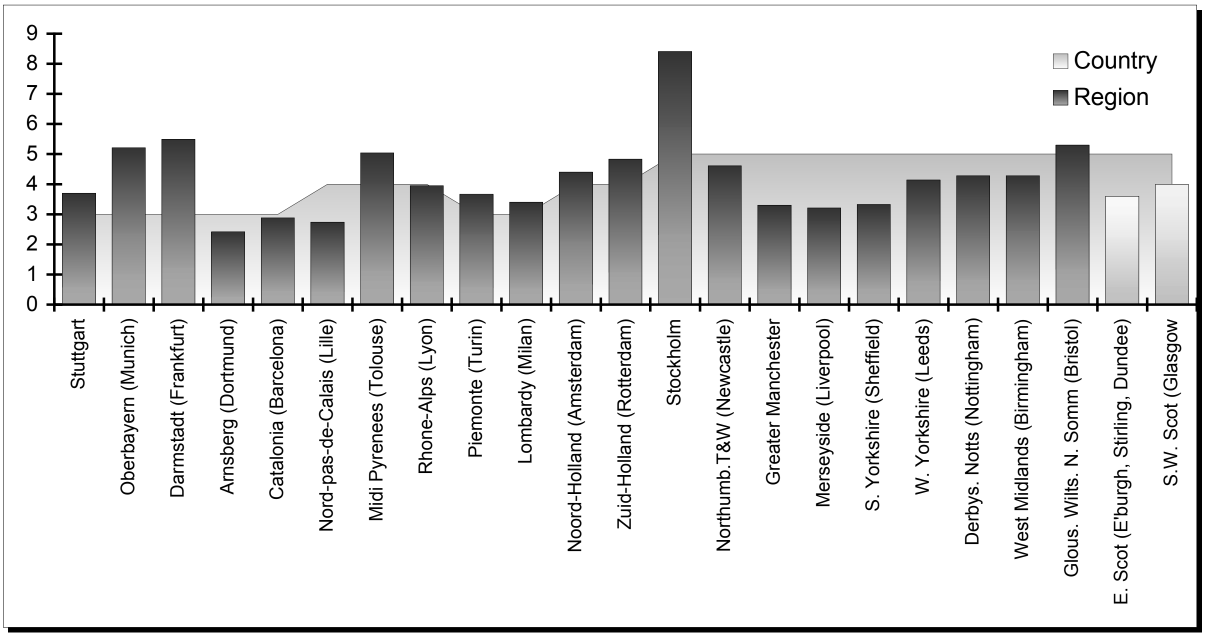
Figure 3.4: Percentage of employees in High-Tech manufacturing sectors 2001



Source: Eurostat: Region: Statistical Yearbook 2003. Data for NE Scotland (Aberdeen) not available

3.12 Employment in the high-tech service sectors in UK cities is comparable with many of the European cities. However in the Scottish and English Core Cities employment in this sector is below the national average suggesting that these jobs are concentrated in London and the South East.

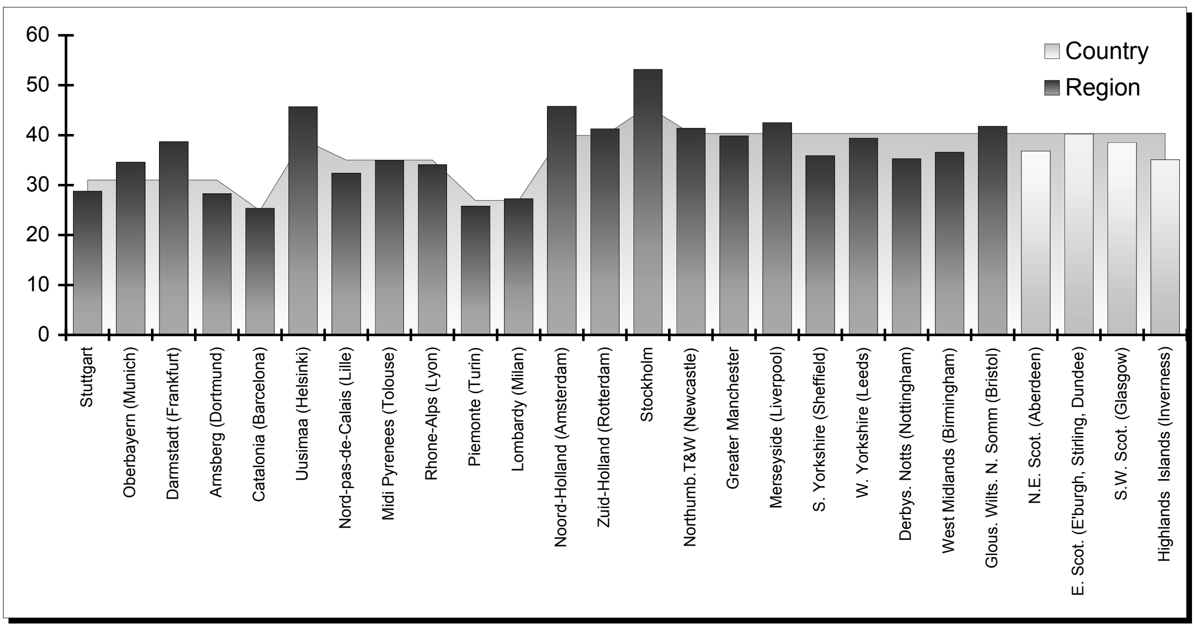
Figure 3.5: Percentage of employees working in High-Tech service sectors 2001



Source: Eurostat: Region: Statistical Yearbook 2003

3.13 In terms of the proportion of employees working in knowledge intensive sectors the UK performs well, with Eastern Scotland (Edinburgh, Dundee and Stirling) the strongest performing of the Scottish regions.

Figure 3.6: Percentage of employees working in Knowledge Intensive sectors 2001

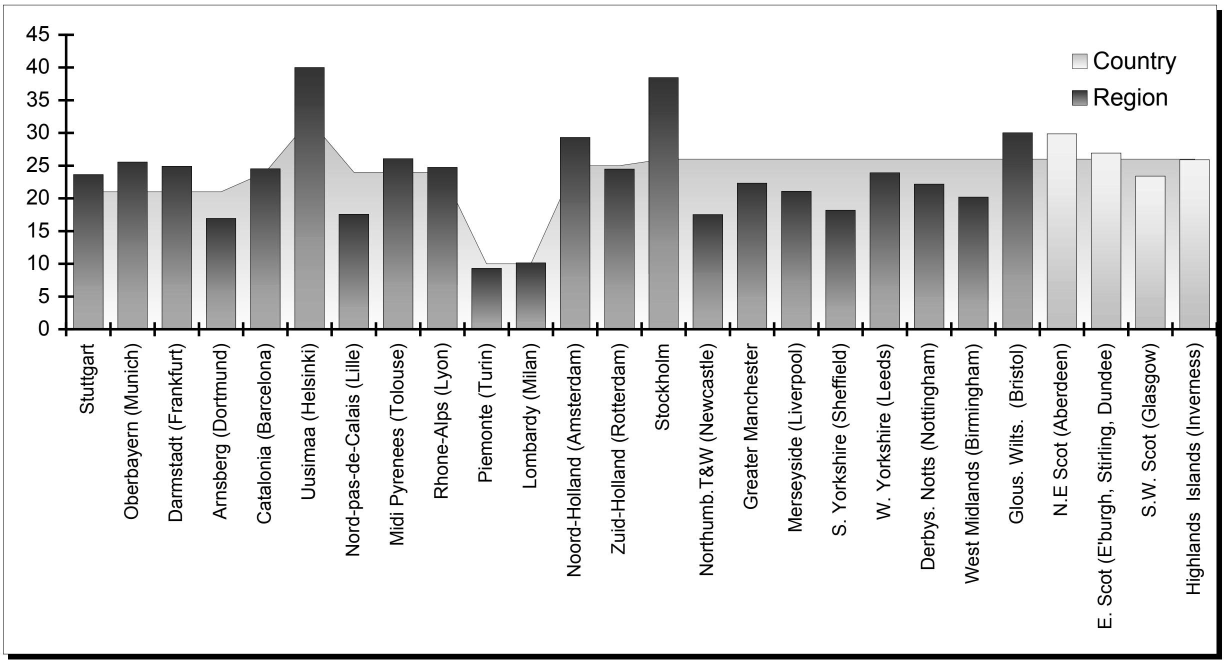


Source: Eurostat: Region: Statistical Yearbook 2003

A WELL-EDUCATED WORKFORCE?

3.14 Figure 3.7 shows the proportion of the working age population qualified to degree level or above. The Scottish cities perform well here, in line with many of the German cities. And they are ahead of all the English Core Cities except Bristol. However, qualification levels remain highest in the Scandinavian countries.

Figure 3.7: Percentage of working age population with 3rd level education 2001

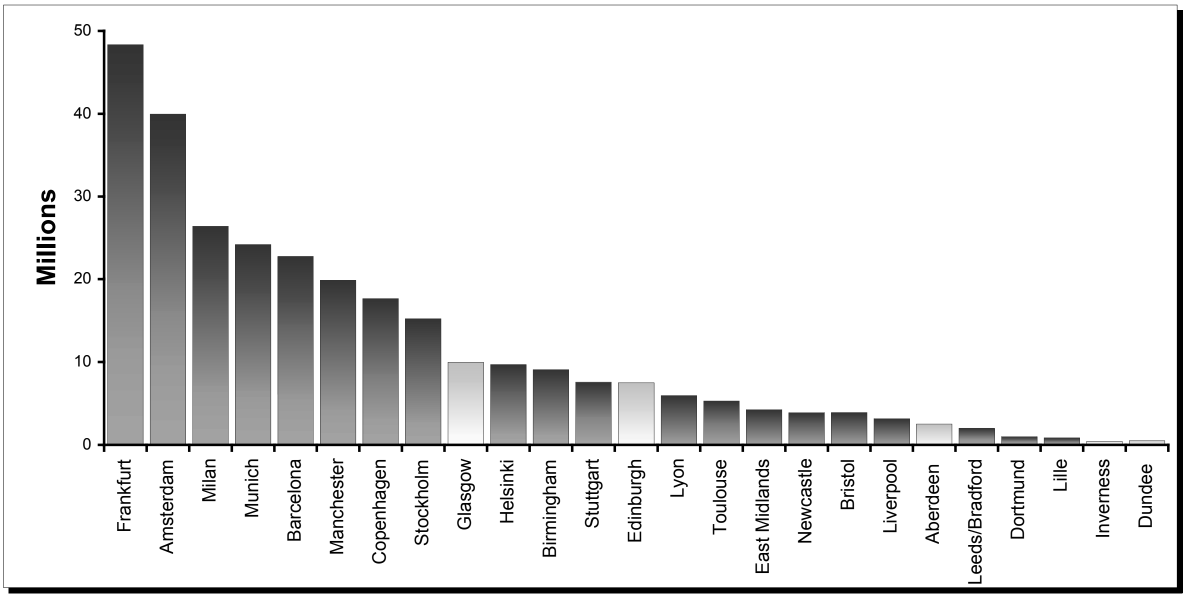


Source: Eurostat: Region: Statistical Yearbook 2003

HOW WELL CONNECTED?

3.15 Connectivity has been measured in two ways: airport passenger numbers and Internet bandwidth connections. Figure 29 and table 16 show the airport data and a familiar pattern emerges. Among the European Competitive Cities Frankfurt, Amsterdam and Milan perform well. When ranked by passenger numbers Manchester is the best performing English Core City. Glasgow and Edinburgh feature in the European top 50, at 39 and 43 respectively. Passenger numbers at Glasgow increased by 4.2% between 2002 and 2003, during the same period passenger numbers at Edinburgh were up 7.9%.

Figure 3.8: Terminal passenger numbers 2003



Note: Where more than one airport serves a city the data has been combined to give an overall figure
Source: Airports Council International 2002. Civil Aviation Authority

Table 3.3: Terminal passenger numbers at Europe's 50 leading airports 2002

Rank	City	Passengers	% Change 2002/3	Rank	City	Passengers	% Change 2002/3
1	London Heathrow	63 468 620	0.2	15	Milan (MXP+ LIN)	17 630 452	1.1
2	Frankfurt	48 351 664	-0.2	16	Zurich	16 989 497	-5.1
3	Paris, Charles de Gaulle	48 122 038	-0.4	17	Dublin	15 856 265	5.1
4	Amsterdam	39 959 161	-1.9	18	Stockholm	15 206 411	-8.0
5	Madrid	35 694 331	5.2	19	Brussels	15 164 913	5.5
6	London Gatwick	30 007 209	1.3	20	Dusseldorf	14 273 082	-3.2
7	Rome	26 285 036	3.7	21	Istanbul	14 030 122	5.0
8	Munich	24 193 304	4.4	22	Oslo	13 646 890	1.8
9	Barcelona	22 748 758	6.6	23	Vienna	12 784 504	6.8
10	Paris Orly	22 390 236	-3.3	24	Athens	12 252 216	3.6
11	Manchester	19 867 912	4.6	25	Malaga	11 553 624	10.9
12	Palma de Mallorca	19 179 018	7.6	26	Moscow	11 540 990	5.9
13	London Stansted	18 716 692	16.6	27	Berlin	11 104 106	12.4
14	Copenhagen	17 643 641	-3.0	28	Antalya	10 482 036	0.5

Rank	City	Passengers	% Change 2002/3	Rank	City	Passengers	% Change 2002/3
29	Helsinki	9 698 431	1.0	40	Geneva	8 009 308	6.1
30	Lisbon	9 636 551	2.9	41	Cologne	7 758 355	44.3
31	Hamburg	9 529 924	6.5	42	Stuttgart	7 584 502	4.3
32	Moscow	9 379 037	40.3	43	Edinburgh	7 481 978	7.9
33	Gran Canaria	9 180 942	1.9	44	Prague	7 463 120	18.2
34	Nice	9 127 268	-0.8	45	London Luton	6 809 534	5.1
35	Birmingham	9 080 362	13.0	46	Lyon	5 939 895	2.8
36	Tenerife	8 841 180	-1.2	47	Lanzarote	5 383 097	5.0
37	Milan	8 757 038	12.0	48	Marseille	5 364 763	-1.7
38	Alicante	8 179 372	17.1	49	Toulouse	5 304 922	-0.6
39	Glasgow	8 131 688	4.2	50	Venice	5 304 597	25.8

Source: Airports Council International 2003

3.16 Total passenger figures only tell part of the tale, however. Ideally it would useful to distinguish between tourist and business travellers; unfortunately this data is not available. However it is possible to use passenger data for scheduled and charter flights and the final destination of scheduled passengers. The following tables do not change the bigger picture presented above, but they add light and shade to it. Hub and spoke airports such as Frankfurt and Amsterdam have a high proportion of scheduled passengers; these airports are home to national carriers which operate a high proportion of flights across domestic and European borders. Some of the smaller airports also have a high proportion of scheduled passengers; these are dominated by scheduled services run by the low-cost flight operators, and these services are predominately to domestic or EU destinations.

Table 3.4: Proportion of passengers travelling on scheduled services 2003

City	**% Passengers on scheduled service**	**City**	**% Passengers on scheduled service**
Dortmund	97.6	Stuttgart	84.8
Frankfurt	97.5	Lyon	84.4
Barcelona	95.4	Lille	75.5
Edinburgh	**94.3**	**Aberdeen**	**75.2**
Copenhagen	93.5	**Glasgow**	**72.5**
Turin	91.6	Leeds	68.7
Helsinki	91.0	Bristol	66.3
Milan	90.5	Birmingham	65.8
Toulouse	90.0	Newcastle	58.2
Amsterdam	89.4	Manchester	51.6
Liverpool	87.0		

Source: Airports Council International 2003

Table 3.5: Final destinations of air passengers 2003

	Total Scheduled Passengers	% Domestic	% EU	% Outside EU
Frankfurt	46,919,988	16.1	47.5	36.4
Amsterdam	35,589,774	0.3	55.2	44.5
Milan	26,342,948	39.5	40.4	20.1
Munich	24,013,458	35.5	39.3	25.2
Barcelona	21,496,919	50.6	46.2	3.2
Copenhagen	16,437,514	9.2	56.9	33.9
Stockholm	15,113,505	35.7	45.7	18.7
Manchester	10,079,642	30.2	43.5	26.2
Helsinki	8,830,829	30.4	50.0	19.6
Glasgow	**7,228,631**	**72.4**	**11.1**	**16.5**
Edinburgh	**7,054,940**	**73.5**	**20.5**	**0.6**
Stuttgart	6,330,615	38.4	51.3	10.4
Birmingham	5,871,814	23.9	63.9	12.1
Lyon	4,945,257	50.3	35.7	14.0
Toulouse	4,732,768	74.6	22.6	2.8
Liverpool	2,766,899	26.8	67.9	5.3
Nottingham	2,717,314	30.2	59.0	10.8
Bristol	2,577,267	41.6	55.1	3.3
Turin	2,569,598	63.6	35.8	0.6
Newcastle	2,292,622	63.6	33.9	2.5
Aberdeen	**1,901,564**	**73.1**	**18.6**	**7.6**
Leeds	1,385,674	35.9	63.0	1.2

Source: Airports Council International 2003

3.17 Table 3.6 shows the pattern of Internet bandwidth. The global cities of London, Paris and New York are best connected. Five of the sample continental cities appear in the top ten, but none of the Scottish or English Core Cities.

Table 3.6: Top 10 International Internet cities for Europe 2002

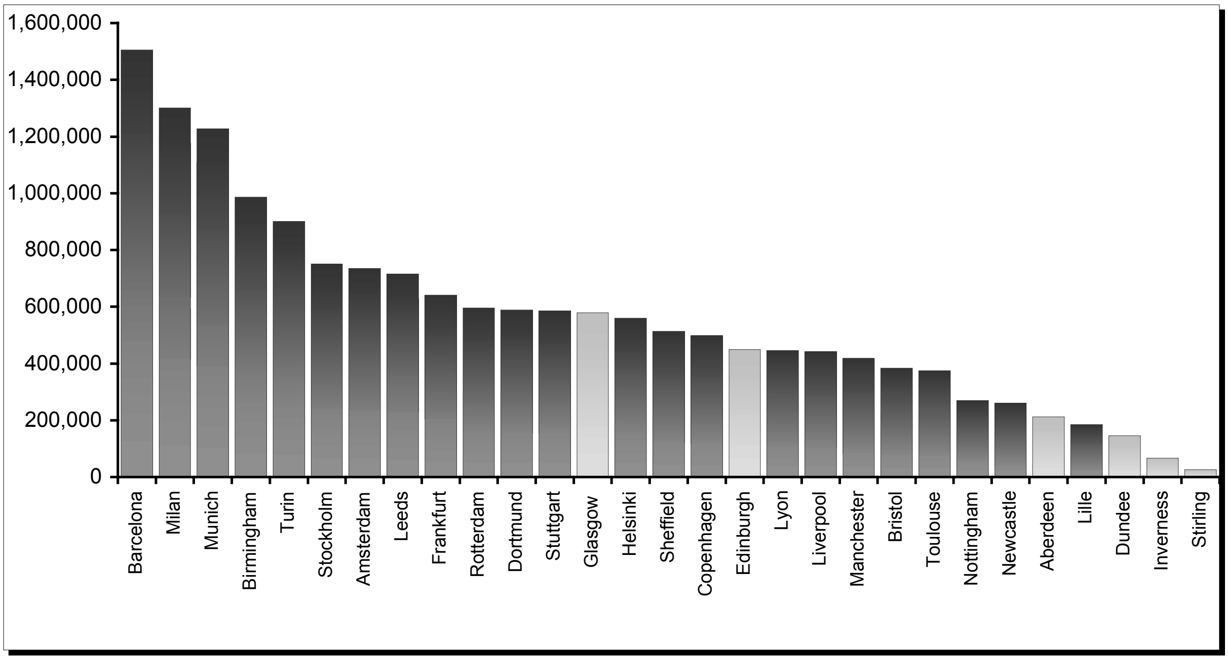
City	**Internet Bandwidth 2002 (Mbps)**	**Rank 2002**	**Rank 2001**	**Rank 2000**
London	319,475	1	1	1
Paris	227,803	2	2	3
Frankfurt	194,902	3	5	5
New York	174,180	4	3	4
Amsterdam	163,942	5	4	2
Copenhagen	109,204	6	8	20
Stockholm	94,741	7	7	7
Brussels	81,536	8	6	6
Milan	66,424	9	9	17
Zurich	51,488	10		

Figures represent Internet bandwidth connected to European locations across international borders from Consolidated Metropolitan Statistical Areas or equivalents including cities outside Europe
Source: TeleGeography Inc.

DEMOGRAPHIC TRENDS

3.18 Views vary about the impact of sheer population size upon economic performance. It is clearly possible for medium and smaller sized cities to be economically successful. But there are reasons why large complex cities have economic advantages. Figure 3.9 shows the population of the sample cities. These are for cities defined by their local authority boundary rather than the wider conurbation or the functional urban region. But they demonstrate that many of the more successful cities are rather larger than UK cities. With the exception of Edinburgh and Glasgow, the Scottish cities are relatively small. If we expanded the boundaries to take in conurbation populations the comparative advantage of many continental cities would still be evident.

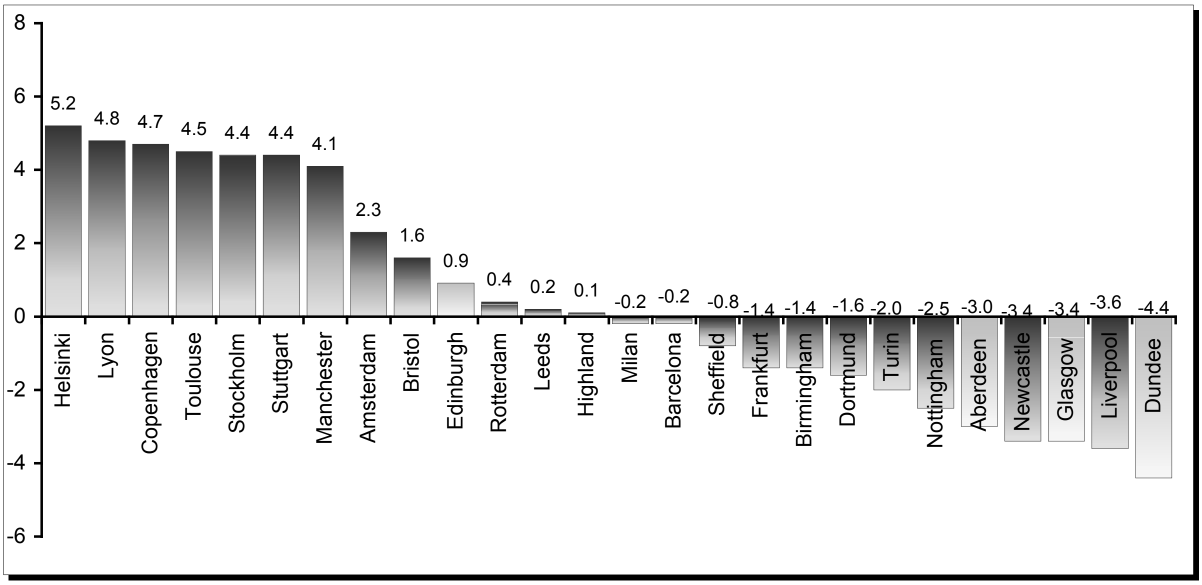
Figure 3.9: Residential population 2001



ARE CITIES GETTING BIGGER OR SMALLER?

3.19 Figure 3.10 demonstrates the way in which cities are attracting or losing population. Despite a tendency for the decentralisation of population that can be found in most European countries, the relative performance of the study cities has varied significantly during the past five years. Those Scottish and English Core Cities that have been under-performing economically in relation to their counterparts in Europe have also been losing people. Population is down by 4.4% in Dundee and 3.4% in Glasgow. During the same period Edinburgh has experienced an increase in population size. Of course if the trends in the wider conurbation were taken into account the picture would be more complex. But the big picture is clear, continental cities have been becoming more attractive to live in, whilst many Scottish and English cities have continued to lose population. Although this trend may be coming to an end as some UK cities have recently experienced small increases in their residential population, see page 6.

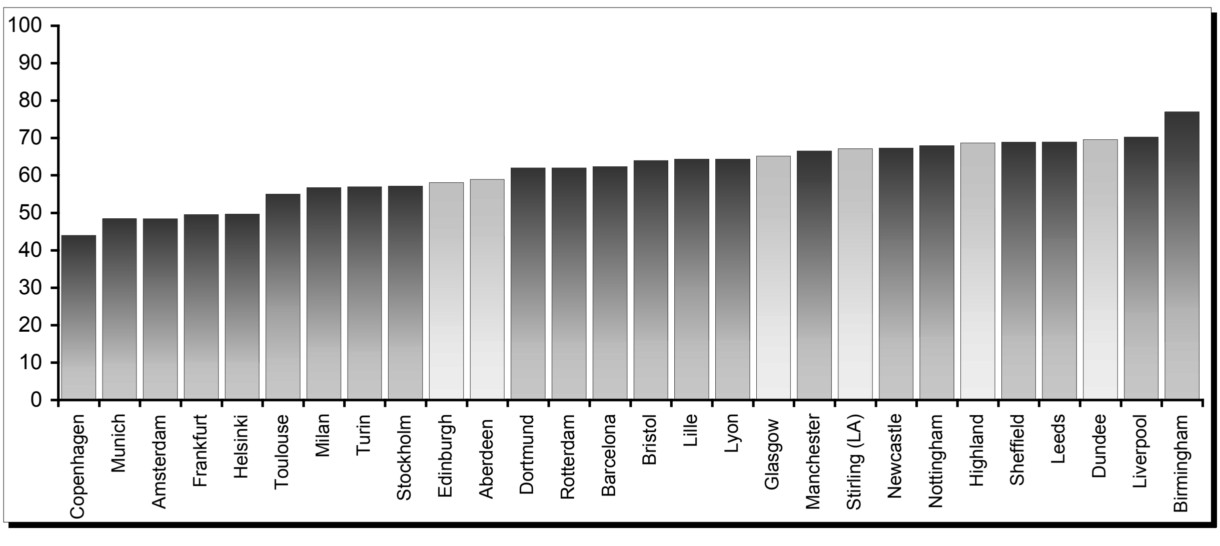
Figure 3.10: Percentage change in residential population 1996-2001



WHO LIVES IN CITIES?

3.20 Figure 3.11 gives an overview of the structure of the residential population living in UK and continental cities. The Population Dependency Index shows the proportion of people too old or too young to be in the workforce, and therefore not directly contributing to the city's economy. It is calculated as the number of under 20 year olds and the number of over 65's divided by the population aged 20-65. Edinburgh and Aberdeen perform well on this index with relatively large working age populations, whilst the other Scottish and English Core Cities have more dependent populations than their European counterparts.

Figure 3.11: Population Dependency Index 2001

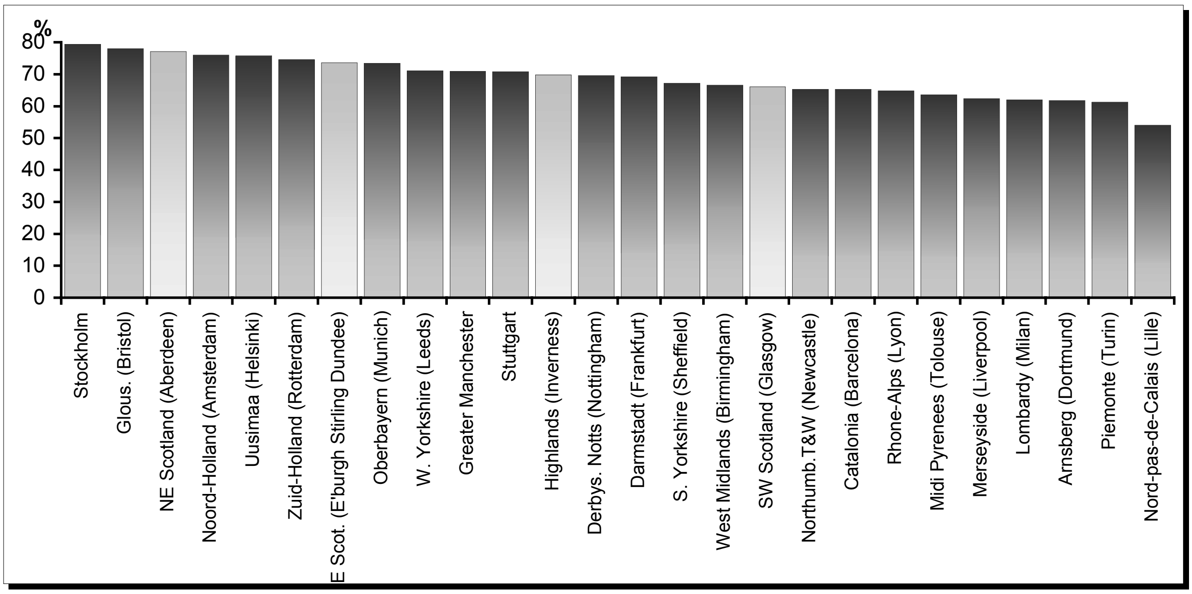


Note: PDI: Under 20s + over 65's / 20 – 65 year olds
Source European Urban Audit 2004

WHO WORKS IN THESE CITIES?

3.21 The UK has a relatively high employment rate – in this case defined as FTE employment divided by working age population adjusted for commuting – when compared with many European countries. Within the UK the regions surrounding Edinburgh and Aberdeen have high employment rates. However, many of the English Core Cities have relatively low employment rates in relation to their European competitors.

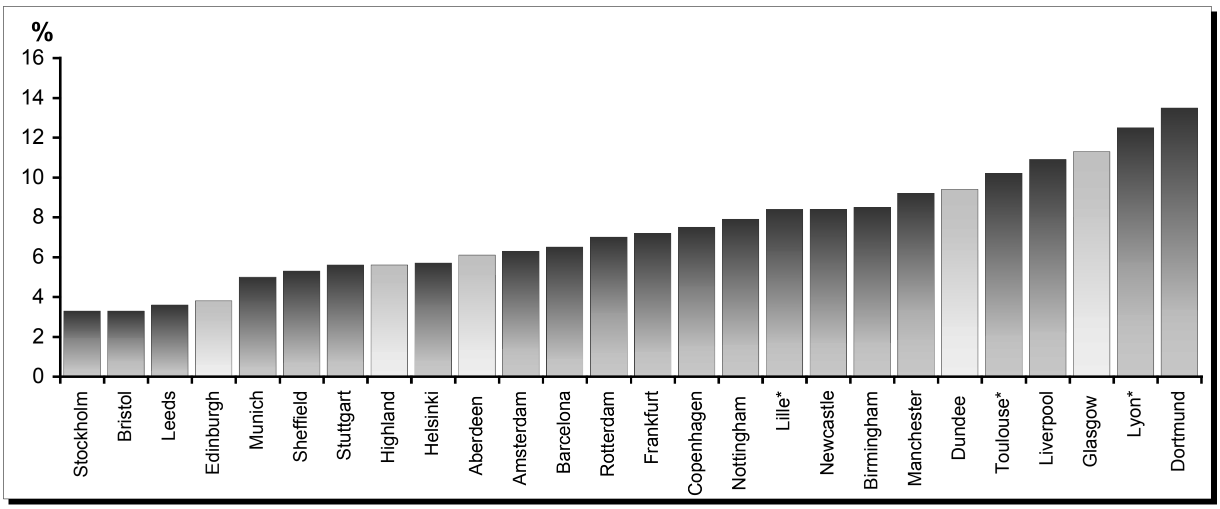
Figure 3.12: Employment rate 2002



Source: Eurostat: Region: Statistical Yearbook 2003

3.22 Figure 3.13 shows unemployment rates for our cities, here the picture is mixed with the more successful Scottish and English Core Cities performing well – Bristol, Leeds and Edinburgh. However, Liverpool and Glasgow lie at the bottom end of the table.

Figure 3.13: ILO unemployment rates 2001



Note: * Regional Rates

Sources: Urban Audit 2004, City Sources, ONS – Labour Force Survey

HOW DOES THE PRIVATE SECTOR SEE OUR CITIES?

3.23 One important dimension of cities' competitiveness is their relative attractiveness to business and private sector investors. We explore this here by examining the most reliable study of these issues, the *Cushman & Wakefield Healey & Baker* European Cities Monitor. Table 3.7 lists the cities which, during the last decade, have been seen by over 500 business people and private sector investors as the best place to locate a business.

Table 3.7: The best cities to locate a business today

	1990	2001	2002	2003	2004
London	1	1	1	1	1
Paris	2	2	2	2	2
Frankfurt	3	3	3	3	3
Brussels	4	4	4	4	4
Amsterdam	5	5	5	5	5
Barcelona	11	6	6	6	6
Madrid	17	8	7	7	7
Munich	12	10	11	10	8
Berlin	15	9	9	8	9
Zurich	7	7	10	11	10
Milan	9	11	8	9	11
Dublin		14	12	12	12
Prague	23	22	16	17	13
Manchester	13	14	19	13	14
Stockholm	19	15	14	18	15
Lisbon	16	16	17	15	16
Geneva	8	12	15	14	17
Düsseldorf	6	17	13	16	18
Hamburg	14	18	18	20	19
Warsaw	25	27	26	22	20
Lyon	18	20	20	19	21
Vienna	20	23	23	24	22
Budapest	21	22	25	23	23
Glasgow	10	19	21	21	24
Rome		25	22	26	25
Copenhagen		24	24	25	26
Moscow	24	30	30	28	27
Helsinki		26	27	29	28
Athens	22	29	28	30	29
Oslo		28	29	27	30

Source: Cushman & Wakefield Healy & Baker European Cities Monitor 2004

3.24 In important respects these subjective surveys confirm what our comparative quantitative data have already shown. First, the global cities of London and Paris are rated the best. Second, capital cities in general are the most attractive. Third, only one Scottish and one English Core City make it into the top thirty. However, when asked which other

European cities are important business centres Edinburgh features, with fewer mentions than Birmingham and Luxembourg but ahead of Stuttgart and Toulouse. The cities that we have identified as having the highest GDP, highest innovation levels, skilled workforces and better external connections are frequently seen by the private sector as the best places to locate.

3.25 It is also worth noting that there has been no change in the relative attractiveness of the top five cities during the thirteen years this survey has been conducted, even though this has been a relatively unstable period economically. The European urban hierarchy is basically stable. However, it is not completely so. It is possible for cities to improve their performance, for example Barcelona and Madrid have both improved their standing with the private sector reflecting the growth and modernisation of the Spanish economy during the 1990s. But equally Copenhagen and Helsinki, which were outside the top 30 a decade ago, have entered the private sector's perception as attractive for investment. For this reason we included Barcelona and Helsinki in the original study. It is also possible for a city to drop down the rankings and Glasgow fell from 10^{th} to 24^{th} between 1990 and 2004

3.26 Table 3.8 provides a more detailed understanding of the ways in which the private sector judges cities' attractiveness. It identifies the three most important features of a city for the private sector. They are: the quality of the workforce; access to markets; and external transport links. All correspond fairly closely to the key drivers of competitiveness identified in the *Competitive European Cities* report. The table shows the comparative rankings of European cities on these three characteristics. Once again they correspond fairly closely to the quantitative analysis presented above.

Table 3.8: Best cities in terms of . . . .

	Easy access to markets, customers or clients	Qualified staff	External transport links
London	1	1	1
Paris	2	2	2
Frankfurt	3	3	3
Brussels	4	5=	5
Berlin	5	5=	10
Milan	6	8	11
Amsterdam	7	7	4
Manchester	7	13	7=
Munich	9	4	7=
Barcelona	9	9	12
Madrid	11	9	9
Lyon	13	26	15
Glasgow	14	18	20
Stockholm	18	9	20
Dublin	23	15	22
Copenhagen	28	21	14
Helsinki	29	21	29

Source: Cushman & Wakefield Healy & Baker European Cities Monitor 2004

3.27 Further evidence of the Scottish cities' relatively low profile in the eyes of the private sector is provided in Table 3.9. Although this is relatively soft data it ranks international cities in terms of a quality of life score generated from 39 indicators. Many of our successful continental cities appear in this list, but no Scottish cities do. However, it is the only ranking that consistently places global cities and capital cities, in particular, lower down the list. There is some evidence here that there are opportunities for non-capital cities, which could have advantages over the larger currently successful ones in terms of quality of life.

Table 3.9: Quality of life survey 2001 - 2004

City	Rank 2001	Rank 2002	Rank 2003	Rank 2004	Index 2004
Zurich	1	1	1	1	106.5
Vienna	3	2	2	3	106
Vancouver	1	2	2	3	106
Sydney	4	4	5	5	105
Geneva	4	4	2	1	106.5
Frankfurt	9	6	5	5	105
Auckland	7	6	5	5	105
Copenhagen	4	6	5	5	105
Helsinki	7	6	26	24	102
Bern	9	10	5	5	105
Munich	9	10	10	10	104.5
Amsterdam	12	12	10	10	104.5
Stockholm	12	12	15	15	103.5
Oslo	12	15	31	31	101.5
Düsseldorf	16	15	12	12	104
Brussels	16	15	12	12	104
Luxembourg	19	18	15	15	103.5
Berlin	23	22	15	15	103.5
Nuremberg	27	25	26	20	103
Hamburg	27	25	26	24	102
Paris	33	31	31	31	101.5
Dublin	35	35	23	23	102.5
Lyon	44	40	39	35	100.5
London	40	41	39	35	100.5
Madrid	51	41	44	38	100
Lisbon	62	57			
Rome	68	68			
Athens	87	87			

New York = 100

Source: Mercer Human Resource Consulting Quality of Living Survey 2004

CONCLUSIONS

This study updates our earlier 'Competitive European Cities' work and incorporates data for the six Scottish cities. It compares the performance of the Scottish cities with the English Core Cities and with a number of successful European cities. The original study defined and measured urban competitiveness in terms of six critical characteristics:

- economic diversity
- skilled workforce
- connectivity
- strategic capacity to implement long-term development strategies
- innovation in firms and organisations
- and quality of life

The data presented here shows that in many respects Scotland's cities are performing well. However, in terms of size and scale only Edinburgh and Glasgow are comparable to the English Core Cities and even these are smaller than many of the successful continental cities.

Scottish cities tend to have high employment rates and a well-qualified workforce. Levels of GVA are high in Edinburgh, Glasgow and Aberdeen. Connectivity – both within the UK and with the rest of Europe – is improving, and this is likely to continue with the expansion of the low-cost airlines.

This report made use of readily available quantitative data and it is just a starting point. Whilst we have made best use of the best available material, important gaps remain. Many of the factors central to urban competitiveness, including innovation, strategic capacity and quality of life remain little quantified. And these are areas that need to be explored further if we are to truly understand the relative performance of Scotland's cities.

CHAPTER 4 TECHNICAL NOTE

INTRODUCTION

4.1 The dynamics and processes that contribute to the performance of cities remain complex and often confused. There is a substantial academic and consultancy literature dedicated to a better understanding of the successful city. Place competitiveness cannot be simply or easily quantified, nevertheless it is possible to work with quantitative data to identify the key elements of competitive cities.

4.2 As part of the European Competitive Cities project we developed a set of common indicators that focus on the key assets of the competitive city. These headline indicators were used to place the performance of the English Core Cities in the wider European context. This work has now been updated to incorporate the six Scottish cities: Edinburgh, Glasgow, Inverness, Stirling, Aberdeen and Dundee.

4.3 The indicators were developed to provide a starting point from which to quantify the assets of the competitive city and benchmark the performance of the selected cities. These indicators come with a health warning. Throughout this process we have had to make choices and balance what is desirable with what is possible. Quantitative data can only ever give part of the picture and all the datasets come with caveats, as long as the limitations are transparent and understood by the end user the data can be used effectively.

4.4 The methodology used to develop these indicators, the challenges faced and the solutions adopted are outlined in this technical note, which reviews:

- the key features of competitive cities
- who else is measuring it and how
- defining the city – where's in and where's out
- data availability
- the Competitive European Cities' Indicators
- data sources and references – replicating the study

KEY FEATURES OF COMPETITIVE CITIES

4.5 Across studies exploring the nature of urban competitiveness there is a general consensus that emphasises the importance of a number of key factors to the competitive city, these include: a quality labour force; favourable industrial structure; and connectedness.

4.6 Our work for the Competitive European Cities (Parkinson et al 2004) identified six key characteristics of urban competitiveness:

- economic diversity
- skilled workforce
- connectivity – internal and external
- strategic capacity to mobilise and implement long term development strategies

- innovation in firms and organisations
- quality of life – social, cultural and environmental

4.7 James Simmie (2001) has described innovative cities as those that enable local strengths to respond to complex, global opportunities. As he states, "this requires organisational responses that combine power of corporate capital with the opportunism of small business; manufacturing technology and service expertise; entrepreneurial forms of freedom with effective public regulation and support; new ideas encouraged by a stable established institution and physical infrastructure; and a capacity for trail and error through support for risk-taking". Innovative cities reflect:

- Experiences of national innovation system and the city's position in the urban hierarchy – the higher up these scales cities are the more likely local environments facilitate innovation
- Long term historical development – the role of large firms and corporate strategies with urban regional dimension

4.8 For Simmie, the key urban assets of an innovative city are:

- a highly qualified workforce
- fixed infrastructure and telecommunications capacity

4.9 In 'What makes Euro regions prosper?' Business Strategies Ltd state that "prosperity is a function of two constituent parts – employment rates and productivity". Their report 'Long term outlook' (2000) identified the two most important drivers of successful regions as:

- industrial structure; and
- human capital

With the additional drivers of:

- labour supply
- infrastructure
- population density
- ethnicity

4.10 Cheshire and Carbonaro's 1996 study provides an analysis of disparities in the growth of GDP per capita between 118 Functional Urban Regions surrounding major cities. This work identified the following as determinants of regional growth:

- industrial structure
- regional population
- R&D establishments (measured per million population)
- growth of neighbouring regions (close proximity to fast growing region can have a detrimental effect on a region)
- national performance

4.11 In 'State of Urban Britain' Robert Huggins has developed a competitiveness index using Storper's[7] definition of place competitiveness as "the capability of an economy to attract and maintain firms with stable or rising market shares in an activity while maintain stale or increasing standards of living for those who participate in it". Huggins' model has three facets:

Inputs	Index of knowledge based companies Index of economic activity Index of business density
Outputs	Index of GDP per capita Index of productivity
Outcomes	Index of earnings Index of unemployment

4.12 In 'The State of England's Cities' Robson et al (2000) identified the key features of the 'urban asset base' as:

- Location
- Age
- Favourable economic structure
- Company characteristics
- Skills, learning and innovation
- Communications
- Quality environment and service
- Alert local Governance

4.13 The EIUA's (1992) study for Lothian and Edinburgh Enterprise Ltd identified four key characteristics of a competitive city:

- A diverse economic base in a range of service and manufacturing sectors, particularly the high value added sectors
- The knowledge based institutions to develop a flow of human capital and skilled workers for the high value added sectors of the economy
- Good economic, institutional, physical and telecommunication links with the most dynamic areas of the European economy
- The local institutional capacity to identify a development strategy for the city and generate the political financial and personnel resources needed for successful implementation

4.14 For Lever (1999) "Competitive success reflects visionary civic leadership, flexibility in the labour force, a responsive public sector, effective public-private partnerships and an entrepreneurial milieu".

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[7] Storper, M. (1997) *The Regional World: Territorial Development in a Global Economy* New York: Guilford Press

4.15 Whilst the precise focus of these studies varies, the attributes they assign to the successful city remain relatively constant, with economic structure; human capital; productivity; connectedness; and innovation featuring as the key determinants of success.

MEASURING COMPETITIVENESS

4.16 An initial review of comparative studies of city performance highlights the lack of robust city level data that is comparable on a trans-national basis and many studies have relied on regional or city-region data.

4.17 The Innovative Functional Urban Areas in North West Europe project (IAURIF, 2001) focused on two 'input' and two 'output' indicators of innovation after finding that very few statistical indicators are available at the regional level.

Input indicators
Inventory of financial resources associated with R&D expenditure.
HR employed in R&D (full time equivalents).

Output indicators
Scientific production (statistics on publications from a US database and Office for Science Technology in France).
Number of patents registered.

4.18 Robert Huggins' 'Global Index of Knowledge Economies'[8] includes the following indicators of regional competitiveness:

- Economic Activity – employment/unemployment
- Employment – key sectors Biotechnology, Computing, Automotive and Mechanical, Electrical and instrument, Computer services
- Number of managers
- R&D expenditure by Government
- R&D expenditure by Businesses
- Patents
- GDP
- Labour productivity
- Earnings
- Elementary education
- Higher education
- Secure servers
- Internet hosts

This report also included a set of sub regional indicators for the UK, covering:

- Economic activity
- ILO unemployment

[8] South East England Development Agency Robert Huggins Associates (2001) Global Index of Regional Knowledge Economies: Benchmarking South East England

- GDP
- earnings
- Businesses per capital
- Knowledge based companies
- Knowledge based workers
- R&D and HE workers
- Productivity – GDP per employee
- Educational attainment (A level AS level points scored)

4.19 Barclays' 'Competing with the World'[9] report provides a detailed profile of 18 regions from across the world, identifying the leading industrial sectors and development issues for each. It also includes a set of economic performance indicators:

- Population – % under 16, % over retirement
- GDP
- Employment
- Unemployment
- Educational attainment
- Patent applications

4.20 In "UK City Competitiveness Index"[10] Robert Huggins reviews the relative competitiveness of the UK and presents data at 'city level' as defined by local authority boundaries. The final competitiveness index included:

- Productivity – economic output per worker
- GDP per capita
- Average full time earnings
- Business density (number of companies per capita)
- Knowledge based firms as a % of all firms
- Economic Activity rates
- Unemployment

4.21 Business Strategies Limited 'What Makes Euro Regions Prosper' starts from the assertion that the number of people working and the productivity of each employee determine the prosperity of a region (income), this report measures regional prosperity in terms of:

- GDP per head of working age population adjusted for commuting at purchasing power standard
- Employment rates (full time equivalent employment divided by working age population adjusted for commuting)

[9] One North East, WDA Barclays (2002) Competing With The World: World Best Practice in Regional Development

[10] Robert Huggins Associates (2002) *The State of Urban Britain*

- Productivity (GDP per head of working age population adjusted for commuting divided by full time equivalent employment)

4.22 Explanatory variables of prosperity include:

- industrial structure
- workplace employment in 1991
- Objective 1 status
- airport – average travel time to airports and number of passengers using them
- qualifications – at three standard levels: higher, medium, lower

4.23 Many of the studies outlined above use very similar indicators of competitiveness. Sometimes this is because these are the best possible measures, but in some cases this is because as researchers we have to balance what's desirable with what is possible and use the best available data. Consequently many of the factors most pertinent to competitiveness – including innovation, governance and connectedness – remain little quantified on a comparative basis.

DEFINING THE CITY

4.24 Cities vary in scope and scale and these differences are in part due their boundaries. "Under-bounding" occurs when the official delineation of a city does not correspond with its true reach and influence; others are "over-bounded" and incorporate large areas of rural or semi-rural land along with the urban area. The cut off point for city boundaries can have a significant impact on socio-economic indicators[11].

4.25 English Cities tend to have high levels of deprivation concentrated in the inner-city areas with wealthier suburbs towards the edge of town. Here tightly drawn boundaries can exclude successful areas from city-wide averages. The opposite can be seen in many French and Italian and Scottish cities where deprivation is often concentrated on peripheral housing estates, here tightly drawn boundaries exclude less successful areas.

4.26 Ideally city boundaries should reflect the true reach and influence of each city. As many UK cities are under-bounded their significance, scope and structure can only be fully understood with reference to the wider city-region. However, data is not readily available for 'ideal' boundaries. To ensure true comparability when evaluating city performance across Europe city boundaries the data would need to be standardised, ideally on a basis that reflected the functional reach of the urban area rather than administrative boundaries. As more data becomes available at the very local level and with advances in ICT/GIS it will be possible to use local data as the building blocks to construct boundaries for urban areas on a consistent basis and so standardise the spatial units of 'the city' across Europe.

4.27 Given the time and budget available the data presented here is for standard geographies – most usually the cities as defined by their current administrative boundaries. This has three advantages. First, this is the level of political accountability; second this is the

[11] Cheshire, P (1997) Economic Indicators for European Cities and Regions: Why boundaries matter

functional level of most service delivery. And finally, this is the spatial level at which most readily available secondary data is published. However, it is equally important to understand how the city at the centre of each of these regions is performing. Data relating to the central city provides a valuable starting point for exploring wider relationships between city and region.

COMPARABLE DATA?

4.28 The limited quantity of robust comparable city-level data available on a trans-national basis presents a major challenge for this work. The measures of competitiveness included here have been influenced by data availability and informed by our experience conducting the research for the Competitive European Cities report (Parkinson et al 2004).

4.29 The GLA's recent working paper[12] highlights some of the data issues encountered when collecting data on a trans-national basis. They found that data from several reputable sources gave different figures for basic measures such as total population. All the data was robust, however it was not measuring exactly the same thing for exactly the same city boundaries, and this resulted in different figures.

4.30 Wherever possible trans-national data sources have been used, these provide data collected on a consistent basis across national boundaries, for example data from the Airports Council International[13]. Unfortunately there are relatively few of these sources available.

4.31 There are a number of international classification systems that can be applied to local data to increase comparability across national basis, these include:

- The OECD's International Standard Classification of Education (ISCED)[14]
- GDP/GVA as defined by the European System of accounts[15]
- European standard classification of economic activity NACE Rev.1 (Nomenclature Européenne des Activités)
- International Labour Organisation's standardised definition of unemployment

4.32 There are domains where data comparability is particularly limited. For example, there is significant variation in definitions, recording methods and reporting rates of crime and without standardisation it is not possible to draw meaningful conclusions from the recorded crime data for different countries.

4.33 Even when working with a relatively small number of headline indicators significant gaps in the data remain. Basic contextual measures such as total population tend to be readily available, however data relating to innovation, connectivity and qualifications remains limited at the city level, in some cases regional data has been used to fill these gaps. Data availability and robustness tends to be highest in the Northern European countries, with the Scandinavian countries having the most accessible and systematically presented data at both

[12] GLA Economics (2004) Greater London Authority Working Paper 9: Measuring and Comparing World Cities

[13] See www.aci-europe.org

[14] See www.oecd.org/dataoecd/7/2/1962350.pdf

[15] See www.statistics.gov.uk/articles/economic_trends/international_comparisons_of_productivity_update.pdf

national and city level. Consequently there is more data for Copenhagen and Helsinki than for Turin and Milan.

4.34 To provide a more comprehensive picture of recent developments in the UK this project has incorporated additional data from UK sources these are explored in section 2 of the main report.

THE INDICATORS

4.35 Despite the challenges presented by boundary definition and limited data availability, indicators describing socio-economic conditions cities remain a valuable tool for policy makers. The indicators can be used effectively and responsibly to identify trends and benchmark cities as long as the associated limitations and caveats of the data are acknowledged and understood.

4.36 The indicators detailed below have been selected as they are:

- focused and limited in number – all the indicators relate to the drivers of urban competitiveness;
- outcome rather than input or output based;
- measurable – the data required to inform the indicator is readily available;
- robust and intelligible;
- timely and ideally available for more than one point in time to identify change over time.

4.37 This set of indicators have been developed to identify the extent to which each of the study cities possess characteristics identifies as contributing to urban competitiveness and to place the performance of selected Scottish and English cities in the European context.

4.38 We have adopted a simple approach to address the two key challenges presented by theses indicators – the issue of city boundaries and the lack of comparative data at the sub-regional level. We have worked with existing administrative boundaries as this is the spatial level at which most data is available whilst noting the limitations of this approach. We have also called on the support of individual cities to access data.

Table 4.1: The Indicators

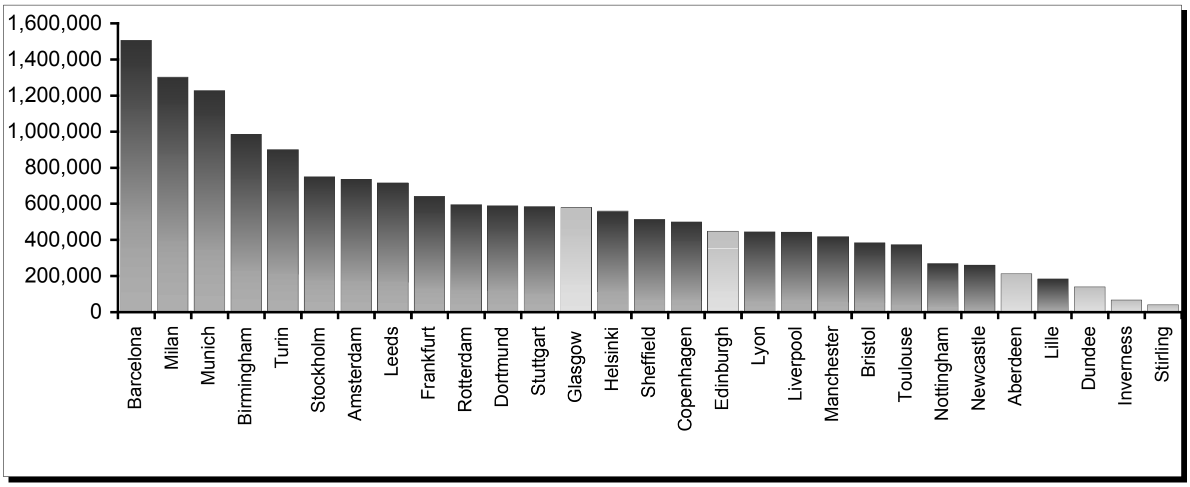
Domain	Indicators
Population	**Total Population** **% of Population under 16 and over retirement age** Population size provides an indication of the scale of the city The rate of population growth or fall provides an indication of underlying economic changes and pressures on urban infrastructures The % of economically active/ inactive in a city provides an indication of the city's potential workforce resources / demand on services
Productivity	**Gross Domestic Product/ Gross Value Added**
Employment	**Total Employment (full time equivalents)/ Employment Rate** % employed general breakdown by sectors (NACE Rev.1.1 A-O) % employed in R&D (NACE Rev.1.1 73) % employed in HE (NACE Rev.1.1 80.3) % employed in knowledge industries (NACE Rev.1 72) % employed in High Tech Industries (24.4, 30, 35.3, 32,33) Total employment provides an measure of scale of the local economy Employment rate - proportion of working age residents in employment – impacts on welfare rates and measures of well-being Prosperous areas tend to have higher employment rates Industrial structure is important as the demand for products and services produced by a city determines the local employment rate Industrial structure also shapes the local the labour market – i.e. the impact of concentration of declining manufacturing industries on employment rates in a city These high value growth sectors have been identified as influential in determining the competitiveness of the city and are generally regarded as beneficial by city promoters
Human capital	Qualifications - the % of working age population qualified to degree level (ISCED 1997 levels 5 and 6) A highly qualified workforce increases the potential productivity of a city
Deprivation	**Total number of people registered as unemployed** **ILO Unemployment rate** A measure of labour market performance and unutilised resources Indication of pressures on welfare services
Connectedness	**Airports – total passengers terminal passengers** The number of air passengers provides an indication of the extent to which a city is connected to wider markets An international airport has been identified as an important urban asset This measure also provides an indication of infrastructure investment
Innovation	**No. of patents registered** Patents registered per head of workforce These indicators provide a measure of the innovativeness of the city economy unfortunately they were not available on a trans-national basis. The European Innovation Index has been used to provide an indication of innovation.

THE DATA

Population

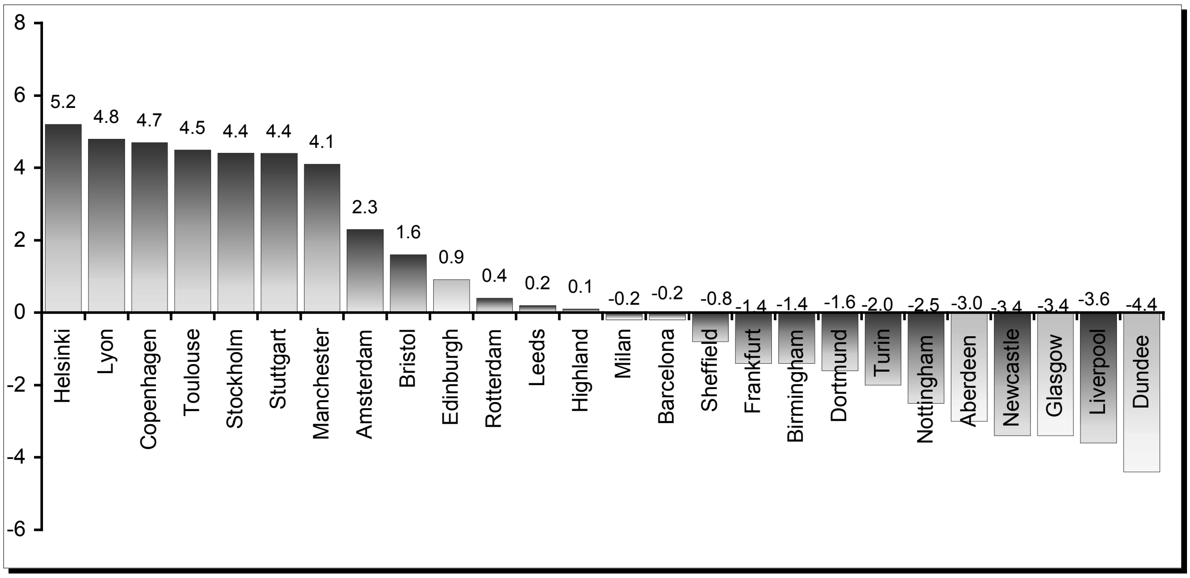
4.39 Population figures are amongst the most robust data available, although differences in the size of different cities may in part be due to differences in how city boundaries are defined. In terms of population the study cities vary significantly from Barcelona – home to 1.5 million residents – to Stirling with just over 40,000 residents. The pattern of population change experience varies across the study cities. All the Scandinavian cities have experienced population growth over the last five years, whilst many of the UK cities, including the Scottish cities, have seen their residential population decrease. The dataset for Munich is inconsistent due to changes in statistical methods between 1996 and 2001.

Figure 4.1: Residential population 2001



Source: UK Cities ONS Mid-Year Population Estimates 2001; city sources

Figure 4.2: Percentage change in residential population 1996-2001

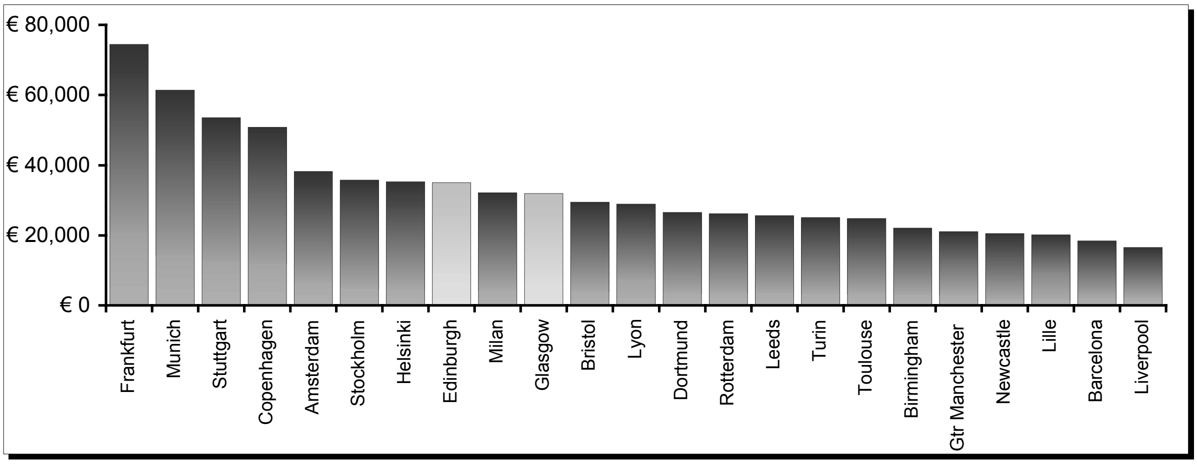


Source: UK Cities ONS Mid-Year Population Estimates 2001; various city sources

Productivity

4.40 The European System of Accounts standardises the calculation of Gross Domestic Product across all EU countries. However, GDP figures are not readily available at the city level. In the UK the ONS publishes sub-regional Gross Value Added figures for 1995-2001. A recent study by Barclays Bank Private Clients calculated GDP figures for many European cities. This data is available on a consistent basis from a single source, making it useful for drawing comparisons, however the Barclays' figure for city GDP can differ from figures published by individual cities.

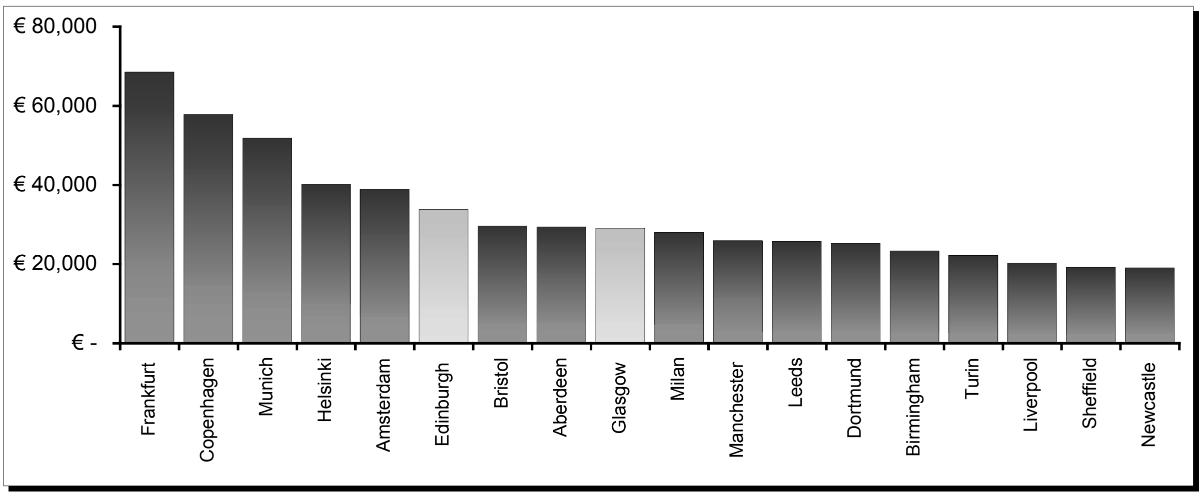
Figure 4.3: GDP per capita 2001 (Barclays)



Source: Barclays Private Clients 2003

4.41 The Urban Audit 2004 provides an alternative source of GDP per capita data. This source does not cover as many of the study cities as the Barclays report, and the actual GDP per capita figures vary significantly between the two studies, however, both studies show a very similar ranking of the study cities.

Figure 4.4: GDP per capita 2001 (Urban Audit 2004)

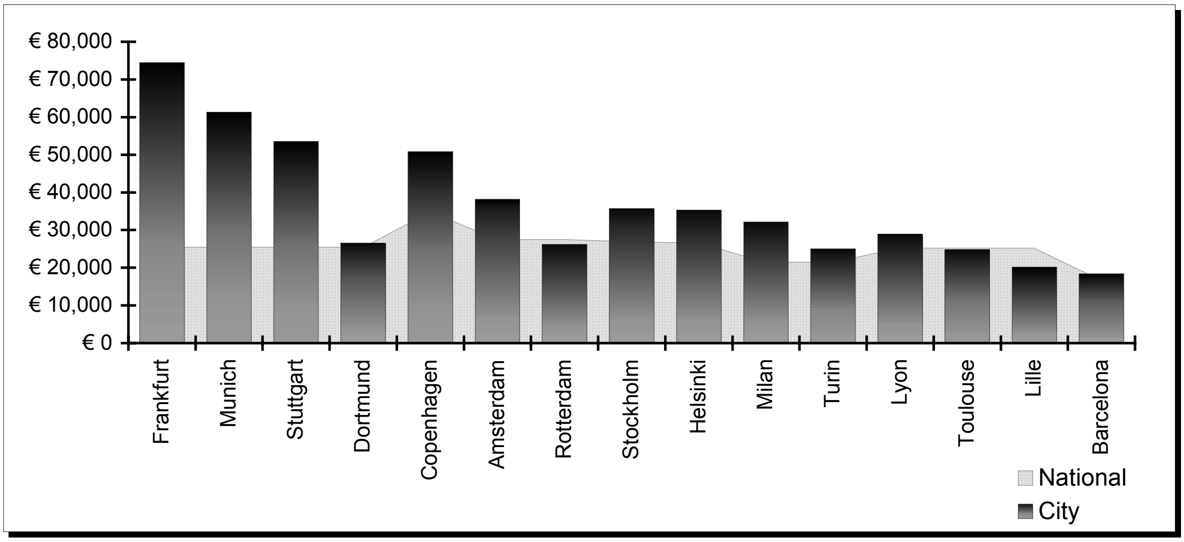


Source: European Communities Urban Audit 2004

*Data for UK cities updated from 1998 to 2001 using ONS sub-regional GVA data, Manchester data is for Greater Manchester South, Newcastle data is for Tyneside

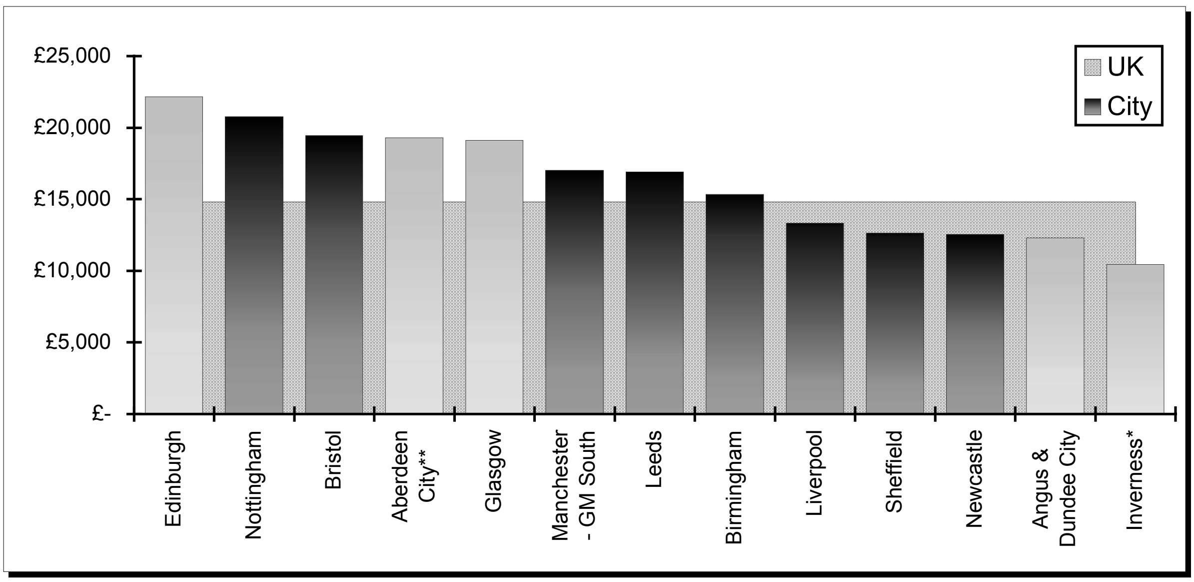
4.42 In terms of productivity the study cities out perform their national economies. The only European study cities to have GDP below the national rate are Rotterdam and Lille. Whilst in the UK Liverpool, Sheffield, Newcastle, Dundee and Inverness all lag behind the national average GVA[16].

Figure 4.5: GDP per head 2001 City: National Performance



Source: City Data Barclays Bank Private Clients 2002. National Data Eurostat

Figure 4.6: GVA per head 2001 City: UK



Source: ONS. *Nairn & Moray, Badenoch & Strathspey are also included with Inverness in the relevant NUTS3 Area
**Aberdeenshire and NE Moray are also included with Aberdeen City in the relevant NUTS 3 area

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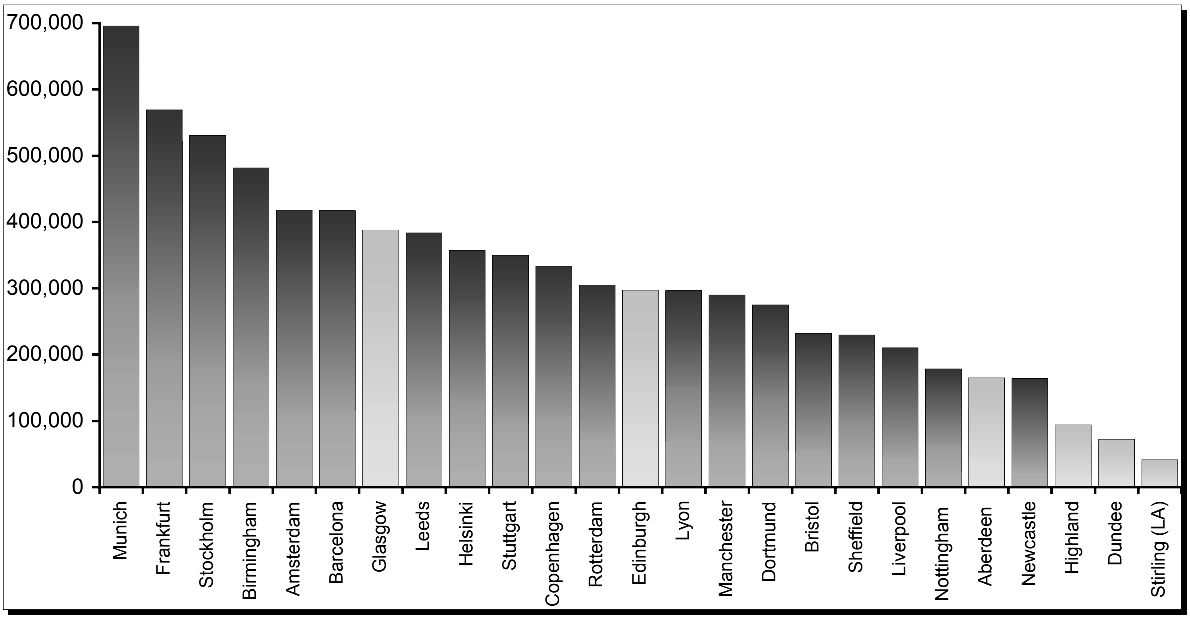
16 Gross Value Added (GVA) measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom. Approximate GVA represents the income generated by businesses out of which is paid wages and salaries, the cost of capital investment and financial charges, before arriving at a figure for profit. It includes taxes on production (eg business rates), net of subsidies but excludes subsidies and taxes on products (eg VAT and excise duty). GVA + taxes on products - subsidies on products = GDP.

Employment

4.43 Data detailing the number of people employed in each city is available for most of the study cities, although the basis on which it is collected varies by city. Data given here is for total employees (part time and full time added together) rather than full time equivalents. Munich, Frankfurt and Stockholm are the major employment centres closely followed by Birmingham. UK cities dominated the lower end of the table.

Figure 4.7: Total employees 2001



Source: UK Cities ONS/NOMIS Annual Business Inquiry 2001; various city sources

4.44 There is significant variation in the industrial mix of the study cities. Manufacturing still plays a significant role in some cities, accounting for 15% or more of total employment in Dortmund, Munich, Birmingham, Dundee and Sheffield. Table 4.2 shows the proportion of employees working in each sector of the local economy. This data does not show the contribution of each of these sectors to the overall productivity of each city.

Table 4.2: Employment by sector

	Agriculture and mining (A+B+C)	Manufacturing (D+E)	Building (F)	Commerce (G)	Hotels and catering (H)	Transport and communication (I)	Banking and insurance (J)	Property, rental and leasing, business services (K)	Public authorities (L)	Education (M)	Health care and welfare (N)	Public private service industries (O)
Copenhagen	0.2	7.2	2.7	16.1	9	24.1 (I &J)		10.4	6.6	5.3	8.7	9.2
Dortmund	0.8	17.7	7.3	15.6	2.6	7.5	6.1	15.9	5.3	4.2	12.1	4.8
Frankfurt	0.2	11.4	3.1	10.5	3.6	14.8	15.8	23.5	17.1 (L, M, N & O)			
Munich	0.3	21.8	3.3	13.4	3.8	4.7	9	19.2	4.9	3.3	9.2	6.8
Lyon	1.2	9.5	3.7	13.8 (G & H)		4.7	6.8	4.7	6	12.7 (M & N)		8.8
Helsinki	0	10	4.4	17 (G & H)		9.5	5	18	34.8 (L, M, N & O)			
Amsterdam	0.1	5.9	3	13.3	5.6	8.1	10.6	21.3	7.1	5.8	12.7	6.4
Rotterdam	0.2	10.4	5.3	13.5	2.9	12.7	6.2	19.2	5	6.7	13.5	4.3
Stockholm	0.2	7.7	3.7	19.5 (G & I)			28.2 (J & K)		6.3	7.9	14.6	11.5 (H & O)
Barcelona	0.1	14.5	5.4	15.9	5.2	6.1	5.4	20.6	7.2	5.2	6.9	7.5
Birmingham	0	17.5	3.6	14.2	4.8	6.3	5.4	16.2	5.1	9.7	11.4	5.8
Bristol	0.1	11.6	4.8	16.1	4.6	5.2	8.4	19.8	5.3	10.1	9.1	4.9
Leeds	0.2	14.5	4.8	17.6	4.6	6.9	5.4	16.8	4.6	8.6	10.7	5.4
Liverpool	0	8.7	2.9	16.7	6.9	7.2	6.3	11.5	9.1	9.7	15.1	6
Manchester	0	7.4	2.7	14.2	6.3	9.6	7.2	19.4	5.6	11.6	11.2	4.7
Newcastle	0	7	3.9	12.8	6.1	4.5	3.9	17.1	13.4	10.2	15	5.8
Nottingham	0.2	12.1	3.1	19	5.8	4.4	2.9	19	5.5	9.8	14	4.7
Sheffield	0	15.8	4.6	18.8	5.1	4.5	5.1	11.8	5.1	9.6	13.8	5.7
Aberdeen	10.7	9.2	5.4	14.5	6.3	7.1	1.5	19.6	3.8	6.7	11	4.2
Dundee	0.6	15.3	4.1	19.1	6.4	4	2.4	8	7	12.5	15	5.6
Edinburgh	1.3	6	2.5	13.2	7.5	4.8	14	18.7	6.7	8.5	11.3	5.4
Glasgow	1.2	7.8	4.5	14.3	6.6	6.1	7.7	16.6	8.4	8.4	12.8	5.6
Stirling (LA)	1.6	7.1	4.3	21.0	10.4	3.3	8.9	8.9	6.7	10.5	12.2	5.1

Source: ONS/NOMIS Annual Business Inquiry 2001; various city sources

4.45 The employment data present here is limited, the data in table 4.2 gives the 'total' number of employees; it would be preferable to use 'Full Time Equivalents' but this was not readily available at city level. 'Total number of employees' does not provide an indication of the number of city residents employed in the city and many of these jobs could be taken by in-commuters. Data relating to the economic activity rates – the proportion of working age residents who are in employment – are explored for UK cities in section 2.11 and at a regional (NUTS 2) level in section 3.21 of the main report.

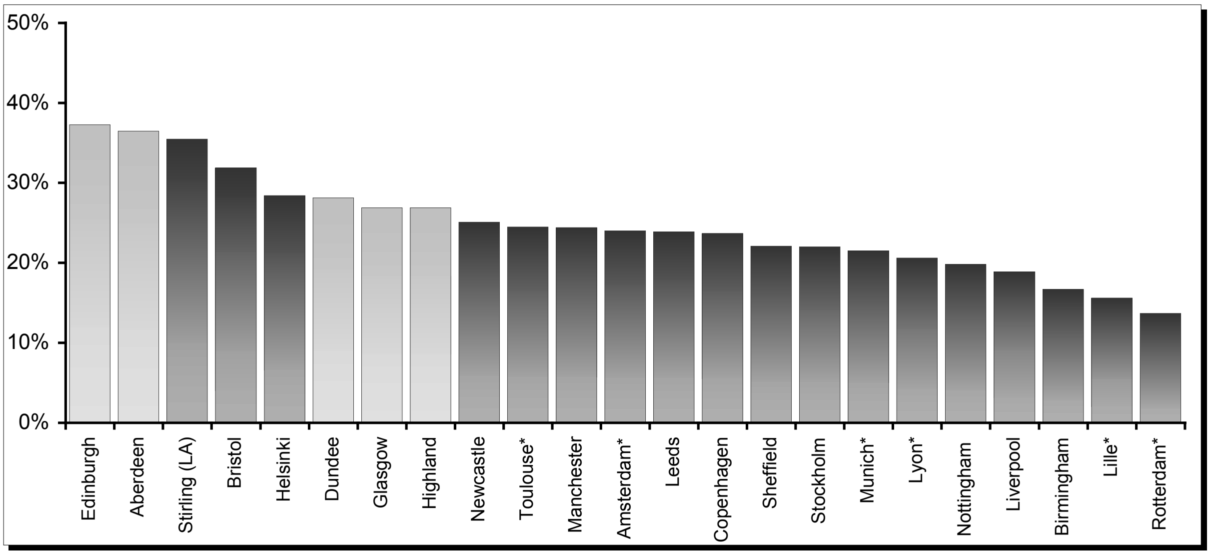
Human Capital

4.46 The OECD's International Standard Classification of Education (ISCED) can be used to convert national qualifications to a standardised scale, making it possible to compare local qualifications on a trans-national basis. ISCED levels 5 and 6 relate to tertiary education and advanced research programmes – degree level or above.

4.47 Where data is available for 1996 and 2001/2 it shows that the proportion of working age residents qualified to degree level has increased in all cities with the exception of Sheffield where the rate has remained static.

4.48 In terms of a highly qualified workforce the Scottish cities appear to be performing particularly well, with 37% of Edinburgh's working age population qualified to degree level or above.

Figure 4.8: Percentage of workforce qualified to degree level or equivalent 2001



Source: UK cities ONS/NOMIS Labour Force Survey Annual Database 2001; various city sources
* Data from Urban Audit 2004. This gives the proportion of population qualified to this level rather than just working age population.

Deprivation

4.49 Unemployment has been used here as an indicator of deprivation and as a measure of unused potential. Systems of defining and measuring unemployment vary by country and nationally compiled data in not automatically comparable on a trans-national basis. However, all EU countries use the International Labour Organisation measure of unemployment in their Labour Force Survey:

> *"Individuals who are out of work but would like a job and are actively seeking and available for employment, or who are out of work and have found a job and are waiting to start In the next two weeks."*

4.50 Unfortunately Labour Force Survey results are not available at the local level in all countries and for some cities the regional unemployment rates have been used here.

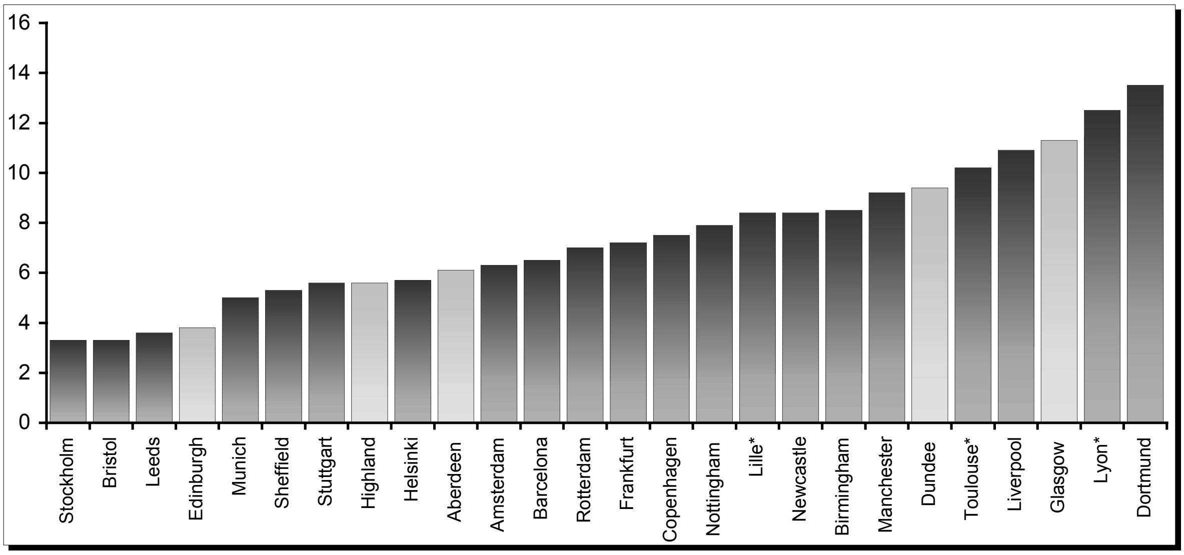
4.51 In terms of unemployment the UK performs well with some of the lowest unemployment rates across the study cities. The only cities to experience an increase in unemployment between 1996 and 2001 are Frankfurt, Munich, Lyon and Aberdeen.

Table 4.3: ILO unemployment rates 1996-2001

	1996	2001	% change
Copenhagen	10.3	7.5	-27.2
Dortmund	14.7	13.5	-8.2
Frankfurt	6.2	7.2	16.1
Munich	4.7	5.0	6.4
Stuttgart	5.8	5.6	-3.4
Lille*	11.0	8.4	-23.6
Lyon*	8.0	12.5	56.3
Toulouse*	10.5	10.2	-2.9
Helsinki	9.0	5.7	-36.7
Milan	6.0	n/a	n/a
Turin	15.3	n/a	n/a
Amsterdam	7.5	6.3	-16.0
Rotterdam	7.2	7.0	-2.8
Stockholm	5.5	3.3	-40.0
Barcelona	10.5	6.5	-38.1
Birmingham	12.3	8.5	-30.9
Bristol	7.6	3.3	-56.6
Leeds	8.5	3.6	-57.6
Liverpool	14.3	10.9	-23.8
Manchester	11.6	9.2	-20.7
Newcastle	8.9	8.4	-5.6
Nottingham	8.8	7.9	-10.2
Sheffield	10.1	5.3	-47.5
Aberdeen	5.0	6.1	22.0
Dundee	14.5	9.4	-35.2
Edinburgh	6.9	3.8	-44.9
Glasgow	15.2	11.3	-25.7
Highland	9.4	5.6	-40.4
Inverness	n/a	n/a	n/a
Stirling	n/a	n/a	n/a

Source: UK cities ONS/NOMIS Labour Force Survey Annual Database 2001; various city sources; Urban Audit 2004
Note: *Regional rates given for French cities

Figure 4.9: ILO unemployment rates 2001

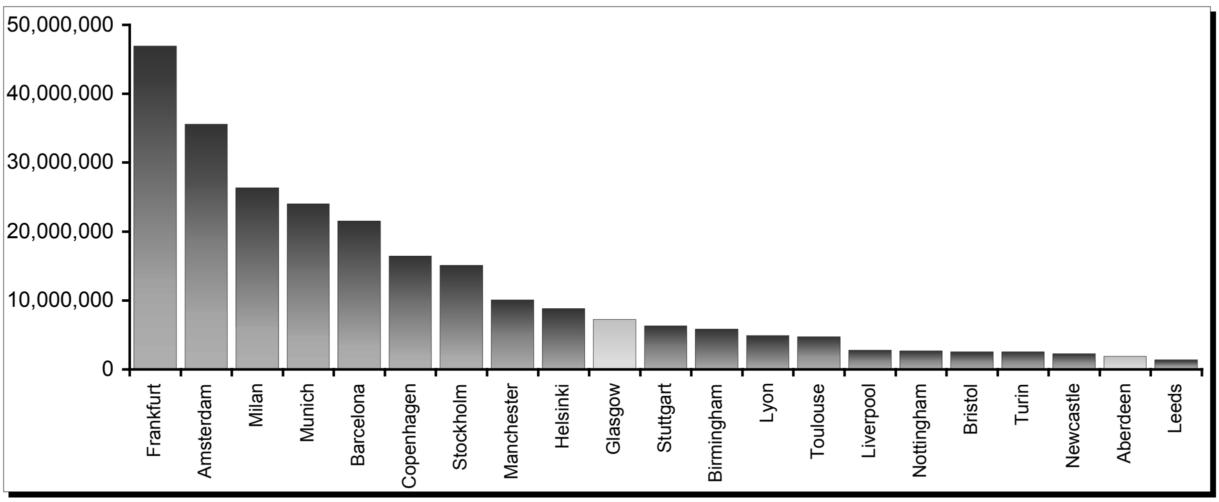


Source: UK cities ONS/NOMIS Labour Force Survey Annual Database 2001; various city sources; Urban Audit 2004
Note: *Regional rates given for French cities

Connectedness

4.52 Airport passenger numbers have been used to provide an indication of a city's connectedness. The data presented here relates to the number of terminal passengers at each airport, these are the passengers who leave the aircraft, and the data includes those passengers who transfer to other flights. Consequently those hub airports such as Frankfurt and Amsterdam where a high proportion of passengers change to onward connections have high passenger number. Data giving the number of passengers leaving the airport and the business/tourist split for each city would provide a more robust indicator of connectedness, however this data in not currently available.

Figure 4.10: Terminal air passengers 2002



Source: Airports Council International 2002

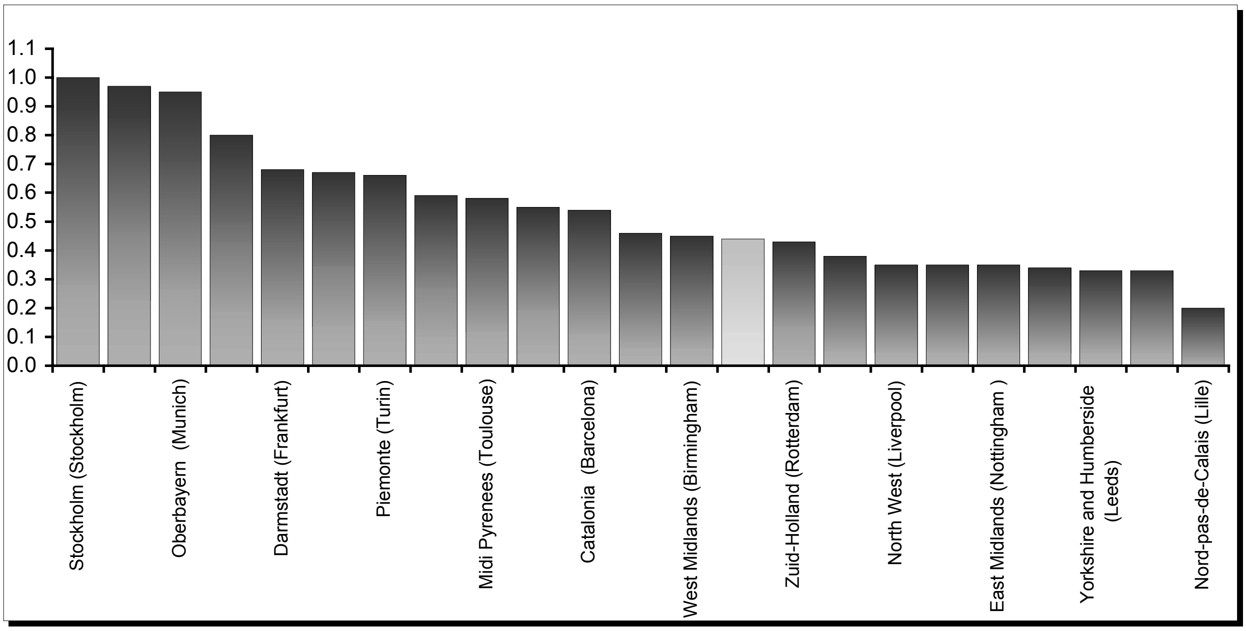
Innovation

4.53 Innovation is a particularly difficult concept to quantify. Whilst the importance of innovation to successful competitive cities is widely recognised there is not a simple measure that can be used summarise a city's performance in this area. The patents measure suggested in our list of headline indicators is a proxy measure that has limitations and it has not been possible to collect this data at the city level. The European Union has developed an Innovation Index to track the 'EU's progress towards becoming the most competitive and dynamic knowledge-based economy in the world'. The index includes a Regional dimension and this has been used here to provide a proxy measure of innovation. At the Regional level the index contains a Revealed Regional Summary Innovation Index (RRSII), which is generated from the following indicators:

- Population with tertiary education
- Participation in lifelong learning
- Employment in medium/high-tech manufacturing
- Employment in high-tech services
- Public R&D expenditure
- Business R&D expenditure
- European Patent Office (EPO) High-tech patent applications
- All EPO applications
- Plus five measures from unpublished Community Innovation Survey 2 data.

4.54 In terms of innovation in their regions Stockholm and Uusimaa are the strongest performers in Europe.

Figure 4.11: European Innovation Scoreboard 2003: Revealed Regional Summary Innovation Index (RRSII)



Source: 2003 European Innovation Scoreboard. Technical paper No. 3. EU Regions

Data Sources

4.55 The data sources utilised during this project are detailed below. Some are static, some get updated on a regular basis, and some get updated on different basis so the coverage can vary from year to year, both in terms of the indicators and spatial levels

Table 4.4: UK Datasets

Dataset	Source
Annual Business Inquiry	ONS
Mid Year Population Estimates	ONS
New Earnings Survey	ONS
Labour Force Survey	ONS
NUTS3 (sub-regional) Gross Value Added	ONS
Claimant 5ount unemployment rate	ONS
Census Scotland	General Register Office for Scotland / SCROL
Census England	ONS/Neighbourhood Statistics
House Price data Scotland	Registers of Scotland Executive Agency
House Price data England	HM Land Registry
SQA Examination results in Scottish schools: 2003	Scottish Executive Education Department
Air passenger numbers	Civil Aviation Authority
Train journey times	The Trainline rail inquiry service www.thetrainline.com
Recorded Crime Statistics	Scottish Executive Statistical Bulletin Criminal Justice Series
Benefit Claimants data	DWP

Table 4.5 European Datasets

European Innovation Scoreboard	European Commission
Air passenger data	Airports Council International
Urban Audit 2004	European Commission
Regions Statistical Yearbook	Eurostat

4.56 All the data sources used come with their own health warnings. Some are more robust than others. Some are based on absolute counts, some on surveys and some on modelling. Survey based data such as the New Earnings Survey and the Labour Force Survey can have relatively small samples in smaller Local Authority areas, this can increase the confidence intervals associated with the data.

4.57 The spatial level at which data is available also varies. Much of the UK data is available at Ward or Local Authority level. Data available across Europe tends to be for larger spatial levels – often NUTS 2 and NUTS 3. The Nomenclature of Units for Territorial Statistics (NUTS) is a hierarchical classification of administrative areas, used across the European Union for statistical purposes.

REFERENCES

Adair, A., Berry, J. and McGreal, S. (1997) Comparative analysis of market performance in European cities *Journal of Property Valuation and Investment* Vol. 15 No. 4 pp 323-335

Bagnasco A. and Le Gales P. (Eds) (2000) *Cities in Contemporary Europe* Cambridge: Cambridge University Press

Business Strategies Limited (2000) *'Long term outlook'* London: BSL

Business Strategies Limited (2001) *What makes Euro regions prosper?* London: BSL

Cambridge Econometrics, Martin, R. (2003) *A Study on the Factors of Regional Competitiveness: A final report for the European Commission Directorate-General Regional Policy* Cambridge: CE

Cheshire, P. (1996) 'Urban Economic Growth in Europe: Testing Theory and Policy Prescription' *Urban Studies* Vol. 33 No.6

Cheshire, P. (1999) 'Economic Indicators for European Cities: Why Boundaries Matter.' In *The Quality of Life in the Cities and Regions of the European Union: Indicators*. Statistical Office of the European Commission, Office for Official Publications of the European Union

Cheshire, P. and Carbonaro, G. (1996) Urban Economic Growth in Europe: Testing Theory and Policy Prescriptions *Urban Studies* Vol. 33 No.7

Cushman & Wakefield (2003) Healy and Baker European Cities Monitor 2003

European Commission (2003) *2003 European Innovation Scoreboard: Technical Paper No 3 Regional innovation performances* Brussels: European Commission

European Institute for Urban Affairs (1992) *European City Regions: Establishing Edinburgh's Competitive Position* Liverpool: EIUA

Eurostat (2002) *Regions: statistical yearbook 2002* Brussels: European Commission

Eurostat (2003) *Regions: statistical yearbook 2003 B*russels: European Commission

Greater London Enterprises (2003) *EU capital cities study 2003* ALG European Service

Hepworth, M. and Pickavance, L. (2004) *The Geography of the Scottish Knowledge Economy. A report prepared for Scottish Enterprise,* London: Local Futures Group

Highland Council (2003) *Inverness Local Plan – Deposit Draft with Modifications*

Huggins, R. (2002) *The State of Urban Britain*: *UK Competitiveness Index 2002* Cardiff: Robert Huggins Associates

International Benchmarking Network (2001) *Indicators for International Benchmarking Projects' results* Barcelona http://servimi.upc.es/bcnmon/uploads/docs/benchmark.doc

International Institute for Management Development – IMD (2002) World Competitiveness Yearbook

Institut d'Aménagement et d'Urbanisme de la Région d'Ile de France (IAURIF) (2001) Science and Technology in the Functional Urban Regions in Northwest Europe

Institut d'Aménagement et d'Urbanisme de la Région d'Ile de France (IAURIF) (2001) *Science and Technology in the Functional Urban Regions in Northwest Europe*

Inverness City Partnership (2003) *Inverness City-Vision*

Jones Lang LaSalle (2002) *World winning Cities 2002* London: Property Futures

Lever, W. F. (1999) Competitive Cities in Europe *Urban Studies* Vol. 36 Nos 5-6 1029-1044

Mercer Human Resource Consulting (2004) Quality of Living Survey 2004

One North East, WDA Barclays (2002) *Competing With The World: World Best Practice in Regional Development*

Parkinson, M., Hutchins, M., Simmie, J., Clark, G., and Verdonk, H. (2004) *Competitive European Cities: Where do the Core Cities Stand?* ODPM: London

Robson, B., Parkinson, M., Boddy, M. and McLennan, D. (2000) *The State of England's Cities* London: DETR

South East England Development Agency/ Robert Huggins Associates (2001) *Global Index of Regional Knowledge Economies: Benchmarking South East England*

Scottish Executive (2002) *Review of Scotland's Cities*

Scottish Executive (2002) *Building Better Cities: Delivering Growth and Opportunities*

Storper, M. (1997) *The Regional World: Territorial Development in a Global Economy* New York: Guilford Press

Tozenblat, C. and Cicille, P. (2003) *Les Villes Européennes Analyse Comparative*

Turrok, I., Bailey, N., Atkinson, R., Bramley, G. and Docherty, I. (2003) *Twin Track Cities? Linking prosperity and cohesion in Glasgow and Edinburgh* Glasgow: Dept Urban Studies University of Glasgow

World Economic Forum (2002) Global Competitiveness Ranking 2002

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