



Glasgow Economic Analysis and Benchmark Report

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Contents

Figures	2
Executive Summary	4
1. Introduction	12
2. The Glasgow Performance	14
2.1 Overall Performance	14
2.2 Industrial Structure	24
3. Glasgow under the Benchmark Lens	36
3.1 Benchmarking Performance	37
3.2 Benchmarking Key Sectors	45
3.3 Does Glasgow have a Productivity Gap?	56
4. Attractiveness: Measuring and Comparing Location Factor Quality	64
4.1 Innovation Resources	65
4.2 Regulation	72
4.3 Taxation	77
4.4 Accessibility	79
5. Regional Aspects of the Glasgow Economy	82
5.1 City and Metro Region: an International Comparison	82
5.2 Glasgow and Edinburgh: Combined an Economic Powerhouse?	85
5.3 Glasgow and Edinburgh: Weight in Scottish and UK Economy	87
6. Glasgow's Strategic Position and Policy Options	90
7. References	101
8. Annex: Data Sources and Methodology	103
8.1 Regions Selected for Benchmarking	103
8.2 IBC International Benchmark Club	104
8.3 Performance Indicators of the IBC-Database	105
8.4 Location Indicators of the IBC-Database	112

Figures

Fig. 1:	Productivity in metropolitan regions and their cities	4
Fig. 2:	Glasgow and its competitors: Real GDP per capita	5
Fig. 3:	Glasgow and its competitors: Human capital in the labour force	7
Fig. 4:	Glasgow and its competitors: Regulation and Taxation	8
Fig. 5:	Population	14
Fig. 6:	Real GDP	15
Fig. 7:	GDP per capita	17
Fig. 8:	Employment	19
Fig. 9:	Productivity, level and evolution	22
Fig. 10:	Labour cost per hour	23
Fig. 11:	Shares of Driver Sectors in the economy	27
Fig. 12:	Contribution of the Driver Sectors to real GDP growth 1995-2004	28
Fig. 13:	Growth contributions of the Financial and Business Services Sector and the Public Sector	33
Fig. 14:	Population 2004	38
Fig. 15:	Real GDP per capita 2004	39
Fig. 16:	Growth of real GDP per capita 1995-2004	40
Fig. 17:	Growth of real GDP per capita and of population 1995-2004	42
Fig. 18:	Growth in real hourly productivity 1995-2004	43
Fig. 19:	Real hourly productivity 2004	44
Fig. 20:	New Economy	45
Fig. 21:	Old Economy	47
Fig. 22:	Life Sciences	48
Fig. 23:	Traditional Sector	49
Fig. 24:	Urban Sector	50
Fig. 25:	Financial & Business Services	50
Fig. 26:	Financial Services	51
Fig. 27:	Political Sector	52
Fig. 28:	Public Sector	53
Fig. 29:	Hotels and Restaurants	54
Fig. 30:	GDP and its components, 2004	57

Fig. 31: Productivity growth in different periods	58
Fig. 32: Deviation between the industry's share in the total economy in Metropolitan Glasgow and the Metro Average	61
Fig. 33: Highest completed education (secondary/tertiary) in the labour force	65
Fig. 34: Share of tertiary-educated individuals in total employment	67
Fig. 35: Share of expenditure on research and development in GDP	68
Fig. 36: Sum of scores of all included universities in a region	69
Fig. 37: Index of product market regulation	73
Fig. 38: Index of labour market regulation	74
Fig. 39: Indices of product and labour market regulation 2003	75
Fig. 40: Change in regulation 1980-1990 and 1990-2003 Indices of product (PMR) and labour market regulation (LMR)	76
Fig. 41: IBC Taxation Index – Companies	77
Fig. 42: IBC Taxation Index – Highly Qualified Manpower	78
Fig. 43: Global Accessibility	80
Fig. 44: Continental Accessibility	81
Fig. 45: Real GDP per capita 2004	83
Fig. 46: Real hourly productivity 2004	84
Fig. 47: Level of Population and GDP per capita 2004, growth of real GDP 1995-2004	85
Fig. 48: Evolution of the shares of the five Driver Sectors	86
Fig. 49: Shares in Scottish economy	87
Fig. 50: Comparing Glasgow and Edinburgh, Scottish and UK economy	88
Fig. 51: Deviation of industry's shares between Scotland and the UK	89

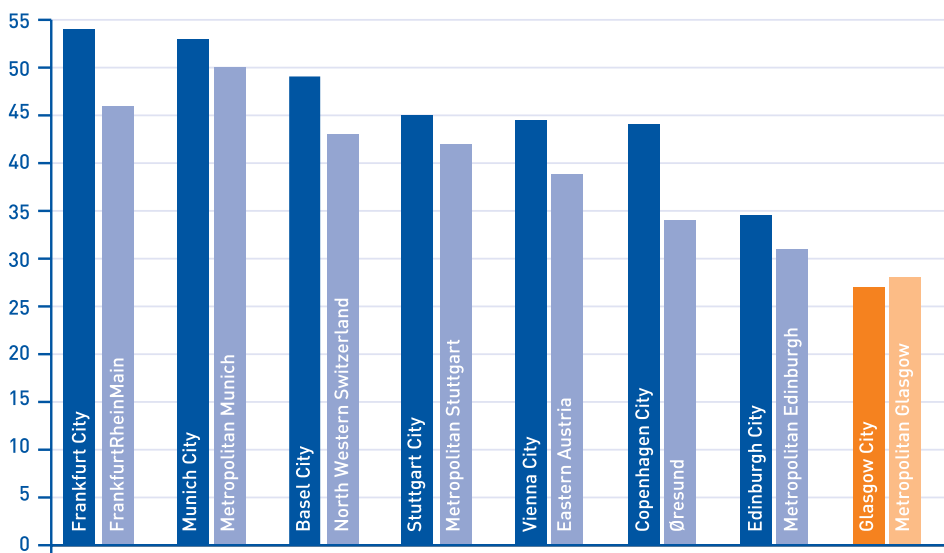
Executive Summary

Policy makers are focusing on regional growth and regional growth policies for two reasons. First, globalisation has exposed regions to international competition more than countries. Second, regions have gained fiscal and regulatory power and have more leeway to shape their own development. Regional policies are becoming crucial elements in regional and national growth strategies.

The regional benchmarking applied here evaluates the economic performance, the competitiveness and attractiveness of Glasgow in a national and international context and can help to shape policy strategies at the regional level. The analysis includes Glasgow City as well as Metropolitan Glasgow and uses more than 20 metropolitan regions as benchmarks. The international benchmarking concentrates on Metropolitan Glasgow, which encompasses all areas closely tied to the city in terms of commuting, commercial activities and use of retail and leisure facilities. Only a definition covering the complete functional urban area allows useful conclusions to be drawn from a benchmarking exercise.

Fig. 1: Productivity in metropolitan regions and their cities

Real hourly productivity 2004, in USD (based on USD at 1995 prices and 1997 PPP)

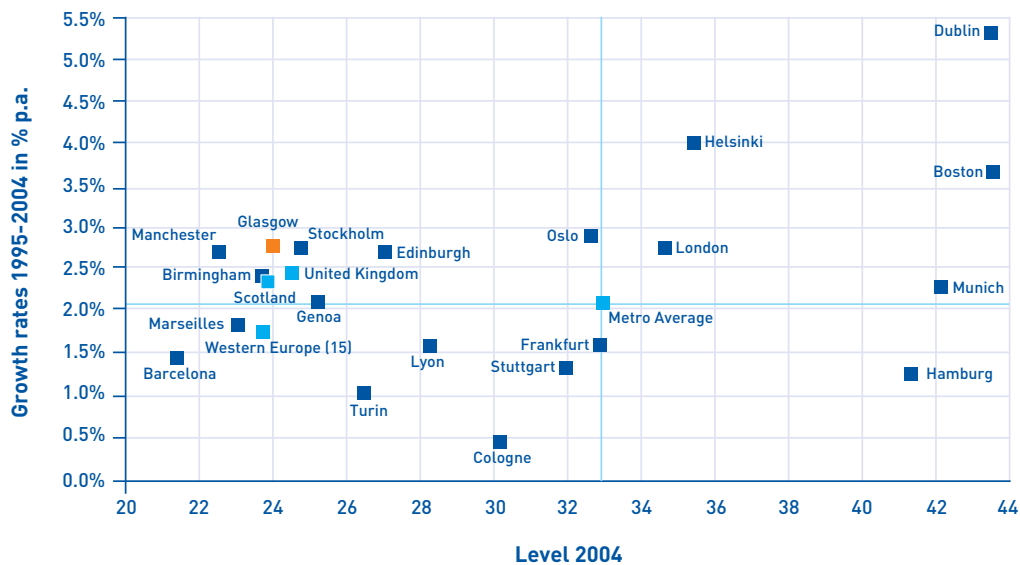


Source: BAK Basel Economics

Glasgow City and Metropolitan Glasgow are also analysed separately. As is usual for a metropolitan region, Glasgow City has a higher concentration of workplaces and a higher GDP per capita. This is due to a net inflow of commuters rather than different economic performance. Productivity is at a slightly lower level in Glasgow City than Metropolitan Glasgow. This is surprising since productivity is usually higher in the city. Cities are more dense, focus on more productive industries and profit from economies of scale. This productivity 'anomaly' reveals a particular spatial pattern of the Glasgow economy. Unlike most other metro regions, traditional low value added sectors are still located in the centre, while highly productive sectors are partly locating outside the city centre.

Fig. 2: Glasgow and its competitors: Real GDP per capita

2004 in USD, average annual growth 1995-2004 (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

Metropolitan Glasgow as a region is starting to catch up with other metro regions with some degree of success. In 2004, the GDP per capita in Metropolitan Glasgow reached 24,000 USD. This corresponds to 73 percent of the average metropolitan region level, a significant improvement since 1980, when this figure only reached 64 percent. GDP per capita is still comparatively low.

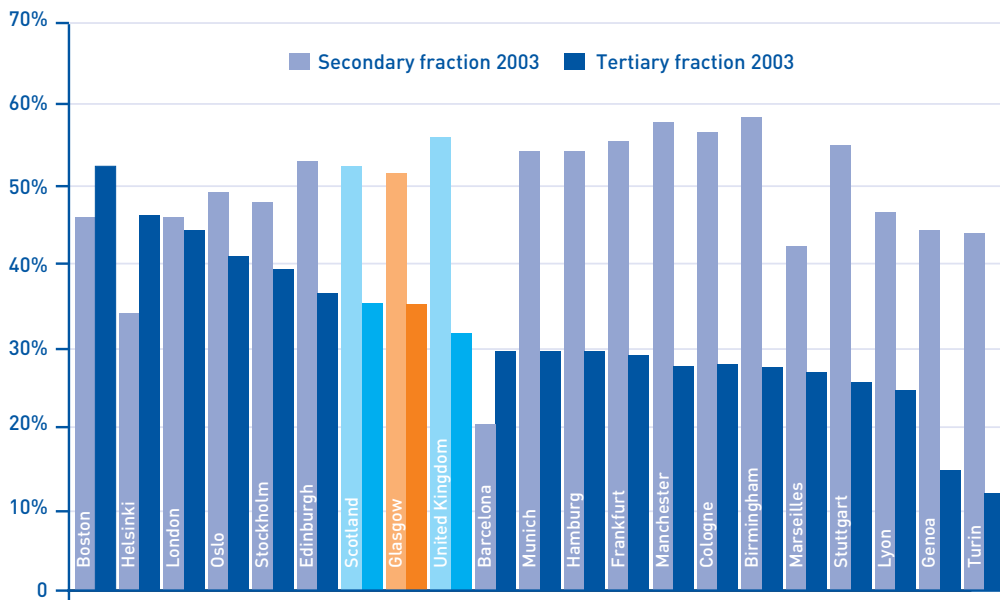
GDP growth is mainly due to Glasgow's success in increasing employment, achieving better results than most metropolitan regions. As Glasgow also improved vis-à-vis the UK, its labour market success is not exclusively due to the favourable regulatory environment in the UK. At the same time, productivity is substantially lower in Metropolitan Glasgow than in other metro regions, and Glasgow has lost further ground over the period of analysis. For a highly developed economy, productivity is the competitive driver in a global world economy and a key factor determining the welfare of a region's population. Glasgow could, to some extent, rely on the employment-to-population ratio as source for GDP per capita growth during a period of catch up. Natural limits exist, however, and productivity is the main factor determining the economic success of a highly developed economy. Productivity should be the major issue and focus for Glasgow's economic policy and strategy.

The existing economic structure and the industrial mix are the base on which future policy must build. The industrial mix in Glasgow partly explains the findings regarding productivity. As experienced by developed economies and metropolitan regions in particular, the industrial mix has shifted towards services and this change has been particularly evident in Glasgow. In 1980, Glasgow's share of the production sector was above average, with a high share of less productive and innovative traditional industries. Glasgow City as well as Metropolitan Glasgow still has a larger share of this so-called 'Traditional Sector' than other metro regions. The second largest sector is the 'Political Sector' It consists of industries highly influenced by political decisions, such as public and health services, and accounts for a share of Glasgow's economy that is significantly above the level usual in metro regions. This could be viewed as a success for Glasgow, as from 1980 the industries in the Political Sector not only grew, but they did so much more strongly than in the average metro region. Some doubts, however, should be raised as to whether or not the politically-driven industries are really a powerful and sustainable source of growth for a metropolitan region.

Metropolitan Glasgow is well equipped with human capital. Its workforce offers a substantial share of tertiary-educated individuals and a large pool of secondary-educated individuals. This is only one of a variety of factors determining the innovation capacity of a region. The share of GDP spent on research and development (R&D) is lower than in an average metro region, especially for a region with a focus on producing industries. This ratio has decreased in recent years. It is questionable whether these producing industries are sustainable and whether they can achieve above average growth rates without considerable increased investment in R&D.

Fig. 3: Glasgow and its competitors: Human capital in the labour force

Percentage of individuals in total employment with highest completed education, 2003



Source: BAK Basel Economics – IBC Module Innovation

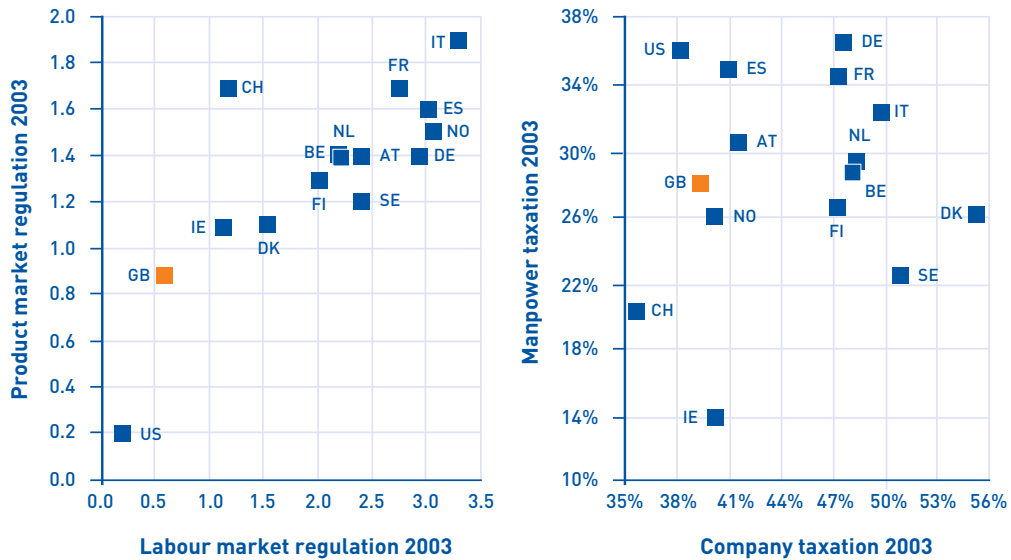
All regions including Glasgow are metropolitan regions.

Glasgow has a competitive advantage over many competing metropolitan regions resulting from the liberal labour and product markets in the UK. Although not a Glasgow-specific achievement, it is an asset for Metropolitan Glasgow. It should be noted, however, that this advantage is not guaranteed and the relative position of Glasgow has already weakened somewhat, mainly in product markets, where EU harmonisation has forced liberalisation throughout Europe.

A further asset for Metropolitan Glasgow is the low level of taxation, for companies as well as for highly-qualified employees. The position is largely defined by UK levels but Glasgow could try to improve it further. This step is necessary as international competition in taxation is not likely to decrease. Interestingly, current econometric analyses suggest that the taxation of highly qualified employees plays a more important role for economic growth, especially for productivity growth, than company taxation.

Fig. 4: Glasgow and its competitors: Regulation and Taxation

Regulation: 0 = liberal / 6 = restrictive; Taxation: Effective tax rate in %



Source: BAK Basel Economics - IBC Module Regulation and Taxation / OECD / The Frasier Institute
 Regions have equal or very similar levels of regulation and taxation in their respective countries.

Future Challenges

The benchmarking analysis shows that Glasgow has achieved impressive successes from a disadvantageous position in 1980. It also shows that some of the strategies chosen have been developed to their limits. New directions need to be taken. Three interrelated future challenges are clearly identified:

- Productivity in Glasgow is comparatively low and other metro regions show better productivity growth. Given that productivity is the key issue that influences the competitiveness of a region and the well-being of its inhabitants, the key challenge for the future must be to improve the productivity of the Glasgow economy.
- Glasgow has already undergone significant structural change, but there is still some way to go. Further structural changes should support the goal of increasing productivity.
- If Glasgow City is to remain the centre and driver of the Metropolitan region economy, efforts regarding the improvement of productivity and industrial structure should put most emphasis on the City. The ‘renaissance of the cities’ includes a renewed interest in working and living in the cities. The restoration of the centre should be encouraged.

Strategic Options

Benchmarking indicates some possible strategic approaches to help realise these goals.

1. Glasgow, a High-Tech, Business or Consumer City?

Three different industrial models are possible for metropolitan regions. They can specialise in innovative and highly productive industries to become High-Tech Cities, concentrate on service to companies such as those in the financial sector to become Business Cities or focus on personal services offered to an international clientele to become Leisure or Consumer Cities. Glasgow's chances as a High-Tech City seem weak in the absence of a cluster of appropriate core industries. Its potential as a Business City is slightly better. The well-educated labour force as well as the regulatory and tax environment could support such a strategy. As many regions have already adopted this option, there is intense competition and success could not be guaranteed. Collaboration with Edinburgh would be necessary to achieve critical mass and international visibility. The prospects for Glasgow to move towards becoming a Consumer City are much better. It could offer personal services, including tourism-related activities as well as education or health services to an international clientele, profiting from a fast growing, highly productive market. Already well developed, Glasgow can profit from a variety of factors such as its highly qualified labour force and its favourable regulatory and tax framework. A further advantage is the English language which opens up a world wide market potential, especially as the largest English-speaking competitor, the US, currently faces some difficulties. Combined with surrounding assets (like the tourist attractiveness of Scotland) there is a huge potential in such a strategy. Again, co-ordinating such a strategy with Edinburgh to gain visibility and critical mass would improve Glasgow's chances of success.

2. Making use of UK advantages, devolution and local collaboration

Glasgow as part of the UK enjoys a liberal economic setting. The favourable regulatory and taxation environment supports innovation and lets the economy adapt quickly and easily to new demands. Glasgow should be aware of these advantages, value them highly and include them in any strategic assessment. At the same time the UK trend of devolving power and responsibility provides more leeway at the local and regional level. Glasgow could and should use these newly-acquired freedoms. Finally, the analysis clearly shows that from an economic point of view it is Metropolitan Glasgow which should be the focus of economic policy and strategy. An increased awareness of the importance of Metropolitan Glasgow and institutional settings formalising collaboration and co-ordination, voluntary or binding, could foster growth. This includes co-operation with Edinburgh. Although locally a competitor, a collaborative effort could generate the visibility and critical mass needed to withstand international competition and achieve greater success globally.

3. Continuing urban renaissance?

Glasgow's economy reveals an unusual spatial pattern. The productivity level in the City hints at an unused density and agglomeration potential. Is a policy for higher density and productivity needed for the City, or will new growth poles at the metro fringes compensate for low productivity in the core of the Metropolitan region? What obstacles prevent highly productive firms from settling in the City?

4. Innovation push

Innovation is undoubtedly a key issue for any developed economy to stay competitive in a globalised world. An innovation-fostering environment has to be placed at the top of the economic policy agenda. One issue is improving the human capital available, either by local production through Universities and other institutions or by importing human capital from other regions. Local development can be significantly helped by providing an attractive, welcoming environment for incoming labour, especially highly educated labour, from the UK or from abroad. Other relevant policy areas include regulation and taxation, where incentives to innovate should be promoted. Strengthening the links between business and research institutes helps to direct resources to the most innovative activities.

Conclusion

Metropolitan Glasgow started from a fairly unfavourable economic position in 1980 compared to other metropolitan regions but was successful in catching up. Its employment record matched or surpassed that of other regions, but its productivity has not. Given that for any developed economy productivity determines the international competitiveness of a region and defines the well-being of its inhabitants, improving the productivity of the Glasgow economy is the key challenge for the future. Economic policy and strategy should focus on this issue.



1. Introduction

Policy makers are focusing on regional growth and regional growth policies for two reasons. First, globalisation has exposed regions to international competition more than countries. Trade statistics reveal clearly the growing openness as well as the vulnerability of regions towards the outside world. Second, most regions have gained in fiscal and regulatory power and have more leeway to shape their own development than they had 15 or 20 years ago. Decentralisation ratios reveal increasing power and responsibilities at the regional level. Regional factors and regional policy - or policies at the regional level - are becoming crucial elements in regional and national growth strategies.

Although knowledge on national growth factors is expanding fast, analysis on regional growth is scarce. This is where regional benchmarking can help to analyse and shape development at the regional level. In 1998, BAK Basel Economics established the "IBC BAK International Benchmark Club"[®], with the aim of helping regions and regional decision makers cope with the challenges of globalisation and decentralisation. Its goals are to advise governments, administrations, trade associations, NGOs and companies at the national and regional level on matters of business location quality and economic policy. The core tool applied is international benchmarking.

The IBC database allows comparison of economic performance and quality of location factors with a set of competing and comparable regions across Europe and the United States. The IBC database relies on official national and international statistics. If this data is insufficiently detailed, further sources like employment or industry statistics are exploited; in some cases data on regional level has had to be estimated on bases of national data and other information. BAK ensures the international comparability of the data⁽¹⁾.

(1) The main sources for the IBC Database are the national and regional accounts furnished by the national statistics offices or Eurostat. For several regions the sectoral disaggregation is not detailed enough. Available employment or industry statistics have been used to estimate missing data. For hours worked, the basic source is OECD (national data). BAK estimates the industry details using national statistics. Data for recent years is estimated by applying the World-Model and the Industry-Model of BAK Basel Economics and Oxford Economic Forecasting. Location factor quality is measured by data from various sources and BAK's own calculations. Furthermore, BAK ensures the international comparability of the data, among other issues, by applying purchasing power parities on industry level and redefining national statistic definitions if necessary. For more information, see chapter 8 or BAK (2005b).

This report evaluates the competitiveness and attractiveness of Glasgow in a national and international context. The analysis includes Metropolitan Glasgow as well as Glasgow City and uses more than 20 metropolitan regions in Europe and the United States which are similar in size and economic structure as benchmarks. The study is divided into five parts. Part one gives an overview on the level and evolution of economic performance against key indicators for Glasgow and highlights the relationship between Metropolitan Glasgow and Glasgow City. It positions both with respect to the average metropolitan area and the UK. The analysis covers the period 1980 to 2004. Part two analyses Glasgow's performance set against more than 20 European and US-American metropolitan regions. This benchmarking analysis puts more emphasis on recent developments. The time period under consideration is typically 1995 to 2004. Part three includes a more detailed account of Glasgow's productivity gap. It also contains an international comparison of attractiveness (or the quality of location factors) that is recognised as crucial for long term growth. Part four tackles a variety of special regional issues in Glasgow. Part five describes Glasgow's policy options to improve its economic performance in the light of its economic structure and attractiveness.

The City of Glasgow is narrowly defined and does not form the complete metropolitan region. The metropolitan region is defined as the area closely tied to the city in terms of commuting, commercial activities and use of retail and leisure facilities. Metropolitan Glasgow comprises Glasgow City and also encompasses East and West Dunbartonshire, Inverclyde, East Renfrewshire and Renfrewshire, and North and South Lanarkshire.

Only by defining a metropolitan region, covering the complete functionally-connected area especially with respect to commuting, can useful conclusions be drawn from a benchmarking exercise. If a region is defined too narrowly (or too broadly) commuting patterns will bias economic indicators (especially when measured per capita), productivity figures will be influenced by differences in density, and typically the industrial mix will be different. When benchmarking, it can never be known which part of an identified difference between two regions is due to different regional definitions and whether other economic reasons apply which could be tackled by politics. At best the results are inconclusive, but it is also possible that wrong conclusions could be drawn from a benchmarking of regions with very different perimeters. Only regions with similarly defined boundaries can be used in a benchmarking exercise.

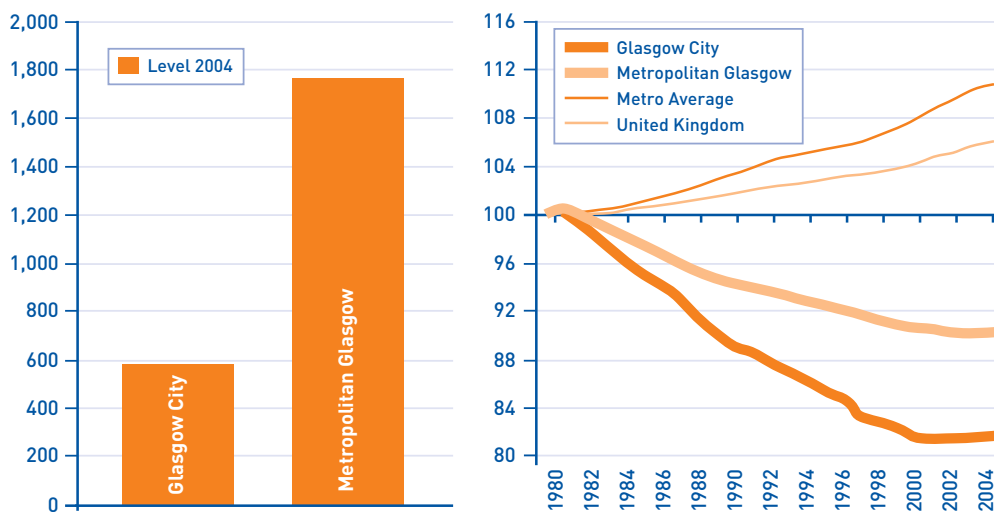
2. The Glasgow Performance

This first section outlines Glasgow’s economic position and gives an overview of the performance of Glasgow City and Metropolitan Glasgow economies. The main objective is to compare the narrowly-defined City of Glasgow with the more widely-defined region forming the metropolitan area, which is closely tied to the City in terms of commuting, commercial activities and the use of retail and leisure facilities. Since the administrative region of Glasgow City and the economic region of Metropolitan Glasgow are not identical, similarities as well as differences between the economic and administrative regions are highlighted in this chapter. Economic figures vary because the distribution of jobs and the place of residence between the two areas are not the same. In addition, the situation and development in Glasgow is compared to the UK and a sample of 28 metropolitan regions^[2]. The focus is on long term developments since 1980 and is augmented by a more detailed descriptive analysis. Some interpretative aspects and causal relations are discussed as appropriate.

2.1 Overall Performance

Fig. 5: Population

Level 2004 (in 1,000 persons) and evolution 1980-2004 (Index 1980 = 100)



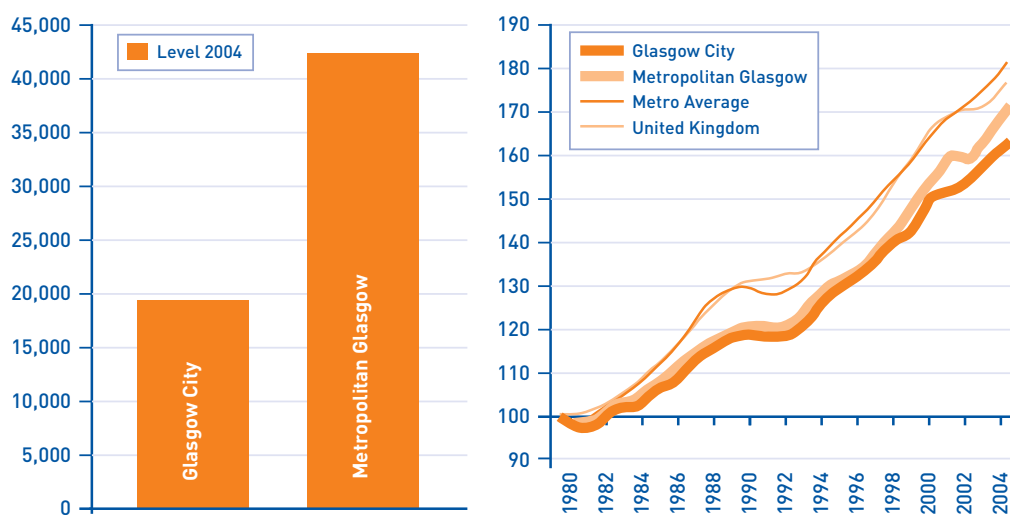
Source: BAK Basel Economics

[2] 26 European and 2 US metropolitan regions; see chapter 8.1 for details. The terms ‘metro average’, ‘average metropolitan region’, ‘European metro average’ and similar terms are used interchangeably and always refer to this group of regions.

In terms of population, Metropolitan Glasgow is three times as large as Glasgow City. In 2004, the City had about 580,000 inhabitants while the Metropolitan region had about 1.75 million inhabitants. In a reversal of population trends in average European metropolitan areas, both areas have experienced a decrease in population during the last 25 years. This was more pronounced in the City which showed an average annual decline of 0.8 percent from 1980 to 2004 while the population in Metropolitan Glasgow dropped only by 0.4 percent. Excluding the City, the Metropolitan region displays an annual decline of 0.2 percent. This compares to an annual increase in population of 0.2 percent in the UK and of 0.4 percent on average in metropolitan areas over the same time period. Over the last 25 years, Metropolitan Glasgow and, more specifically, Glasgow City, have performed poorly in promoting themselves as attractive places in which to live.

Fig. 6: Real GDP

Level 2004 (in millions USD) and evolution 1980-2004 (Index 1980 = 100)
(based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

Analysing population growth over time in more detail reveals that Glasgow, fortunately, seems to have arrested the decline around the year 2000 and population has remained stable since the start of the new millennium. The improvement in population growth has not been unique to Glasgow. The growth difference between Glasgow City and the average of European metropolitan areas has now narrowed from an annual 1.5 percentage points during the eighties to just 0.5 percentage points since 2000.

Although Glasgow still has some work to do to increase its attractiveness as a place to live compared to other metropolitan areas, considerable success has already been achieved. This is especially true for the City, which, in recent years, has been performing somewhat better than the rest of the Metropolitan area. Some of the factors driving this development will be discussed in greater detail later in this section.

Turning to the economic performance of Glasgow, about half of the value added in Metropolitan Glasgow can be seen to take place within the City. In 2004, the figures for real gross domestic product (GDP) were about 42 billion USD in Metropolitan Glasgow and about 19 billion USD in Glasgow City. Comparing this to the population data reveals a much higher GDP per capita in Glasgow City of 33,000 USD compared to the Metropolitan region with a GDP per capita of 24,000 USD. This pattern is typical of the relationship of a centre to its corresponding metropolitan area. Among other reasons (for example, that value added intensive sectors concentrate in centres and that centres can benefit from efficiency gains due to this concentration) a net inflow of commuters from the metro region into the centre biases the GDP per capita and makes an economic interpretation of this data more difficult⁽³⁾. GDP itself must be investigated in order to analyse the development of economic performance in the last 25 years.

Since 1980, the GDP in Glasgow has increased considerably. In the Metropolitan Region, the average annual growth was 2.0 percent, while, in the City, growth reached 2.2 percent. These are substantial growth rates, but they are lower than the average growth in European metropolitan regions (2.4 percent) or in the UK (2.5 percent). Since 1980 Glasgow has lost ground compared to other European metropolitan areas.

Analysing the data in more detail reveals that Metropolitan Glasgow improved its relative position over time. During the eighties, metro regions grew about one percentage point faster per year than Metropolitan Glasgow. Average growth was similar in the nineties. Since 2000, Metropolitan Glasgow has grown by 1.9 percent annually, significantly faster than the metro average (1.5 percent). So, although Glasgow has lost ground over the last 25 years, recent developments show a relative improvement vis-à-vis other metropolitan regions. At the moment, Glasgow seems to be progressing well.

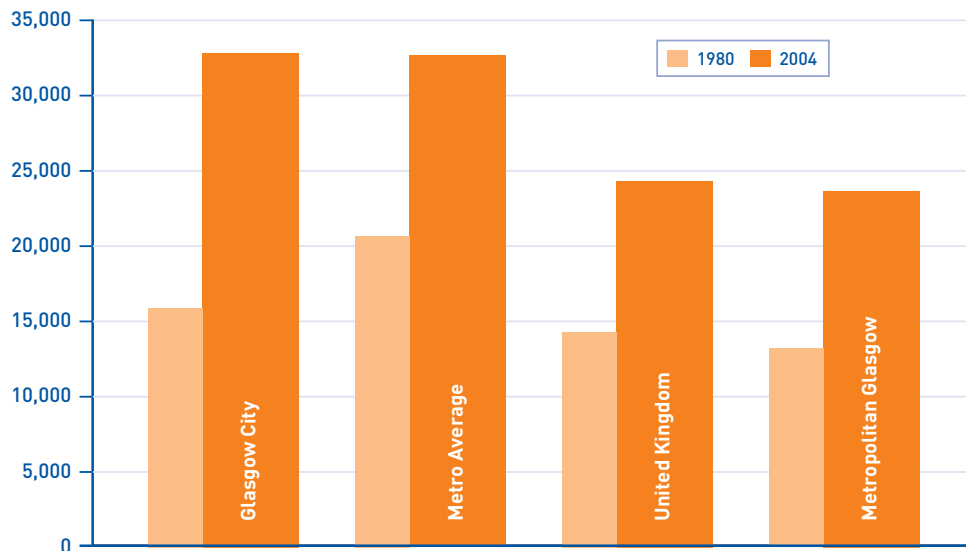
(3) GDP is measured at the location of production, while population relates to the place of residence. If the workplace and the residence are not within the same region, measuring GDP per capita might lead to confusing results. A surplus of incoming commuters - which is characteristic for cities - increases the region's production per inhabitant. In terms of economic performance analysis and comparison, regional boundaries should be drawn according to the regional labour market. It appears that the Metropolitan Glasgow comes close(r) to the concept of a regional labour market. Therefore, for a comparison of Glasgow's GDP per capita to other regions' performance, it is the Metropolitan region which should be used.

Contrasting the recent performance of Glasgow against the UK, things look less bright. From 2000 to 2004, UK GDP grew at 2.3 percent annually, much faster than in Metropolitan Glasgow and the metro average. Given the same institutional environment, Glasgow did not perform as well as the UK did on average. This finding would appear to cast some doubt on whether Glasgow's recent GDP performance is as positive as initial analysis suggests.

Looking at recent developments in more detail reveals somewhat higher growth in Glasgow City than in the surrounding area. Between 1995 and 2004 Glasgow City displayed an annual average growth rate close to 3 percent as compared to about 2.5 percent in the Metropolitan region. Growth in both areas showed a slowdown early in the new millennium - related to the New Economy downturn - but it picked up again quickly. Between 2000 and 2004, growth on average slowed to 2.4 percent in Glasgow City and 1.9 percent in the Metropolitan region.

Fig. 7: GDP per capita

In USD (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

Focusing on GDP per capita, some interesting observations can be made. As highlighted previously, the focus should be on Metropolitan Glasgow rather than on the City, since commuting patterns can bias the results. Regarding the growth of GDP per capita during the period between 1980 and 2004, Glasgow (2.5 percent annually) did well compared to the metro average (2.0 percent) and even to the UK (2.3 percent). This improved position compared to the GDP itself is due to the decrease in population.

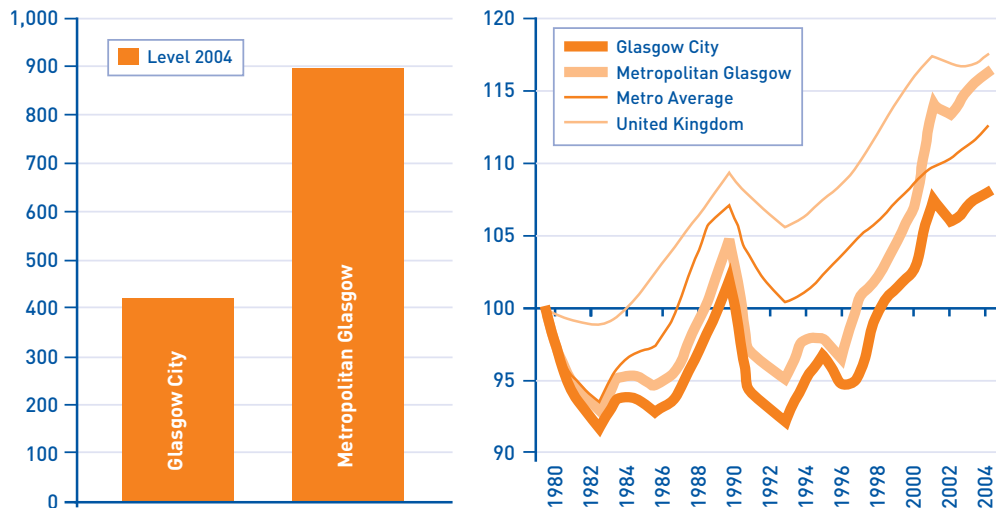
Of greater concern for Glasgow is the comparison of GDP per capita levels. In 2004, the GDP per capita in Metropolitan Glasgow only reached about 73 percent of the average European metropolitan area level. Although this is a significant improvement from 64 percent in 1980, the difference is still substantial. Again, a closer look reveals that the improvements are comparatively recent. The difference in the GDP per capita levels was roughly stable in percentage terms until early in the nineties. The improvements were most marked on two occasions: in the mid-nineties and early in the new millennium.

From the perspective of economic performance, Glasgow seems to have been catching up with other metropolitan regions in Europe and managing this successfully, especially recently. Although there is still some way to go, Glasgow is at least heading in the right direction. GDP can be broken down into its various driving components so that the process that led to this increased growth can be better understood. The following sections examine the development of employment, the participation rate, and productivity. They explain in more detail what led to the improvement of GDP per capita and indicate a possible course of action for the future.

Although employment is one of the components driving GDP development, it is also of political interest on its own account. Employment has been the major focus of economic policy in Glasgow in recent years and the success of this policy can be observed in the data. Within the period 2000 to 2004, employment grew by an annual 1.3 percent in Metropolitan Glasgow which is substantial in terms of growth. Most of this relates to the City where employment increased by 2.1 percent annually. Even in the remaining part of the Metropolitan region, annual employment growth was 0.7 percent, significantly more than the total metro regions' average (0.3 percent).

Fig. 8: Employment

Level 2004 (in 1,000 persons) and evolution 1980-2004 (Index 1980 = 100)



Source: BAK Basel Economics

Employment covers all persons, both employees and self-employed, working at least 1 hour per week.

An extended view over the last 25 years reveals less positive developments. During the eighties, employment in Metropolitan Glasgow increased by only 0.2 percent annually (metro average: 0.9 percent). At the end of the nineties, the employment figure was the same as at the beginning of the decade (metro average growth: 0.6 percent). Glasgow's success in creating employment is fairly recent, both in terms of the number of workplaces directly created and compared to other metropolitan areas. It would also seem that Glasgow has a more cyclical pattern than the average of metro regions. This could be due to the more flexible labour market which allows quicker adoption and more cyclical effects to influence employment data. It applies to the whole of the UK which is also more cyclical regarding employment than the metropolitan average. Glasgow, with a fairly high share of producing industries, might also be more exposed to cyclical effects than the average metropolitan area.

Such a comparison is not completely fair. As seen previously, contrary to the average European metropolitan region, the population in Glasgow decreased until around 2000. For the people living in the Metropolitan region employment per capita, which defines the average available employment for every inhabitant, is more relevant than the figures for pure employment. A look at the development of the employment-to-population ratio reveals that Glasgow's poor performance regarding job creation between 1980 and 2000, both relative as well as absolute, can be explained by the decrease in population. Actually, in terms of employment per capita, Glasgow did well over the whole period. The employment-to-population ratio increased from 0.43 in 1980 to 0.52 in 2004 (Metropolitan Glasgow). The average of metro regions saw an increase as well, but a much smaller one, from 0.46 to 0.49 over the same period.

A narrower focus reveals that, in 2004, about half of the employment in the Metropolitan region was located within Glasgow City – the economy of Glasgow City employed about 418,000 persons, whereas the figure for the complete Metropolitan region was 902,000 persons⁽⁴⁾. As already discussed, employment growth was higher in the City compared to the Metropolitan region. This trend is observable for the full period of the last 25 years except for cyclical influences. At the same time as the population in the City decreased, the employment-to-population ratio sharply increased. This was most probably due to changing commuting patterns and should, therefore, not be interpreted as an economic success in itself.

As in most developed economies, growth in employment was driven by the growing importance of the tertiary sector. Retail trade, tourism, banking and business services, as well as public administration, health services and education were important forces behind job creation. At the same time, almost all industries in the secondary sector reduced employment.

Summing up the employment analyses, job creation in Glasgow has been successful if the decreasing population is taken into account. Not only did the absolute number of persons in employment increase, but the workplaces available per inhabitant also grew substantially. Today, the employment-to-population ratio is considerably higher than the average in metro regions. This is true for both Metropolitan Glasgow and for the City. In the latter, the figures are even more impressive. However, since changing commuting patterns can affect the results, the figures for Glasgow City should not be overvalued. This does not lessen the success for the Metropolitan region as a whole.

(4) The figures provided here follow international definitions in order to be internationally comparable.

The decrease in population needs to be looked at carefully. A region can improve its statistical position if it is unattractive enough for the population to want to leave it. Since employment prospects are of key importance, a poor performance regarding these prospects might have created the statistical improvement observed. It may be that the employment problem was large enough that it basically resolved itself through migration. This cannot be regarded as a success. Given the available data, the question cannot be resolved with any finality, but the latest developments, the stabilisation of population figures as well as the above average employment-to-population ratio, point in the direction of a more optimistic interpretation.

Productivity:

Two measures of productivity are usually used in economic analyses: hourly productivity and employment productivity. Hourly productivity is defined as output per hour of labour input in the economy. Employment productivity is the output per employee (including the self-employed). Output is measured as GDP or value added.

Although basically providing the same information, the measures can differ from one another. Reasons are found in the usual hours worked and part time employment structures. Other issues like overtime, holidays, average sick leave duration and similar issues influence the results as well^[5]. The differences can be observed in the levels as well as in the development of both productivity indicators.

Both indicators are equally acceptable. Depending on the question asked, one can be more suited to the analysis than the other. For many economic questions analysing differences in the economic development, hourly productivity is regarded as more precise because it is not influenced by labour market issues like part time structures. However, data availability is often better for employment productivity. For the sake of completeness, both productivity measures are presented here, but the discussion will focus on hourly productivity.

[5] When interpreting empirical results, checks are needed to ensure that the data available covers these issues.

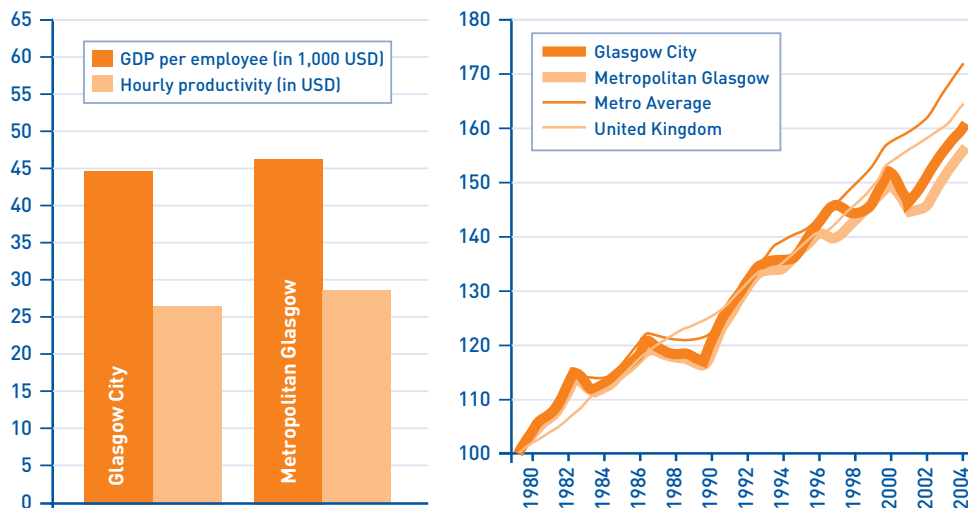
The other component apart from labour input that increases GDP, or GDP per capita, is productivity. Comparing the situation of Glasgow to other metro regions at the beginning of the observation period reveals a relatively unfavourable position. The level of hourly productivity in Metropolitan Glasgow reached, on a comparable basis, slightly above 70 percent of the metro region average in the early eighties. Apart from GDP or employment issues, the position of Glasgow did not improve over the last 25 years. Relative to other metro regions, productivity in the new millennium reduced further when compared to the eighties, falling to around 66 percent. A more detailed analysis of the development gives even less scope for complacency. Although productivity increased faster in Glasgow during the nineties than in the average metro region (2.7 percent versus 2.1 percent), the growth rates in Glasgow were again substantially lower in the new millennium than they had been during the eighties. This holds true in absolute terms and also in comparison to other metro regions. Productivity in Glasgow increased from 2000 to 2004 by 1.3 percent annually whereas the metro average reached 1.7 percent. It should be mentioned that using the Glasgow City performance figures instead of those of the Metropolitan region or using employment productivity instead of hourly productivity do not lead to substantially different findings.

Fig. 9: Productivity, level and evolution

Real GDP per person in employment: level 2004

Real hourly productivity: level 2004 and evolution 1980-2004 (Index 1980 = 100)

(based on USD at 1995 prices and 1997 PPP)



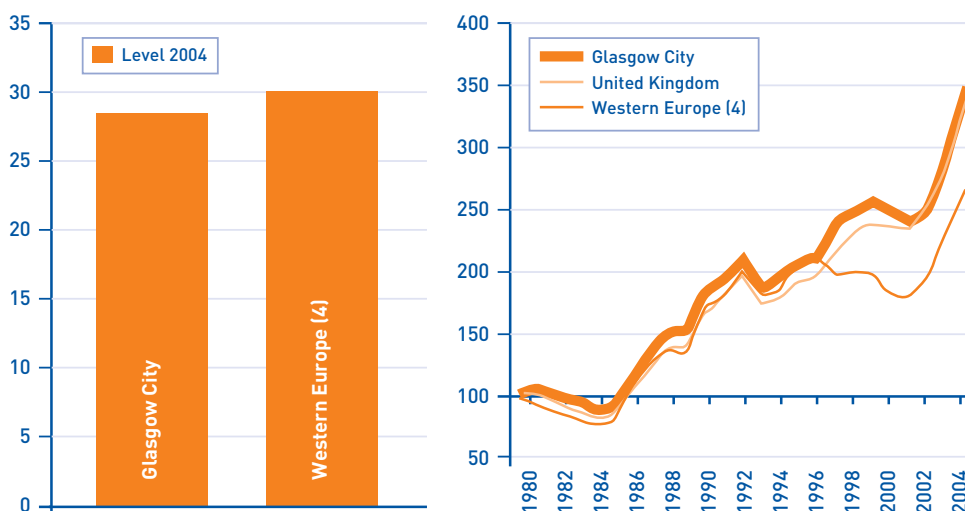
Source: BAK Basel Economics

Glasgow had an unfavourable starting position in 1980 regarding productivity. It did not improve productivity as much as the average metro region. UK and Western Europe also performed better than Glasgow. Although the differences are not large, Glasgow lost even more ground starting from an already below-average productivity level in 1980.

Comparing the productivity of Glasgow City with Metropolitan Glasgow reveals an interesting pattern – interesting in that they hardly differ. Productivity in Metropolitan Glasgow appears to be slightly higher than in Glasgow City. In 2004, hourly productivity was at 27.5 USD in the City and 28 USD in the Metropolitan region. The same holds true for employment productivity (about 45,500 USD in Glasgow City and 46,600 USD in the Metropolitan region respectively). This finding is somewhat surprising in light of the more common City-Metro pattern where cities display considerably higher productivity than their surrounding areas. Value added intensive sectors usually concentrate in the denser inner circle of the city. In Glasgow, the pattern appears to be different, although there is some indication that this is slowly changing. In the period between 1995 and 2004, hourly productivity growth in the City was 1.9 percent per annum while in the Metropolitan region it was 1.2 percent per annum. It is far from a stable process. For example, for the period between 2000 and 2004, productivity in the Metropolitan region grew faster (1.3 percent versus 1.0 percent). One cause may be an unusual industrial pattern. This issue will be analysed in the next section.

Fig. 10: Labour cost per hour

Level 2004 in USD and evolution 1980-2004 (Index 1980 = 100)



Source: BAK Basel Economics

Labour costs in Glasgow increased more than in Western Europe over the period observed⁽⁶⁾, especially during the second half of the nineties, when labour costs in Glasgow grew much faster than in Western Europe. The cost competitiveness of Glasgow decreased, as did the competitiveness of the UK. As a comparison of the levels reveals, the development described above is a kind of normalisation. Levels hardly differ today. Glasgow lost its position as a place of cheaper labour vis-à-vis Western Europe. Asia or Eastern Europe offer more competitive labour costs. For Glasgow as a highly developed and wealthy region, a strategy relying on low labour costs would not be promising.

2.2 Industrial Structure

An analysis of the industrial structure is helpful in understanding how the Glasgow economy functions, and may explain certain peculiarities observed in the city. Furthermore, the existing economic structure and the industrial mix are the base on which future policy must build. An analysis of the economic situation can never be complete without a thorough knowledge of the industrial structure and its development. The following section provides a first step in this direction and more detailed investigations follow later in this report.

The first step is to separate agriculture, the producing sector and the provision of services, or, as they are called, the primary, secondary and tertiary sectors. As is usual for highly developed economies, the tertiary sector is by far the largest of the three in Glasgow, and it has grown since 1980. In 1980, services made up 61 percent in Metropolitan Glasgow (Glasgow City: 71 percent, average of metropolitan regions: 69 percent). The remaining shares of the economy were mostly located in the production sector. In 2004, the share of the tertiary sector had increased to 74 percent (Glasgow City: 84 percent, average of metropolitan regions: 79 percent). Although the share is somewhat lower in Metropolitan Glasgow than on average in Europe, the difference is not enormous, and it has decreased over time. Furthermore, the City exhibited the higher share, as would be expected for the centre of a metropolitan region.

(6) The information to calculate labour costs is not available for all regions. The comparison is therefore limited to Glasgow City, UK and an average of major Western European countries.

Although the analysis of the three economic sectors reinforces the picture of Glasgow as a region in a catch-up process, the separation is not detailed enough to provide sufficient insight to explain the facts described above. Dividing the economy into excessively detailed industries would probably hide more than it reveals^[7]. For the following analysis, the economy has been split into five aggregates with common properties, the so-called drivers (for details, see box).

The Drivers of Economic Growth:

In analysing an economy, separate analysis of specific industries or sectors can often provide helpful insights. Dividing the economy into too many different industries, however, can be confusing and may hide the actual structures of interest under a bulk of information (currently, the IBC International Benchmark Club database regularly provides data for 46 different industries, in some cases even more detailed). For this reason, IBC applies a concept to group the individual industries into 'sector aggregates' with common properties. One common property is productivity. The industries within an aggregate are more or less in the same situation regarding productivity, especially the productivity level.

These 5 aggregates - called the five 'drivers' - are:

(1) New Economy Sector:

The industries in the New Economy Sector are characterised by dynamic development and are closely related to the area of communication, information processing and the Internet. They are technology as well as demand driven.

Productivity level and productivity growth are clearly above average.

The sector basically subsumes the IT (hardware, software and services) and telecommunication sector.

(2) Old Economy Sector:

The Old Economy Sector subsumes producing industries with very high levels of value added as well as usually high levels of productivity. Either the product itself or the production process, or both, are High-Technology.

Productivity level and productivity growth are above average.

The Old Economy Sector comprises, in particular, industries such as the chemical-pharmaceutical industry, transport equipment, medical engineering, and the production of precision instruments.

[7] The IBC database currently allows the separation of up to 46 different industries for all regions. In selected regions, even more detailed industry information is available.

(3) Urban Sector:

The Urban Sector includes all the services that are typically concentrated in an urban setting. Within a geographical unit, they are mostly concentrated in the centre (e.g. for France in Paris, for a metropolitan area in the city, within a rural setting in the village centre).

Productivity level is around the average, productivity growth is mostly above average.

The Urban Sector consists of services that meet everyday needs such as commerce, hotels and restaurants, personal services, real estate, transport as well as financial and corporate services.

(4) Traditional Sector:

The Traditional Sector aggregates the remaining producing industries. Typically, these industries have a lower value added level and lower productivity. Labour costs are more important in their cost structure than in the other producing industries, and technology plays a smaller role. In industrialised economies often they are either very specialised in a niche or they face intense competition from the developing world.

Productivity level and productivity growth are below average.

The Traditional Sector includes in particular the production of consumption and intermediate goods as well as construction.

(5) Political Sector:

The Political Sector summarises all industries that are strongly influenced by politics. This does not necessarily mean that politics directly determines this industry in all regions, but rather how much the industry is based on private rather than public decisions. The answers to these questions differ between industrial countries and times.

Productivity level is below average, productivity growth is somewhat awry.

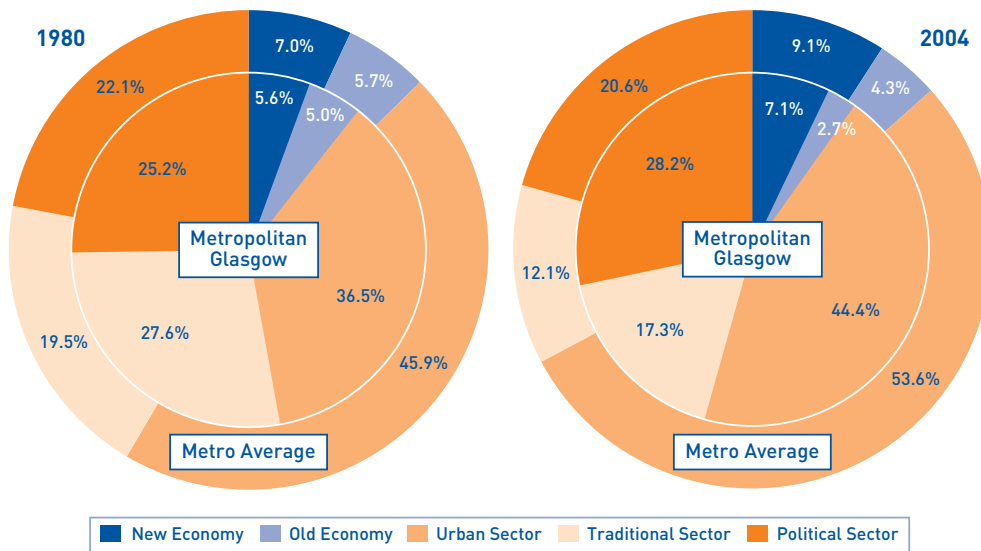
The Political Sector covers basically public administration, healthcare, education, the primary sector and utilities.

Economic Drivers

By far the largest share of the Glasgow economy in 2004 belongs to the Urban Sector. In Glasgow City, more than half of the economy falls into this category (54 percent); in the Metropolitan region, it is 44 percent. For Metropolitan Glasgow, this is somewhat lower than the metro average (54 percent). Glasgow is less focused on the typical urban part of the economy than other metropolitan areas. This is not a new development. In 1980, shares in all regions (City, Metropolitan region and metro average) were 8 to 10 percentage points lower. The general pattern, a lower share in the Metropolitan region compared to the metro average and to Glasgow City, was the same.

Fig. 11: Shares of Driver Sectors in the economy

Shown as percentages, 1980 and 2004, (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

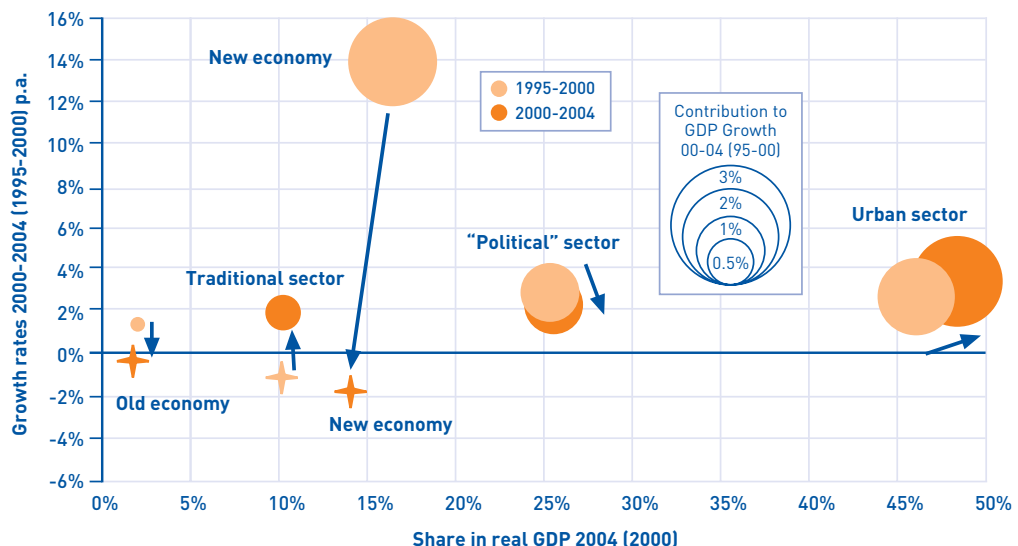
The second largest sector in Glasgow is the Political Sector (2004 - 28 percent Metropolitan region, 23 percent Glasgow City). This is higher than the average found in other regions: 21 percent is the metro average, 22 percent in Western Europe and 20 percent in the UK. Not only is this share considerably higher in Glasgow, but it has also increased since 1980 (at least in the Metropolitan region). Conversely, in all the other averages cited above, the share of the Political Sector decreased between 1980 and 2004. This could be viewed as a success for Glasgow, as the industries in the Political Sector not only grew, but they did so much more strongly than in the average metro region. Some doubts, however, should be raised as to whether or not politically-driven industries are really a powerful and sustainable source of growth for a metropolitan region.

Of the three remaining sectors, the Traditional Sector plays by far the most important role in Glasgow, although its share has decreased substantially since 1980. The importance is somewhat less pronounced in the average metropolitan region, but the general development can be regarded as similar, and the difference of 5 percentage points in the shares is not all that large. In 1980, the difference amounted to 8 percentage points. Regarding the much smaller shares of the New and the Old Economy Sectors, the structure in Glasgow does not differ significantly from an average metropolitan region, although the shares in other metro regions are somewhat higher.

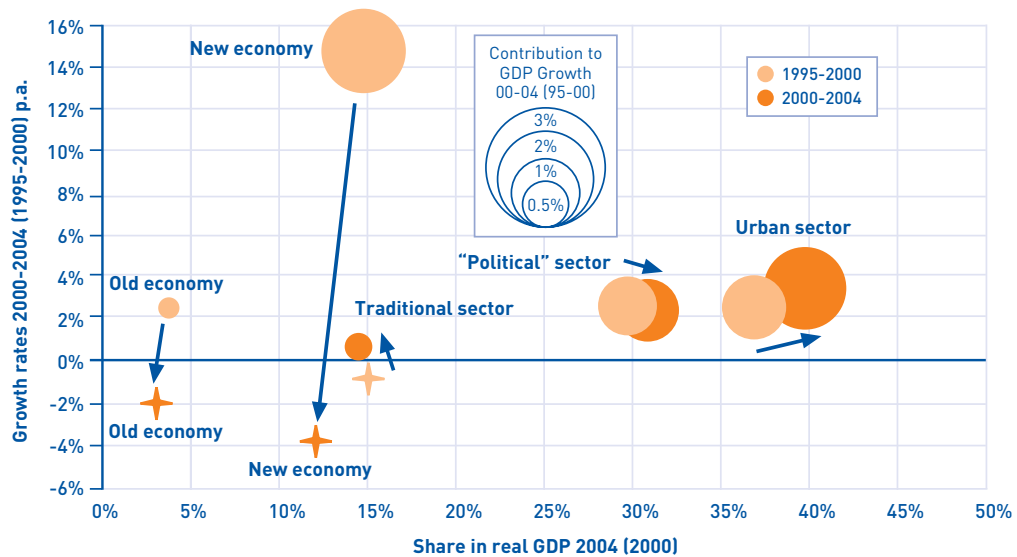
Fig. 12: Contribution of the Driver Sectors to real GDP growth 1995-2004

based on USD at 1995 prices and 1997 PPP

Glasgow City



Metropolitan Glasgow



Source: BAK Basel Economics

Interpretation example for a growth contribution 'bubble' chart:

The contribution of a sector (industry, firm, region, etc.) to the growth of an economy (sector, region, country, etc.) depends on its share of the total and on its growth rates. A large contribution to economic growth can be due to a high share and moderate growth or a smaller share but more dynamic development. For example, in Glasgow City, the Political Sector made up 25 percent of the economy. During the period of interest, it grew 3 percent annually. Combining these, the Political Sector contributed 0.75 percentage points to the growth of the Glasgow economy annually. Or in other words, had the Political Sector in Glasgow not existed, annual economic growth would have been 0.75 percentage points lower.

Please note that the size of the bubble reflects the growth contribution. Negative contributions are marked with a star.

The shares of the different drivers help in understanding the economic structure of Glasgow, but this is only half of the story. The shares must be combined with the growth of each of the sectors in order to reveal how much the individual sectors contributed to the economic development of Glasgow⁽⁸⁾. The analysis is focused on the periods 1995 to 2000 and 2000 to 2004 to shed light on the more recent developments.

Looking at the development of the economic drivers, the New Economy Sector is the most noticeable feature. The tremendous growth rates from the years 1995 to 2000 could not be sustained. In fact, the average growth between 2000 and 2004 was negative. The significant downturn of the New Economy Sector early in the new millennium explains all the slower growth Glasgow experienced between 2000 and 2004 as compared to the period between 1995 and 2000. This is good news in so far as the downturn in one sector of the economy did not lead to substantial and visible difficulties in other sectors in Glasgow. The downturn in the New Economy did hurt, and it was much more pronounced in Glasgow than in other metro regions (18 percentage points lower growth in Glasgow from 2000 to 2004 than from 1995 to 2000; only 6 percentage points in metro regions). This issue will be examined later in this report. Another interesting fact is that there is hardly any difference between Glasgow City and the Metropolitan Glasgow. The New Economy Sector is not concentrated in one place, but rather spread between the centre and the surrounding areas.

The remaining two producing sectors play an extremely small role in Glasgow's economic growth. The Old Economy has a small share in Glasgow, and although it is usually considered to have growth potential in industrialised regions, this sector actually declined from 2000 to 2004. Due to its small overall share, this did not hurt Glasgow. The Traditional Sector did somewhat better, growing between 2000 and 2004 (though it had declined between 1995 and 2000). The share of the traditional industries in the economy is larger than for the Old Economy, especially in Metropolitan Glasgow. Despite what would have been expected for a metropolitan region in Europe, there is some success in the Traditional Sector in Glasgow. A more detailed analysis must be carried out to reveal in which niches this success is located. Given the overall size of the Traditional Sector, even if successful, it most probably does not have the potential to ensure future economic growth for Glasgow as a whole.

(8) Please note that the analysis of growth contributions is based on real GDP development. The above discussion on industry shares and their changes over time used nominal GDP. These are different analyses and they cannot be compared numerically.

As would be expected for a metropolitan region, the largest contribution to growth, by far, comes from the Urban Sector. It annually contributes about 2 percentage points to Glasgow City's growth from 2000 to 2004, though somewhat less in the Metropolitan region and less from 1995 to 2000. This is a satisfactory contribution in a metropolitan region if the European average is taken as a benchmark. Glasgow's growth between 2000 and 2004 is remarkably strong, outperforming the metropolitan average by 3.5 percent versus 1.4 percent. On the other hand, the average European metropolitan region did better between 1995 and 2000 (4.2 percent versus 2.6 percent). From a broader perspective, Glasgow's Urban Sector has developed in a similar fashion to the average European metropolitan region, although with a different time pattern.

Although the result for the Urban Sector was expected, the Political Sector reveals a somewhat surprising development in Glasgow. It contributes substantially to Glasgow's growth with around 1 percentage point annually. Additionally, it contributes in a fairly steady way regardless to the regional definition or the time period in focus. Furthermore, this contribution is substantially above what is found in an average metropolitan area. Typically, average annual growth rates of the Political Sector are between 1 and 1.5 percent. In Glasgow, they are around 2.5 percent. The following section will try to shed some more light on this issue by deconstructing the industry structure even further.

Details regarding "Financial and Business Services" and the "Public Sector"

To gain a better understanding of what happens in two of the most important sectors in Glasgow, Financial and Business Services (an important part of the Urban Sector) and the Public Sector will be analysed in more detail. The analysis utilises a concept known as Shift-Share Analysis (see box below for an explanation of the methodology). In general, it provides the same information as the 'bubble' charts seen above, but it allows a denser presentation of the information. As used here, the Shift-Share Analysis disaggregates growth contributions of an industry into different components which reveal different 'sources' of growth. Typically, the Shift-Share Analysis is applied to the entire economy, aggregating the sources of growth from different industries to an economy-wide figure. It can also help to understand differences in the development of individual industries, separating region-specific effects from general industry development.

The Shift-Share Analysis:

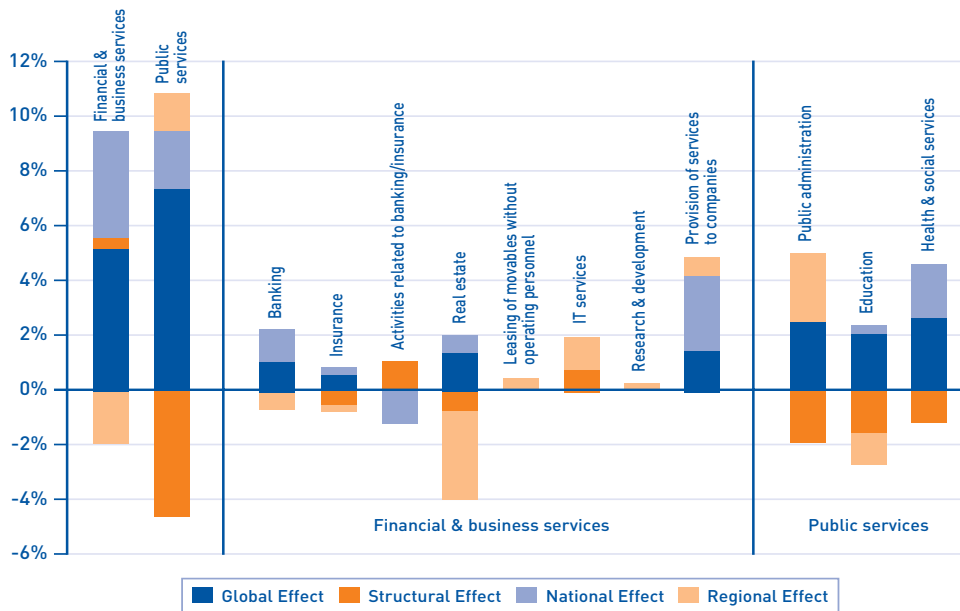
The Shift-Share Analysis is a concept to disaggregate the regional growth rate in a deterministic way into separate growth contributions. Generally speaking, the concept allows the extraction of parts from regional growth which can be explained by general circumstances. What remains are the region-specific effects.

In an extension of the traditional Shift-Share Analysis, the actual growth rate is decomposed into a Global, Structural, National and Regional Effect. The Global Effect reflects the general development of the sample of metropolitan regions and catches general economic trends as well as general business cycles or world trade effects. The Structural Effect collects the impact of different industry mixes on growth. With the National Effect, country-specific effects due to specific regulations or fiscal and monetary policies are taken into account. The Regional Effect is the residual of this growth decomposition and refers to region-specific developments.

The Shift-Share Analysis starts at the industry level. After a pure decomposition of industry growth rates, their components (global, structural, national and regional) are aggregated with regional industry shares to the corresponding effects for the aggregate economy. In this way, each effect can be decomposed into its industry contributions. These decompositions are useful in themselves as they allow the analysis of structural questions regarding a region's industry mix, separating region-specific facts from general developments.

Fig. 13: Growth contributions of the Financial and Business Services Sector⁽⁹⁾ and the Public Sector⁽¹⁰⁾

Contributions to cumulated GDP growth 1995-2004 (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

Example of interpretation:

An example (Banking) for the interpretation of the Shift-Share Analysis (figure 13):

Global Effect: Given the share of Banking in Glasgow, its performance reflected the average European economy, its growth contribution would have been 1 percentage point. This growth contribution is solely due to the fact that Banking has a substantial share in the Glasgow economy.

Structural Effect: Banking grew slightly faster in Europe than the European economy. Due to this and the share of Banking in Glasgow, the result was a small growth contribution of around 0.1 percentage points. This growth contribution is not a specific achievement of Glasgow. Instead, Glasgow profits from the general trend in this industry.

(9) 'Financial and Business Services' encompasses banking and insurance, provision of management-related services, real estate, leasing and information technology.

(10) For the purposes of this analysis, the 'Public Sector' includes public administration, education, health and social services.

National Effect: Banking grew faster in the UK than the European average. Therefore, again a positive growth contribution results in Glasgow (similar to the Structural Effect).

Regional Effect: Since Banking did worse in Glasgow than in the chosen benchmark (here the UK, as a national effect is included) as a whole the growth contribution of the Regional Effect is negative.

All together, the growth contribution of Banking to the Glasgow economy of close to 2 percentage points was largely due to the starting position with a substantial share of Banking in Glasgow and the positive development of Banking in the UK. It was smaller than would have been expected given the starting position in Glasgow and the general trends of the industry (negative Regional Effect).

It could be argued that the derivation from the metro region average is of interest, not from the UK. In this case, national and regional effects have to be added up, and Glasgow has a positive development due to region-specific facts. As we know, this is not true. The positive part is a UK effect, and the Glasgow-specific effects lead to a worse than expected development. Given the national framework, Glasgow should have performed better.

First of all, we see the importance of the two chosen sectors. The Financial and Business Services Sector contributed 7.6 percent to real GDP growth from 1995 to 2004, and the Public Sector contributed 6.5 percent.

In the Financial and Business Services Sector, the Global, National and Structural Effects were positive, while the Regional Effect was negative. This indicates that a positive growth contribution of this sector is common in metropolitan regions, and even more so in the UK. In Glasgow, this sector performed worse than in Western Europe – hence, the negative Regional Effect.

Breaking down the sector into individual industries reveals the sources of this development. It is not surprising that IT services and the provision of services to companies display a positive Structural Effect. Both industries were growth leaders in Western Europe during the time period considered. Both, but especially the IT

services, show a positive Regional Effect as well. In Glasgow, their growth was even stronger than the metro average or the UK average. It seems that, in Glasgow, the success of these two dynamic industries were above average. So although, in general, the Financial and Business Services Sector performed worse in Glasgow than the metro average, Glasgow's strengths lay in the fastest growing sub-sectors.

The reason for the negative Regional Effect in the Financial and Business Services Sector lies partly in banking and insurance. Although banking did provide a substantial growth contribution, this is due to more general developments in the industry and not to a Glasgow-specific success. Note that the National Effect is positive and significant. It outweighs the negative Regional Effect of Glasgow in this sector. Compared with the metropolitan region's average, Glasgow performed above average for banking, although this is more due to the national framework than Glasgow-specific⁽¹¹⁾. The real downside, however, is found in real estate. This industry not only contributed negatively to Glasgow's growth, but it did so because of region-specific developments. On average in Europe and the UK, the sector contributed positively to growth. This industry's particular significance becomes obvious when comparing its shares in Glasgow's economy in 2004. Only 3.5 percent of value added was achieved in this sector. On average in metro regions, the figure was 11.5 percent, and in the UK it was 10.6 percent. In a region with a declining population it is not surprising that real estate does not do as well as in a booming region. The differences, however, are extremely large.

The most striking result of the Public Sector's growth is in public administration. Although both the Structural Effect as well as the National Effect were negative between 1995 and 2004, the Regional Effect was clearly positive. Public administration grew at an average rate of 3.3 percent annually between 1995 and 2004 in Metropolitan Glasgow. A shift of public services towards Glasgow might possibly have helped this result, with the purpose of supporting a city with structural difficulties. Remarkably for the Public Sector, among the subdivisions, only the health and social services sector displays a positive Structural Effect. The Public Sector, a key sector in the Glasgow economy, does not display high growth in the sample of metropolitan regions. It is usually a disadvantage to have an above average share of the other subdivisions of the Public Sector. It has to be questioned if further growth in this sector is an advantage or a disadvantage for sustainable economic development.

(11) This result is possibly somewhat biased as London is included in the UK average and its success improves the figures. The results would be more in Glasgow's favour if the London effect was excluded.

3. Glasgow under the Benchmark Lens

Regions today are heavily exposed to international competition and globalisation. At the same time, most regions have gained political powers, both fiscal and regulatory, to shape their own development. Regional factors and regional policy or policies at the regional level, are becoming crucial elements in growth strategies. Benchmarking is one of the tools developed to support such policies. It helps to analyse and shape development at the regional level. Benchmarking compares the economic performance, competitiveness and quality of location factors of a region against other regions which are in some general sense comparable. Its goals are to learn from the best performing regions, identify shortcomings and possible growth strategies, and avoid potential pitfalls that other regions might have already experienced.

For the benchmarking exercise, a sample of regions were selected which are functional metropolitan areas. They needed to be comparable to Metropolitan Glasgow in one or more aspects of the way they work⁽¹²⁾. All regions are metropolitan regions with a large city at the centre, are from highly industrialised countries and, in most cases, are European. The sample also includes some challenging examples, even if comparability is somewhat limited. For example, much larger metropolitan regions like London are included. Furthermore, the focus in the selection is on more successful metro regions because one goal of benchmarking is to learn from the best. It is also possible to learn from the experiences of unsuccessful metro regions. These have also been included to make sure that the complete range of possible developments is covered. For the sake of diversity, metropolitan regions from different countries are preferred. Chapter 8.1 lists all the comparator metro regions and shows exactly how they are defined.

Roughly speaking, the regions can be divided into three groups: The Anglo-Saxon group, the Nordic group and the continental European group⁽¹³⁾. The list of regions in chapter 8 also details to which group a region belongs. The metro average does not refer to the average of the regions presented here, but rather to an average of the 26 European and 2 US metropolitan regions with data available⁽¹⁴⁾.

(12) For example, the focus on a specific industry in a small region can result in the selection of much larger regions with a similar approach to this industry.

(13) Irish and Scottish regions are part of the Anglo-Saxon group although they historically do not belong there. From an economic point of view, they belong into a group with English and American regions. It could be called the Anglo-Celtic group. The term Anglo-Saxon is well-established and understood. Therefore, it will be used throughout this analysis.

(14) See chapter 8 for details. The terms 'metro average', 'average metropolitan region', 'European metro average' and similar terms are used interchangeably and always refer to this group of regions.

Common characteristics for the three groups of regions

- Anglo-Saxon: The regions are characterised by a liberal organisation of markets (product as well as labour) and a relatively less extended social security system. The economic system is based on individual freedoms and responsibilities. UK, Irish and American regions belong to this group.
- Nordic: The regions show a liberal product market and often also liberal elements in the labour market. They have a developed social security system. The regions' economies are driven by innovation and innovation-supporting policies. Regions in Scandinavian countries belong to this group.
- Continental: Although product markets are liberalised, they still are more regulated than in the other groups. Labour markets are heavily regulated, and social security systems greatly extended. The government influence in the economies is high. Most continental European regions belong to this group.

Since the benchmarking compares metropolitan regions, the analysis focuses on Metropolitan Glasgow to avoid misinterpretation. Glasgow City is not a complete functional metropolitan region and deductions drawn on a comparison of Glasgow City with other metropolitan regions might lead to possibly incorrect conclusions. The previous chapter highlighted the differences and similarities between Glasgow City and the Metropolitan region.

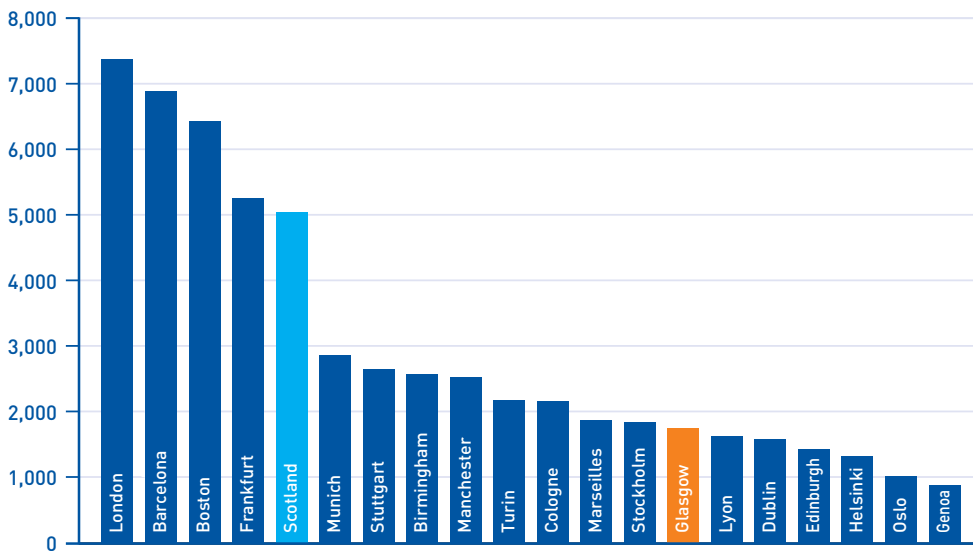
3.1 Benchmarking Performance

The first step in positioning Metropolitan Glasgow within the sample of metropolitan regions chosen for benchmarking is to look at its population level in 2004. The Metropolitan region falls towards the lower end of the regions under consideration. Metropolitan Glasgow's population of 1,750,000 is significantly smaller than the populations of big metropolitan cities such as London, Boston or Frankfurt. The population of London is four times greater than that of Glasgow.

The population of a metropolitan region depends, to a great extent, on the region's demarcation. Ideally, a metro region should align with the regional labour market, and thus with the area from which commuters are attracted. Otherwise, unbalanced regional employment and population figures may bias the benchmarking results. Some benchmarking results indicate wrongly specified metropolitan regions. For example, although Barcelona is a large metropolitan region, the data available is for Catalonia, which is much larger than Barcelona. Although this might affect the sample chosen here, it does not change the fact that Glasgow competes among the mid-size, secondary league of city regions.

Fig. 14: Population 2004

in 1,000 persons



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

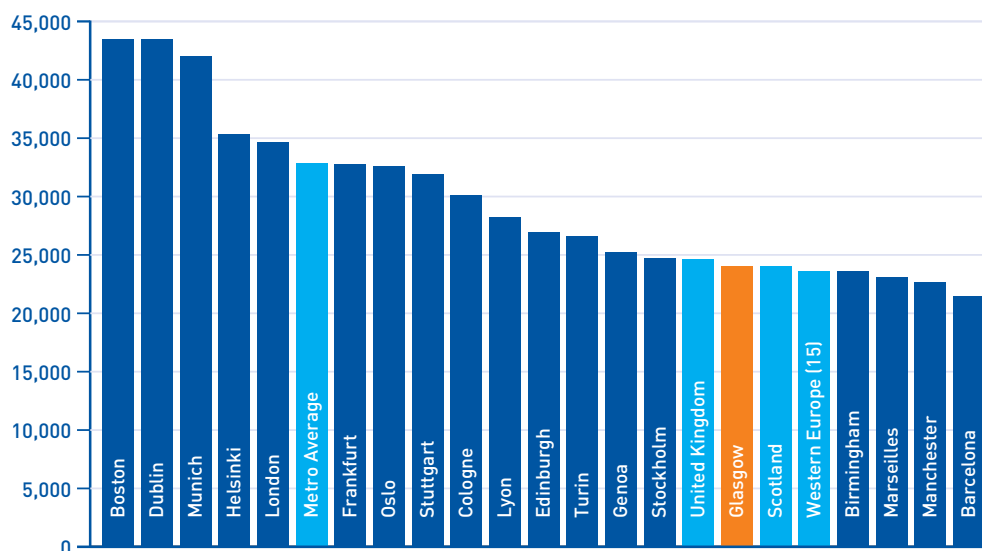
It might be more justifiable to compare Glasgow with metropolitan regions such as Edinburgh, Turin, Stuttgart, Cologne, Marseille and Lyon which are characterised by an industrial background similar to Glasgow's.

With a real GDP of 24,000 USD per capita in 2004, Metropolitan Glasgow lies in the middle of this comparable group of regions. Its real GDP per capita is lower than that of Cologne, Turin, Genoa and Lyon, and higher than that of Marseilles. Larger metropolitan regions like London have real GDPs per capita far higher than that of Glasgow. Comparing the regions' real GDP per capita makes more sense in the case of different-sized regions and is able to produce new insights. Even though Metropolitan Glasgow is still below the metro region average, it ranks higher than Scotland. It is also interesting that Barcelona, which is the second largest region in this sample in terms of population, is at the bottom of the scale in terms of GDP per capita. As Spain is still catching up in terms of economic performance, this is not surprising.

The group of metro regions at the top of the scale, Boston, Dublin and Munich, is remarkable. All of these regions are well known for their strengths either in the New Economy or in Life Sciences. Looking more closely at the metro regions' industrial structure might shed further light on variances in performance regarding GDP per capita. This issue will be dealt with in more detail later in the report.

Fig. 15: Real GDP per capita 2004

in USD (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

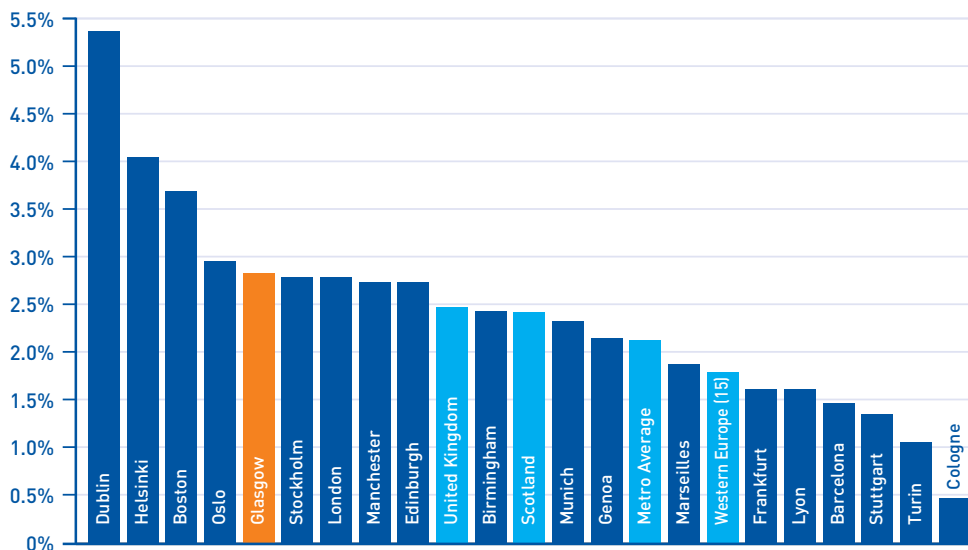
The annual average growth of real GDP between 1995 and 2004 for Metropolitan Glasgow was 2.8 percent. This is well above the average metropolitan regions' growth rate. Glasgow although very dynamic, has closed the gap significantly, but is still far from reaching the highest levels.

Even though Metropolitan Glasgow did not reach the extraordinarily high growth rates of Dublin, Helsinki or Boston, its growth is comparable to the metro regions of Edinburgh, Manchester, Oslo and Stockholm. In general the metro regions from continental Europe did worse than the Anglo-Saxon and Nordic regions, although the results, even within countries, differ substantially. Munich's growth was only slightly below that of Metropolitan Glasgow, while Cologne performed poorly.

The grouping of metropolitan regions is clearly shown in the chart. Most Anglo-Saxon metro regions rank towards the top in GDP growth between 1995 and 2004. The Nordic regions are also well positioned, but a more detailed analysis shows a somewhat different growth pattern. From 1995 to 2000, the Nordic group grew quickly but did less well in the period 2000 to 2004 when most regions of the Anglo-Saxon group were achieving fairly good growth rates. Most Continental regions performed less well in both periods.

Fig. 16: Growth of real GDP per capita 1995-2004

Annual average growth rates (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

The Anglo-Saxon group's recent economic success can probably be attributed to its liberal regimes and structures. Glasgow has benefited from its membership of this group. It has performed better than the metro average but is still ranked at the lower end. Does Metropolitan Glasgow have some difficulties in making use of the Anglo-Saxon advantages?

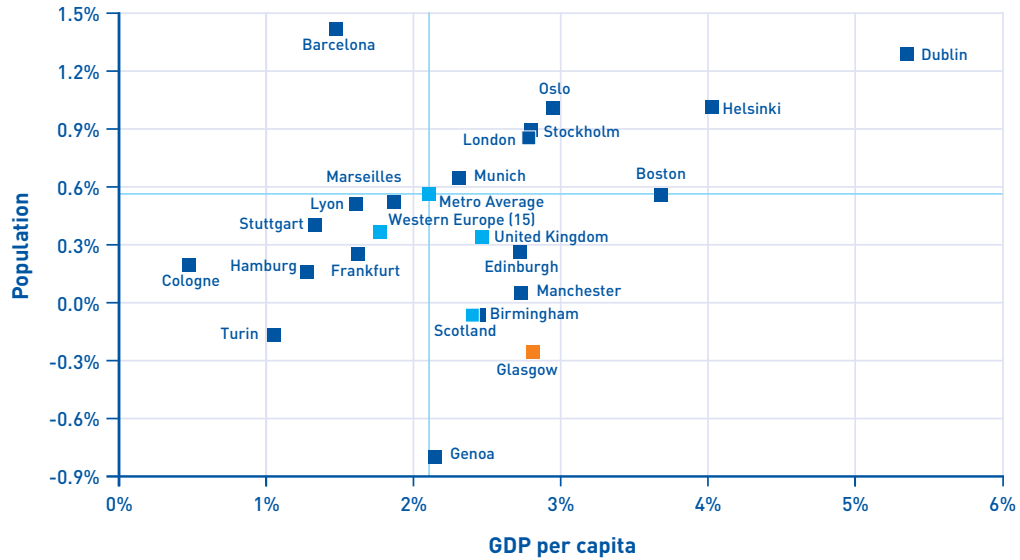
Mapping growth in GDP per capita to population growth reveals a generally positive correlation between the two variables. GDP per capita is linked to the changing 'size' or production potential of a region due to shifts in population. Regions that attract population (either through higher birth rates or migration) increase their average economic well-being, measured in GDP per capita. In the case of migration, the relationship might be the other way around: people might move to a region due to an increase in GDP per capita.

In almost all metro regions, growth of GDP per capita between 1995 and 2004 was higher than population growth. This is usually an indicator of productivity growth, but other explanations are possible, such as labour force participation patterns⁽¹⁵⁾. An exception to this pattern is Barcelona which did not succeed in increasing its comparatively low productivity. Dublin also stands out due to its extraordinarily high growth in GDP per capita. The positioning of the metro regions can be seen to have a strong national component. Most metro regions of one country form a cluster in the graphical presentation of the data. Most British metro regions (included in this study with the exception of London) and the Italian metro regions display negative or very low population growth but managed to increase their GDP per capita.

(15) If productivity is measured as GDP per hour of labour input, another factor is average working times.

Fig. 17: Growth of real GDP per capita and of population 1995-2004

Annual average growth rates (GDP based on USD at 1995 prices and 1997 PPP)



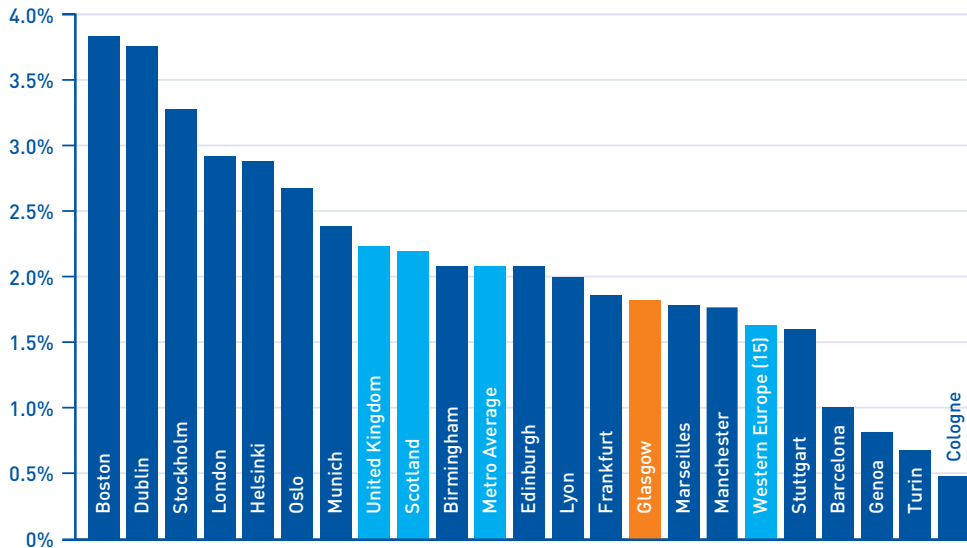
Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

In some ways, Metropolitan Glasgow does not follow the usual pattern. Even though its population showed a substantial decrease, the average annual rate of its GDP per capita was 2.8 percent. This GDP per capita increase is high for a declining population. As previously mentioned, productivity is one of the factors behind differences between population growth and GDP per capita growth. Another factor is the share of the population active in the labour force, measured as the employment-to-population ratio. This and not productivity, is the reason for Metropolitan Glasgow's somewhat unusual pattern. The employment-to-population ratio grew from about 45 percent in 1995 to 51.5 percent in 2004. This increase was not matched by most other metropolitan regions. Although Metropolitan Glasgow showed a drop in population, it achieved economic growth and was especially successful in the labour market and increasing labour market participation.

Fig. 18: Growth in real hourly productivity 1995-2004

Annual average growth rate (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

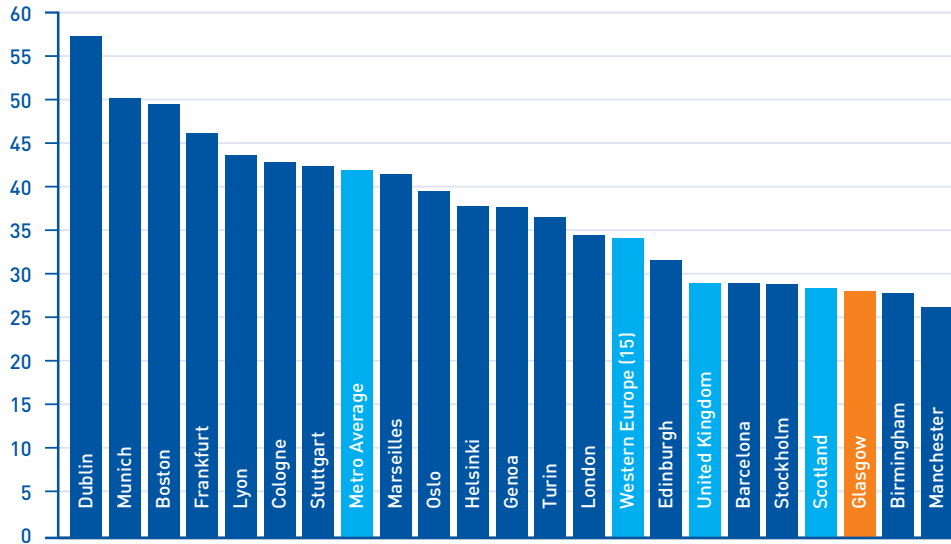
All regions including Glasgow are metropolitan regions.

Turning to productivity growth, Metropolitan Glasgow has not performed well since 1995. Productivity is not the reason why Glasgow's GDP per capita grew more than that of most regions in the sample. Still, productivity did increase in Glasgow, and some other regions experienced less of an increase. Turin, Manchester, Genoa and Stuttgart, which are more comparable to Glasgow in their industrial structure than service centres like London or Munich, achieved similar or less productivity growth. The industrial structure clearly plays a major role in productivity performance.

Before analysing industry structures in greater depth, productivity levels need to be discussed further. Although Metropolitan Glasgow's productivity growth is undistinguished, its productivity levels are even worse. Metropolitan Glasgow has one of the lowest levels of productivity in the sample with hourly productivity in Metropolitan Glasgow about 25 percent lower than the metro average. Among the regions with similar industrial structures, only Manchester has a lower productivity level. Cologne, Marseilles, Genoa and Turin display higher productivity. Even the Western European average and the UK average are above the Glasgow level, although they include rural areas as well, which are usually less productive.

Fig. 19: Real hourly productivity 2004

in USD (based on 1995 prices and 1997 PPP)



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

The best results in productivity are achieved by metro regions which are known for a large financial services sector, chemical-pharmaceutical clusters ('biotech') and/or an ICT specialisation. Munich, Boston and Frankfurt each fall into at least one of these categories. It is extremely important to take the industrial structure into account when discussing any region's productivity performance.

In conclusion, Glasgow needs to be extremely concerned about its productivity performance. The level of hourly productivity is lower than in nearly all other benchmarked metro regions. This can be explained by the fact that Metropolitan Glasgow stayed focused on heavy industry for much longer than other metro regions and has only started to make the necessary structural changes to reposition itself comparatively recently. Therefore, it can be considered a catch up region, which partly explains lower levels of productivity. However, Glasgow did not manage to catch up as much as it did against other indicators. This is a matter of grave concern given productivity's importance, particularly in highly developed economies, as a source of economic growth, for defining the population's well-being and for staying competitive in a globalising world. Glasgow's economic policy needs to address productivity performance as a matter of urgency^[16].

[16] Further special analyses on productivity are included in this chapter, including a discussion on the importance of productivity.

3.2 Benchmarking Key Sectors

3.2.1 New Economy

Fig. 20: New Economy

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

Like many regions, Glasgow shared in the benefits of the New Economy boom late in the nineties. In 2004, this resulted in a share of about 12 percent in this sector in the Metropolitan region which was closely in line with the majority of metropolitan regions. The growth picture is somewhat different. Between 2000 and 2004 Metropolitan Glasgow had the worst growth figure of all metro regions except Edinburgh. On average from 2000 to 2004, the New Economy Sector declined in Glasgow. Other metropolitan regions were still able to show some positive growth, although not as much as before the year 2000. Growth of the New Economy was excellent in Metropolitan Glasgow from 1995 to 2000 and this was much higher than the average metro region. Even if this is taken into account, Metropolitan Glasgow's performance fell below the metro average over the whole period from 1995 to 2004.

The growth history of the New Economy in Metropolitan Glasgow is typical for an Anglo-Saxon region, but it showed much greater variation than the other metropolitan regions in the benchmarking sample. In general, the Anglo-Saxon regions experienced strong growth in the New Economy until 2000, but were much more badly affected by the downturn. In the chart, most of the Anglo-Saxon regions are in the lower part of the distribution (with respect to growth from 2000 to 2004). Continental European regions and Nordic regions in particular generally did better. On the one hand, a favourable institutional setting allowed the Anglo-Saxon regions to respond quickly to opportunities in the New Economy Sector but the same setting also exposed them to more dangers when the boom ended.

Within the Anglo-Saxon group, Metropolitan Glasgow was particularly hard hit. The successful development during the boom up until 2000 was not sustainable during the downturn. This raises questions about the future potential for New Economy-based growth in Metropolitan Glasgow. Part of the development might be due to a strong cyclical component in Glasgow but other regions, including the Anglo-Saxon regions, are less affected. It seems that there are also some structural difficulties in the New Economy sector in Metropolitan Glasgow. Non-sustainable growth is not desirable. If Glasgow wishes to concentrate on the New Economy sector, it should make this a major focus of its economic policy in order to achieve a more sustainable development and reduce cyclical risks.

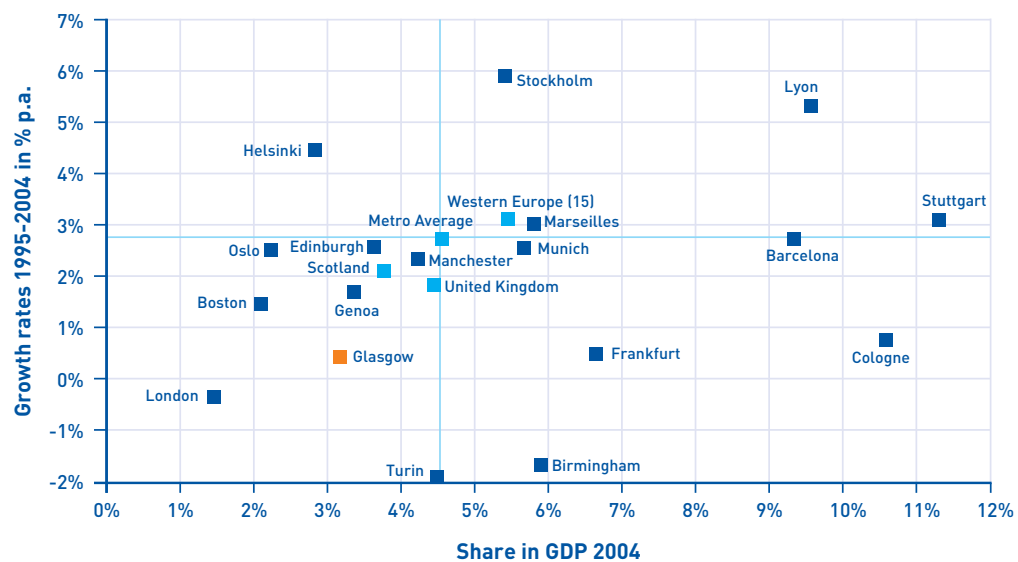
3.2.2 Old Economy

The industries belonging to the Old Economy are highly productive and innovative. Their prospects for future growth are good, and they are less likely to move to low-wage regions. They are the driving forces behind the economy of some metropolitan regions, e.g. Stuttgart and car manufacturing. This does not appear to be the case for Metropolitan Glasgow, as shares as well as growth for 1995 to 2004 are significantly below the metro average.

Regions strong in the Old Economy often specialise in one specific industry. The Life Sciences Industry⁽¹⁷⁾ is one such industry and is considered to have great future growth potential. As the graph reveals, a number of metropolitan regions, including Stockholm and Lyon, were able to profit from substantial growth contributions over the past few years. It is interesting that the members of the different groups of regions, Anglo-Saxon, Nordic and Continental, play less of a role in the positioning of metropolitan regions in the Old Economy than they do, for example, in the New Economy Sector. The Life Science Industry differs from the New Economy Sector in that it depends more on individual regional-specific factors (including the history of the region) than on general settings of the economic structure (which is more similar within the groups than between them)⁽¹⁸⁾.

Fig. 21: Old Economy

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions. Dublin is not included in the graphic as it is outside the chosen scaling.

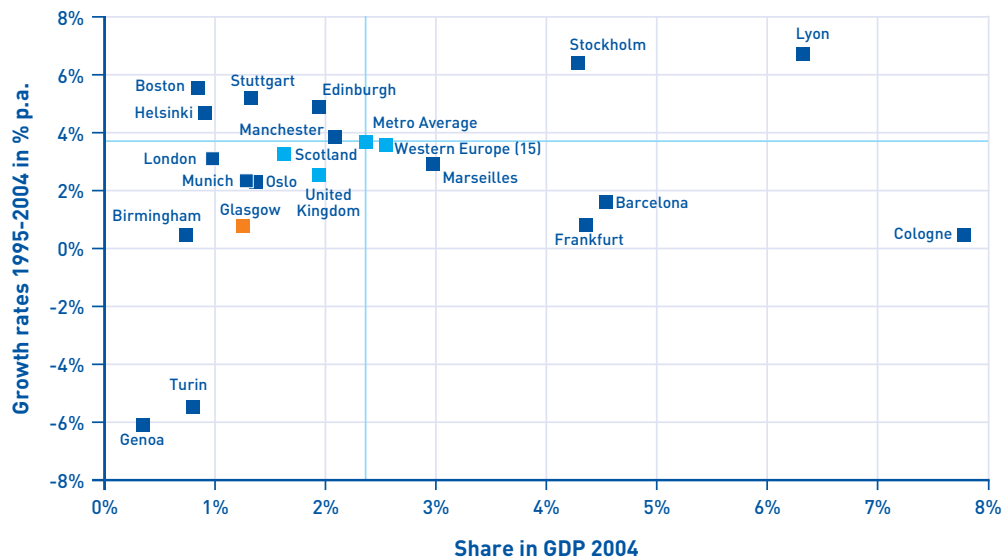
(17) Note that for the moment, data for the Life Sciences Sector has to be approximated within the chemical-pharmaceutical industry. Data on the Life Science Industry itself will be available in the near future (including for example the production of medical instruments and machinery as well as specific research). This lack of data is, most probably, the reason that Boston has a rather small share, although it is a well known region for Life Sciences research and industry. For Glasgow, we believe that the conclusions will not be altered significantly by including more precise data.

(18) Partly this finding might be due to the data issue of the chemical-pharmaceutical industry instead of Life Science. New developments in the Life Science are heavily dependent on the regulatory environment. A more group-specific structure would be plausible for these activities.

The data shows that it is unlikely that Metropolitan Glasgow will gain a top position in the Life Sciences Industry. It will be difficult for it to achieve the critical mass to become a centre of Life Sciences since its share is lower than in most metropolitan regions. One possible option is to occupy and develop a specific Life Sciences niche but this does not look hopeful given Metropolitan Glasgow’s negative growth record over the past few years. Life Sciences is probably not the industry to meet Metropolitan Glasgow’s future growth needs.

Fig. 22: Life Sciences

based on USD at 1995 prices and 1997 PPP⁽¹⁹⁾



Source: BAK Basel Economics

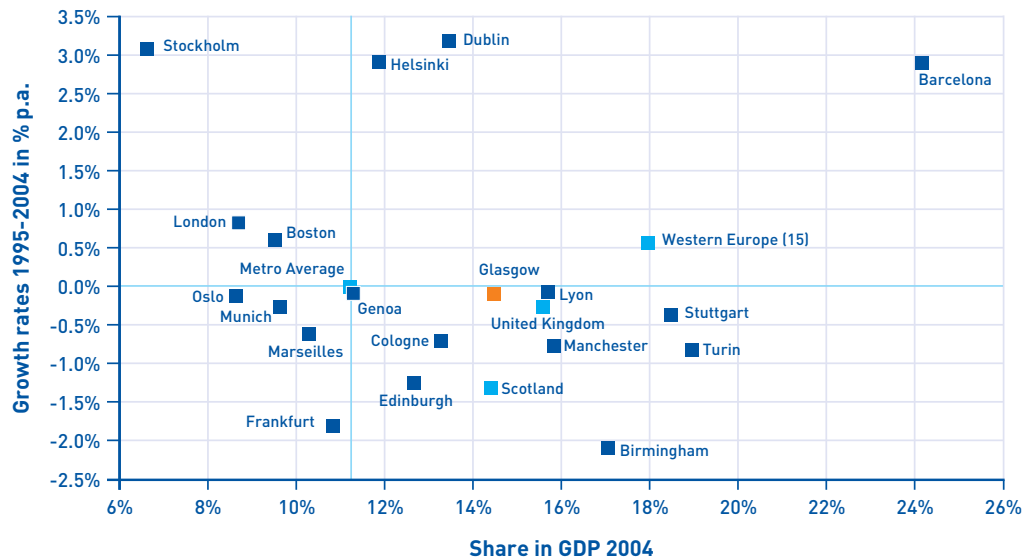
All regions including Glasgow are metropolitan regions.

3.2.3 Traditional Sector

The Traditional Sector is still relatively strong in Glasgow and has grown in recent years. This is uncommon among the metro regions sampled, but as shown by the graph, Metropolitan Glasgow is not exceptional in this respect. Many other metropolitan regions have higher shares. Growth for the period 1995 to 2004 is similar to the metro average, but again, other regions did better.

The relative position of Metropolitan Glasgow, the disappointing growth outlook for the Traditional Sector in highly developed regions and the labour cost increases observed in the last few years, confirm that the Traditional Sector is probably not the most promising area to push for growth.

(19) Dublin is not included in the graphic as it is outside the chosen scaling.

Fig. 23: Traditional Sectorbased on USD at 1995 prices and 1997 PPP⁽²⁰⁾

Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

3.2.4 Urban Sector

The Urban Sector is the largest industry sector for most metropolitan regions. Metropolitan Glasgow has the lowest Urban Sector share of all metropolitan regions in the benchmark sample, and is well below the metro average. This should be analysed in more detail.

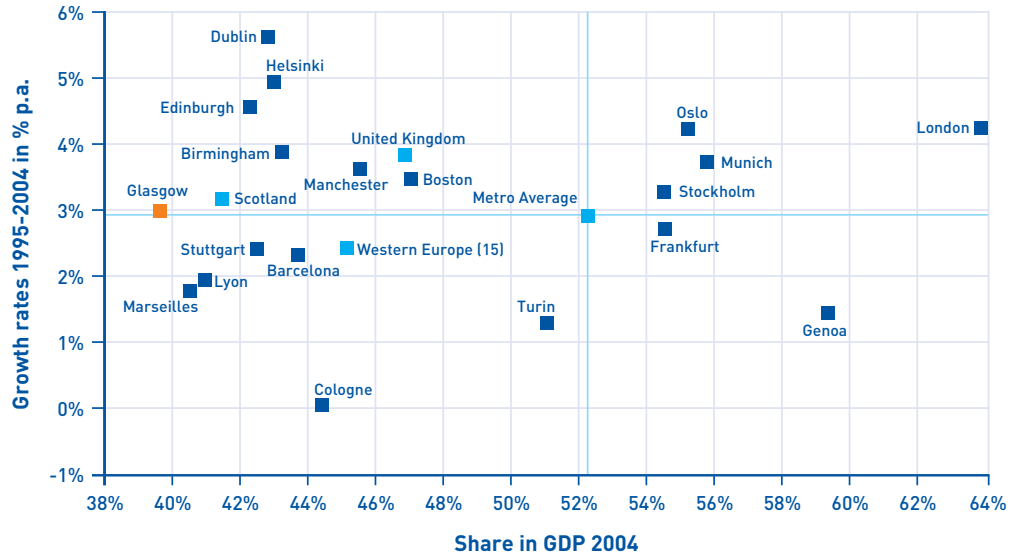
Comparing the regions' Financial and Business Sector clearly validates the profile of the financial centres of Greater London, Frankfurt and Munich. These three clearly display the highest share of this sector in the economy.

Their leadership is less clear when looking at the growth of the sector. Although all these regions achieved substantial growth of close to 4 percent or more between 1995 and 2004, this growth places them just at or somewhat above the metropolitan average. Clearly, more growth took place in Edinburgh and, to a somewhat lesser extent, in Helsinki and Dublin. Most other metropolitan regions grew close to the average rate although the French and Italian metropolitan regions grew less than the average. Cologne was the only region with a negative growth rate.

(20) Dublin is not included in the graphic as it is outside the chosen scaling.

Fig. 24: Urban Sector

based on USD at 1995 prices and 1997 PPP⁽²¹⁾

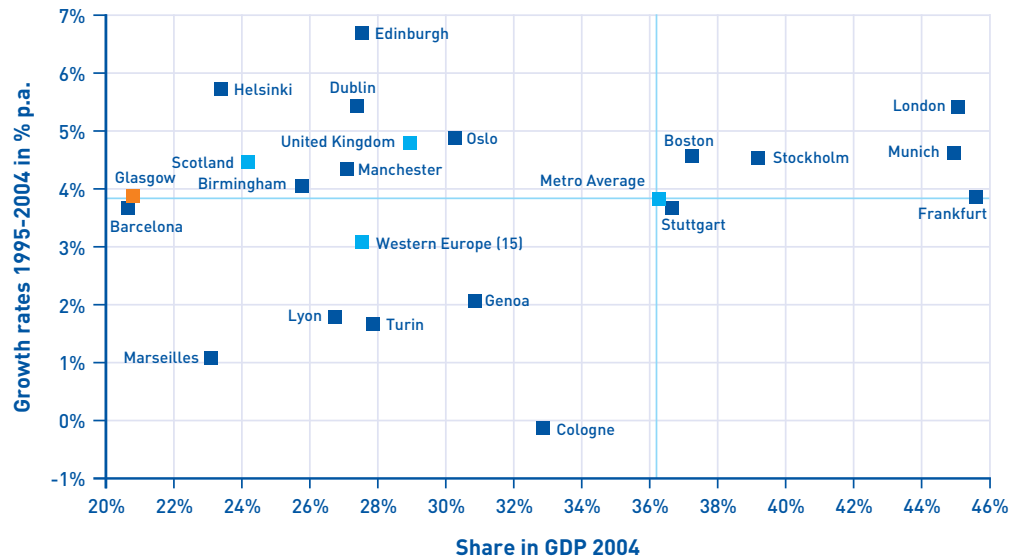


Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

Fig. 25: Financial & Business Services

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

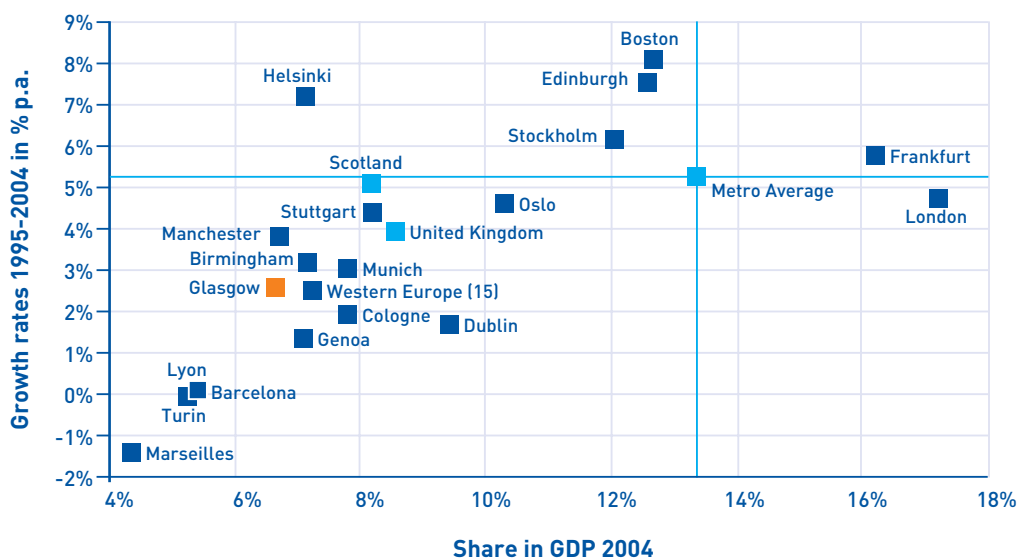
(21) Dublin is not included in the graphic as it is outside the chosen scaling.

Metropolitan Glasgow experienced an average growth rate of about 3.9 percent per year, around the metro average, but its Financial and Business Sector share was lower than in all other regions except Barcelona. Historically and compared to other metropolitan regions, this sector is not one of Glasgow's strengths. Even if Metropolitan Glasgow can achieve strong growth in the Financial and Business Sector, the growth contribution to the total economy will be limited due to its comparatively small starting share. Only over a long period of time can this situation change substantially. This does not mean this sector should not be supported, but to concentrate exclusively on this part of the economy would not be advisable.

One unusual feature was that growth of the Financial and Business Sector was slightly higher in Metropolitan Glasgow than in Glasgow City. The share of the Financial and Business Sector was considerably higher (about 8 percent) in the City. Finance was more important in Glasgow City, but the City did worse than other metropolitan areas regarding the growth of the sector.

Fig. 26: Financial Services

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

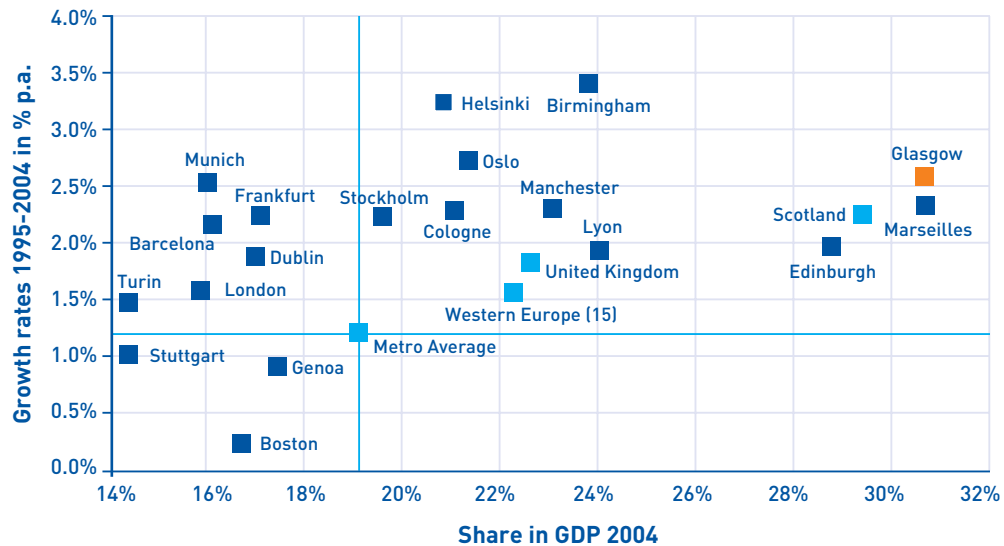
As highlighted earlier, one important reason behind the unusual development of the Financial and Business Sector in Glasgow is real estate^[22]. Metropolitan Glasgow's position becomes less extreme when this important part of the sector is excluded. At present, Metropolitan Glasgow is not positioned as a specific financial and business services location. For example, in 2004, the Metropolitan region had a below average share of financial services. The majority of regions with smaller shares are from Continental Europe, where for historical reasons, banking and insurance are often divided and nationally-oriented. This means that they lack the opportunity for international growth. Current data and analysis does not indicate that Metropolitan Glasgow is about to become a major financial services centre.

When the financial services in Metropolitan Glasgow are analysed in more detail, there is anecdotal evidence that the part of the industry not locally-oriented and consists to a large extent of less value added and less innovative services, such as call centre services. These are in danger of being outsourced to regions with lower costs, since English is a very common language worldwide and no real language barriers exist.

3.2.5 Political Sector

Fig. 27: Political Sector

based on USD at 1995 prices and 1997 PPP^[23]



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

[22] See chapter 2 for a discussion on the influence of a decreasing population.

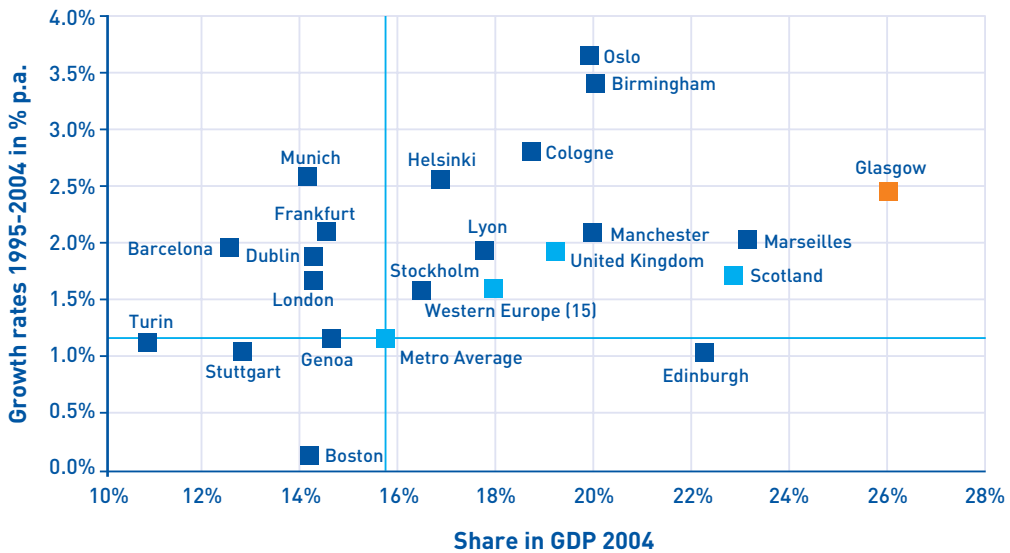
[23] Dublin is not included in the graphic as it is outside the chosen scaling.

As highlighted earlier, the Political Sector plays an important role in the Metropolitan Glasgow economy. Metropolitan Glasgow displays the highest share in the Political Sector in 2004 and its performance is in sharp contrast to that seen in other sectors. The growth experienced in this sector is one of the highest within the sample of metro regions.

The Public Sector is by far the most important part of the Political Sector. In 2004 Metropolitan Glasgow displayed the highest share in the Public Sector and one of the highest growth rates as well. Compared to other metropolitan regions, the Public Sector, consisting of Public Administration, Health Services and Education is the best performing part of Metropolitan Glasgow’s economy.

Fig. 28: Public Sector

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

In Metropolitan Glasgow, Health and the Public Administration are the driving forces behind Political Sector growth. To some extent, this seems to be characteristic of the UK. The other UK metropolitan regions in the sample, with the exception of London, also display a similar structure. This is particularly striking in Metropolitan Glasgow which has the highest share and the second highest growth within the group of UK city regions.

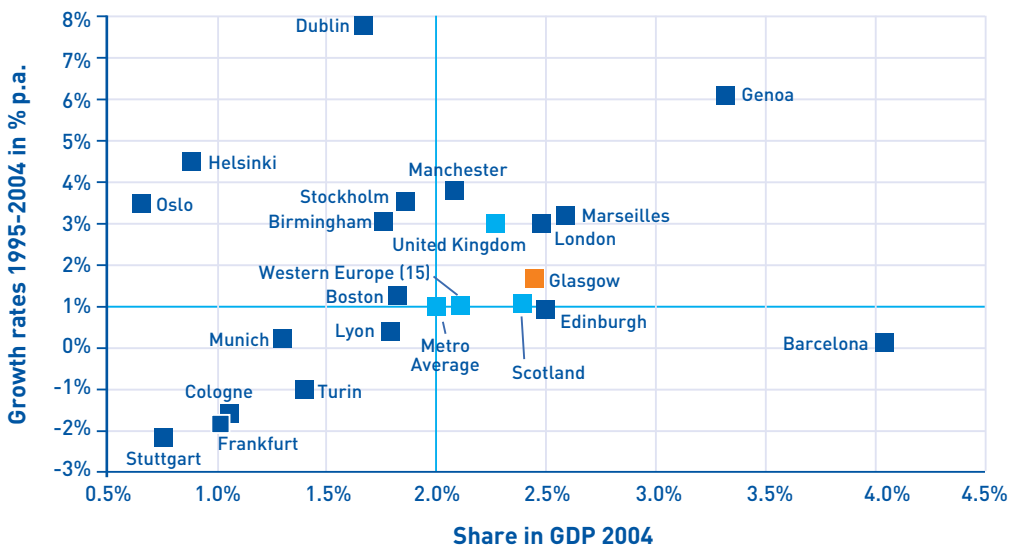
It is interesting to observe that, in contrast to the Financial and Business sector, there is a weak correlation between high shares in the economy and higher than average growth rates. Since the share is measured at the end of the period, it seems that the regions reach their respective positions at different rates of growth, starting from a more equal economic structure.

It is at best questionable if a specialisation in the Public Sector is appropriate for a metropolitan region. In general, this is not considered a high productivity sector and its growth potential seems limited. There are certainly niches, however, that have promising prospects. Providing health services to well-off customers is a fast growing international service which has high added value. The same is true for higher education which also has an increasing international market potential. Metropolitan Glasgow, having the advantage of the English language, a good reputation, a liberal society and the addition of well-known tourist attractions close by, might be able to take advantage of these opportunities.

3.2.6 Consumer Services

Fig. 29: Hotels and Restaurants

based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics

All regions including Glasgow are metropolitan regions.

The Hotels and Restaurants sector can provide some information about the Consumer Services potential. Although Hotels and Restaurants play a fairly small share in the economy and their contribution to growth is limited, they should not be undervalued. The development of Hotels and Restaurants is a good indicator for the level and attractiveness of consumer services offered in a region, especially for people from outside the region. When Hotels and Restaurants profit, other parts of the economy, such as retail trade, transport and culture, sport and entertainment profit as well.

Metropolitan Glasgow is positioned at the upper end with respect to its share of Hotels and Restaurants. Growth in this sector is close to the average although most Anglo-Saxon regions as well as the Nordic regions perform somewhat better.

Edinburgh is even better positioned than Metropolitan Glasgow. Edinburgh and Glasgow have good potential for future economic development by combining their respective assets to provide personal services to people from outside the metropolitan regions and internationally.

3.2.7 Benchmarking industrial structures: strategic options

There are three possible industrial models for metropolitan cities in highly developed regions. First, they can focus on a value added intensive and innovative industry, such as Life Sciences or car manufacturing. Parts of the New Economy also belong to this category. A metropolitan region specialising in these areas could be described as a High-Tech City. Second, they can concentrate on business-related services like the financial sector or consulting. This is often called the Business City concept. The third possibility is the Leisure City or Consumer City option. The focus is on personal services offered to an international clientele. These are mainly tourism-related activities, but can also include education or health services. Often the different fields interact well and reinforce each other.

Glasgow is not best-placed for taking advantage of the first two options. It cannot lay claim to well-established and clear superiority in these industry sectors to lead to recognition as a cluster, and recent growth in the industries has not been exceptional. Positioning as a Business City is possible particularly if undertaken in collaboration with Edinburgh. However, the third strategic direction - the Leisure or Consumer City option - is more promising. Already well developed, Glasgow can profit further from its English language advantage, especially as the largest English-speaking competitor, the US, currently faces some difficulties (for example the US immigration policy). Scotland's strong international reputation is further augmented by the country's natural assets and tourism potential. If Glasgow manages to co-ordinate such a strategy with Edinburgh to gain critical mass, the chances of success are even better.

3.3 Does Glasgow have a Productivity Gap?

Why productivity is important

From the benchmarking perspective, the level and growth of productivity in a metro region are both important. Productivity shows the capacity of an economy or, reciprocally, the amount of hours needed to produce one unit of goods or services (usually measured in units of a currency). From a welfare economics perspective and with everything else remaining equal, the higher the productivity of a country/region, the better the welfare of its inhabitants. A utility function involves leisure and consumption and higher productivity allows the same consumption (equal production) while increasing leisure. More leisure can increase the well-being of individuals and deliver positive economic benefits.

Theoretical considerations apart, the level of productivity is an important parameter from a corporate perspective. For instance, a company's location decision for a new factory depends on unit labour costs, defined by labour productivity and labour costs as well as on other factors.

Measurement issues

Comparisons of productivity obviously require consistent measurement methods. First of all, it is important to compare productivity per hour or per full-time equivalent and not per employee, otherwise different structures of part-time working could lead to incorrect conclusions. Other measurement issues are concerned with the different national methods used for national accounts or employment statistics. Since the European System of National Accounts was implemented in the vast majority of the IBC-countries by 2004, this issue has become less of a problem. However, there is some bias in the comparisons of European and US data on real value added. Because US (unlike European) statistics of deflation take quality improvements into account ("Hedonic Method"), US productivity levels (in comparison with European) are somewhat overstated in real terms.

The most important measurement issue for international comparisons is the method of currency conversion. BAK Basel Economics follows the so-called "industry-of-origin approach", which develops PPPs by industry and sector. See Annex (chapter 8) for a detailed description of the methodology used.

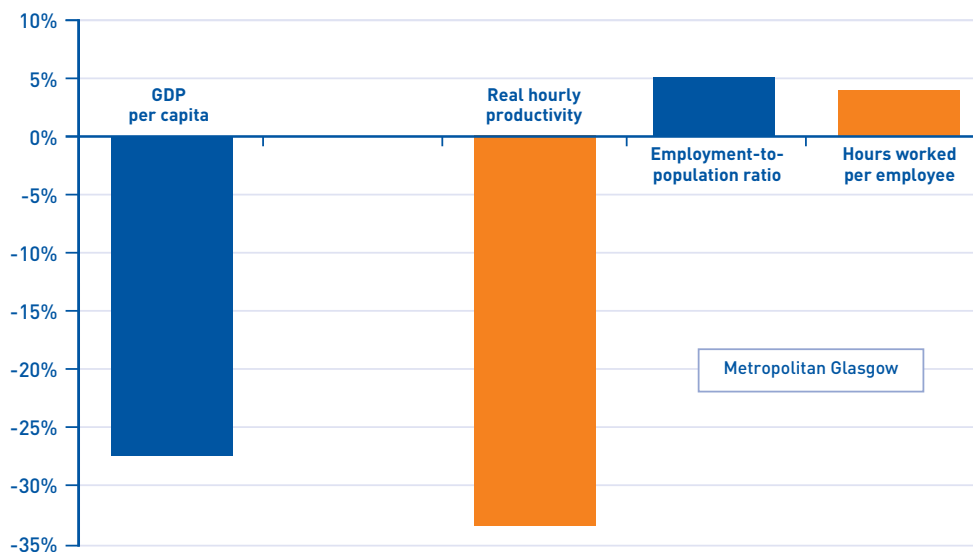
Most of the above measurement issues disappear when productivity growth is analysed. However, the aspect of hedonic price measurement is also important for growth analysis. Although there is a significant influence of hedonic pricing, many studies come to the conclusion that even without hedonic pricing, the US economy has still grown much faster than Europe's in the last decade.

Glasgow's productivity

Metropolitan Glasgow is positioned at the low end of the productivity ranking in the sample of metropolitan regions. It has also exhibited below average productivity growth both from a long-term perspective (over the last 25 years) and from a more short-term perspective (over the past 10 years). Before turning to a detailed analysis of possible reasons for this poor productivity performance, the impact on the region's overall economic performance needs to be considered.

Fig. 30: GDP and its components, 2004

Deviation of levels from the regions' average (in percent of average)



Source: BAK Basel Economics

Economic performance is determined by the amount of labour put into production and by the real hourly productivity (which in turn might be seen as the product of the quality of the labour input and the technology applied). Following a classical analytical framework, GDP can be divided into its components and, for example, displayed graphically as derivation from an average^[24]. One such division uses hourly productivity, employment-to-population ratio, and working time as components.

GDP per capita in Metropolitan Glasgow was about 25 percent lower in 2004 than the metro regions' average. When this is broken down into its components, it reveals an above average labour input, driven by the higher employment-to-population ratio and, to a lesser extent, by the hours worked per employee. This leaves a productivity gap as explanation for the lower GDP per capita which exceeds 30 percent.

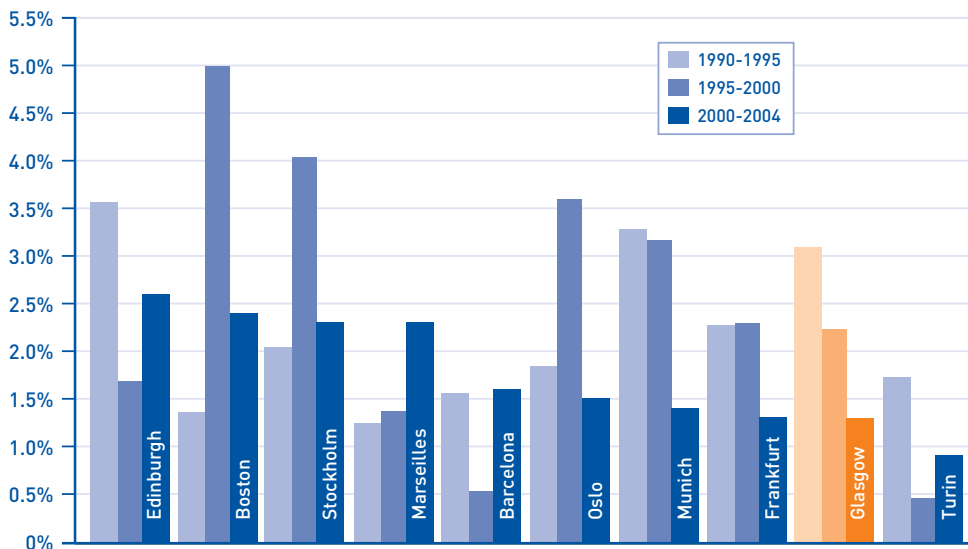
[24] The average used in the chart is the metro average.

Although less pronounced, the same structure is found in an examination of growth. While labour input figures, especially the employment-to-population ratio, perform well in comparison with other metropolitan areas, it is in productivity that Metropolitan Glasgow, to a certain extent, lags behind.

The simple reason behind Metropolitan Glasgow’s relatively low GDP per capita is its productivity gap. Increasing productivity must, therefore, be the major focus of any economic development policy. This is all the more true because natural limits constrain the other sources of economic growth, the employment-to-population ratio and the amount of hours worked. During a catching up process, Metropolitan Glasgow could, to some extent, rely on these sources. In the long run, however, it is productivity which determines the economic success of any highly developed economy.

Fig. 31: Productivity growth in different periods

based on 1995 prices and 1997 PPP; ranked by growth 2000-2004



Source: BAK Basel Economics

All regions including Glasgow are the metropolitan regions.

Examining the development of productivity in Metropolitan Glasgow over different time periods brings further unwelcome news. The productivity increase in Metropolitan Glasgow was not only lower compared to the benchmarking regions on average over the last 15 or 25 years, but productivity growth also decreased over time, in absolute growth rates as well as relative to the average of other metropolitan regions. Between 1990 and 1995, Metropolitan Glasgow grew at an annual average rate of about 3 percent, but growth slowed to 2.2 percent per year between 1995 and 2000 and finally to 1.3 percent between 2000 and 2004. Although during the first period Metropolitan Glasgow was, together with Edinburgh and Munich, amongst the fastest growing city regions, it experienced just average growth in the second period. Then, between 2000 and 2004, Metropolitan Glasgow had one of the slowest productivity growth rates of all metro regions.

The productivity increase initiated by the high-technology boom of the New Economy sector was less distinct in Glasgow than it was in other regions. Metropolitan Glasgow could not attract the highly-productive segment of the sector, but rather attracted the 'assembly lines' of the top multinational enterprises.

For economic policy to attempt to tackle the productivity gap, more knowledge of the reasons or sources of the problem are necessary. The productivity gap can result from several different sources:

1. The industrial structure

The region's productivity is, first of all, a result of the region's industrial structure. Different industries have different labour productivity. A major source of the difference is the capital used per unit of labour input. Other sources include the ability to apply new technologies within the production process. For example, the retail trade is an industry with a huge potential to profit from new ICT technologies. As illustrated, the industry structure is important for the level as well as the growth of productivity. The concept of the 5 Driver Sectors introduced in section 3.2 follows on from this idea. This section undertakes a more detailed industrial analysis.

2. The quality of the labour force (human capital)

Labour with higher education or with more experience usually exhibits higher productivity. Although not necessarily true in every individual case, a higher educated (formally or through work experience) labour force allows a higher productivity level in the economy. The issue of labour force quality is discussed further in the section on location factors. It indicates that the education issue is not the source of productivity differences between Metropolitan Glasgow and the other metropolitan regions. Compared to the metropolitan regions in the benchmarking sample, Metropolitan Glasgow rates positively with regard to the formal education of the labour force. However, this does not mean that further improvements in the human capital of Metropolitan Glasgow's labour force could not help tackle the productivity gap.

3. Productivity gaps within industries

Apart from the more general reasons given above, it is possible that the productivity gap results from industry-specific facts, which, added together, lead to a productivity gap for the whole economy. For instance, the positioning of an industry as an assembly line rather than, for example, as a centre for innovation and new products could result in lower productivity. A situation could also arise where protectionism hampers competition which lowers the willingness to innovate which in turn, prevents gains in productivity. If the overall productivity gap results from such industry-specific elements, industry-specific analyses are necessary to detect the reason or reasons for the productivity gap. Only after such an analysis are policy conclusions possible. However, this does not necessarily mean that policy measures addressing the productivity gap must also focus on individual industries.

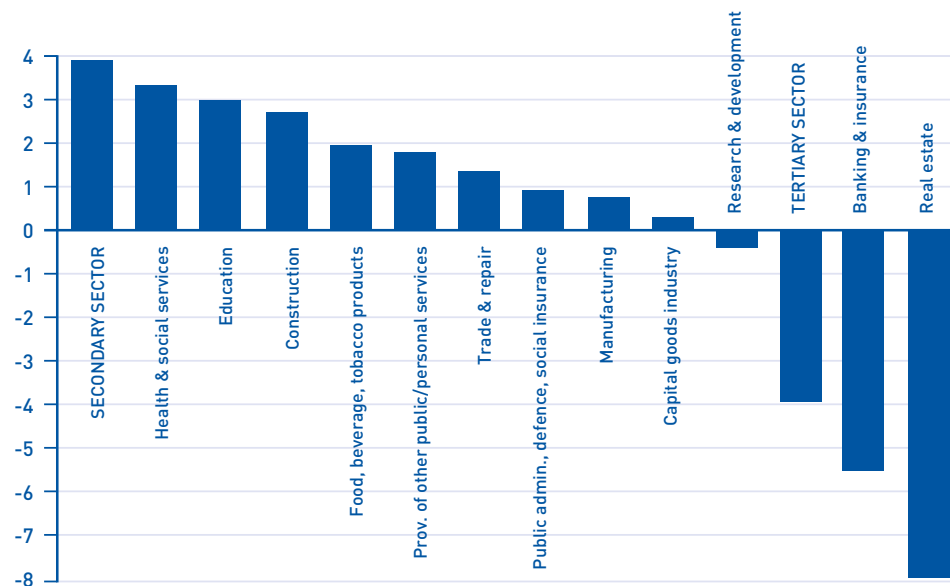
Productivity and the industrial structure

As already highlighted, one possible explanation for the productivity gap is the industrial structure and, in this respect, Metropolitan Glasgow's economy differs in its industry composition from the metro average. Its share in the Secondary Sector is much higher (+3.8 percentage points) than the average, basically at the expense of the Tertiary Sector (-3.9 percentage points). This does not explain the productivity gap, as Secondary and Tertiary Sectors both have more productive and less productive industries.

Turning to the concept of the 5 Economic Drivers, it has already been shown that their shares in Metropolitan Glasgow deviate from the metro average. Furthermore, it is the Traditional Sector and the Political Sector which have higher shares. This report has previously highlighted the less productive status of these sectors. From this finding it is not surprising that Metropolitan Glasgow's performance regarding productivity is below average.

Fig. 32: Deviation between the industry's share in the total economy in Metropolitan Glasgow and the Metro Average

2004, in %-points (based on USD at current prices and exchange rates)



Source: BAK Basel Economics

A more detailed analysis reveals further differences. On the one hand, banking and insurance as well as real estate carry much less weight in the Metropolitan Glasgow economy than in an average metro region. On the other hand, education, health and social services have a higher share in Glasgow. In Metropolitan Glasgow's economy, typically less productive services take an above average share, and two very productive ones, the financial sector and real estate are below average.

A similar pattern can be found in the Secondary Sector. While the typically less productive sectors of construction (+2.7 percentage points) and the production of food, beverages and tobacco (+1.9 percentage points) are heavily represented, the capital intensive and often highly productive chemical-pharmaceutical industry (-1.1 percentage points) is smaller in Metropolitan Glasgow than in an average metro region.

The analysis shows that the industry mix in Metropolitan Glasgow can partly explain the productivity gap in levels. It is less clear if these findings also explain the comparatively slow growth of productivity, although the difference from the metro average is smaller. The same structures which lead to the gap in levels influence growth to some extent. See, for example, the discussion of the 5 Driver Sectors.

To answer this question an expansion of the Shift-Share Analysis introduced previously can be used. The different effects are further split into working volume effects and productivity effects. For the sake of simplicity the precise deconstruction is not presented here^[25].

Growth Accounting: Productivity growth is the driver

From a macroeconomic point of view, it is the growth rather than the level of productivity which is of interest. A useful way of viewing GDP growth is to break it down into its major components: i) total population, ii) the ratio of persons of working-age (15-64 years) to the total population; iii) the ratio of employed persons to the working age population (the 'participation rate'), iv) hours worked per employee and v) productivity per hour.

By far the most important component of GDP growth is the increase in productivity per hour. In Western Europe, productivity increased with an average annual growth rate of 1.7 percent, while labour input (the result of demography and labour utilisation) grew at an average rate of only 0.5 percent. For metropolitan areas, this discrepancy is even larger. For the average metropolitan regions (covered in the IBC database) the average growth rate of productivity was 2 percent, whereas labour input, measured as the hours worked, increased at an average growth rate of 0.6 percent.

The importance of productivity growth is derived from its magnitude with respect to its GDP growth contribution. It is also the component of GDP growth with the highest regional variation. From a regional point of view, it can probably be influenced by regional policy more effectively than by demography and labour utilisation.

[25] Including an interaction term between working volume and productivity, 9 different effects can be separated.

The deconstruction shows that in the period used (1995 to 2004), most of the growth in Metropolitan Glasgow followed global growth trends, in productivity as well as in working volume. More interestingly, the structural effects indicate whether the industry mix in the Metropolitan region can explain the smaller productivity gains and the fairly good work volume increases. Curiously, this is not the case. Metropolitan Glasgow had a favourable industry portfolio in 1995 which led to a positive structural productivity effect. If all industries in Metropolitan Glasgow had achieved the same productivity increase as in Western Europe, it would have had above average productivity growth. The opposite would be true for the working volume. The industry mix would have suggested a below average growth of the working volume, and the structural working volume effect would be negative. Both the increasing working volume and the below average productivity growth cannot be explained by the industry mix in Metropolitan Glasgow.

Productivity: an issue of concern for Glasgow

Summing up, the analysis shows that although there has been some catching up in recent years, Metropolitan Glasgow's GDP per capita is lower than in most benchmarked regions and is mainly due to lower productivity. This is, in part, explained by the industrial structure in Metropolitan Glasgow which has an above average share of industries with typically lower productivity. This does not hold true for the change in productivity over time. The favourable industry mix in Metropolitan Glasgow should have allowed it to achieve above average productivity growth and catch up in levels to the average of European metropolitan regions. As highlighted, this did not happen. Region-specific influences kept Glasgow's metropolitan economy from increasing its productivity as much as would have been expected. Tackling the productivity problem with an eye on the industrial mix is a key issue for Metropolitan Glasgow's growth-oriented policy. There are further regional or industry-specific facts at work which need to be tackled by policy. The general benchmarking analysis used here points to the problem. It is not specific enough to suggest precise policy measures for specific industries, but it is clear that policy-makers must pay close attention to their productivity performance.

Enhancing regional productivity is Metropolitan Glasgow's main issue for the future and any economic development policy should focus on it. Productivity is the key driver of economic growth.

4. Attractiveness: Measuring and Comparing Location Factor Quality

Up to this point, the report has discussed the current position of the Glasgow economy and has shown how this came about. The evaluation of past political and economic decisions is interesting, but the objective of a benchmarking exercise is to provide a clear, factual basis for future policy and better decision-making. In addition, by comparing the Glasgow situation to situations, decisions and developments in other regions, benchmarking can also provide guidance on future actions and possible actions.

The current economic situation is not the only factor that should be taken into account. Location factors are also extremely important for future economic growth and development. They include the human capital available in the workforce, public funds accessible for economic policy, land reserves and natural resources, regulations and regional governance, to name just a few.

Benchmarking can help a region to understand the situation and the available options related to location factors. By quantitatively measuring and comparing the quality of a range of important location factors, the IBC International Benchmark Club supports regional decision makers in making more informed judgments. The focus is on location factors which:

1. heavily influence supply side developments, especially the location decisions of companies and the ability to establish and grow firms,
2. can be influenced by politics and are, at least in some regions, regulated within the region, and
3. can be measured objectively, quantitatively and in an internationally comparable way.

The location factors are grouped under four general headings: Innovation Resources, Regulations, Taxation, and Accessibility^[26].

[26] Information is not available at regional level for some of the indicators. If appropriate, the figures for a geographically larger region have been used. For example, income taxation does not vary regionally in most countries and national data could be used. Company taxation can vary, however but the differences are insignificant. To keep matters simple, the national figures are used for company taxation.

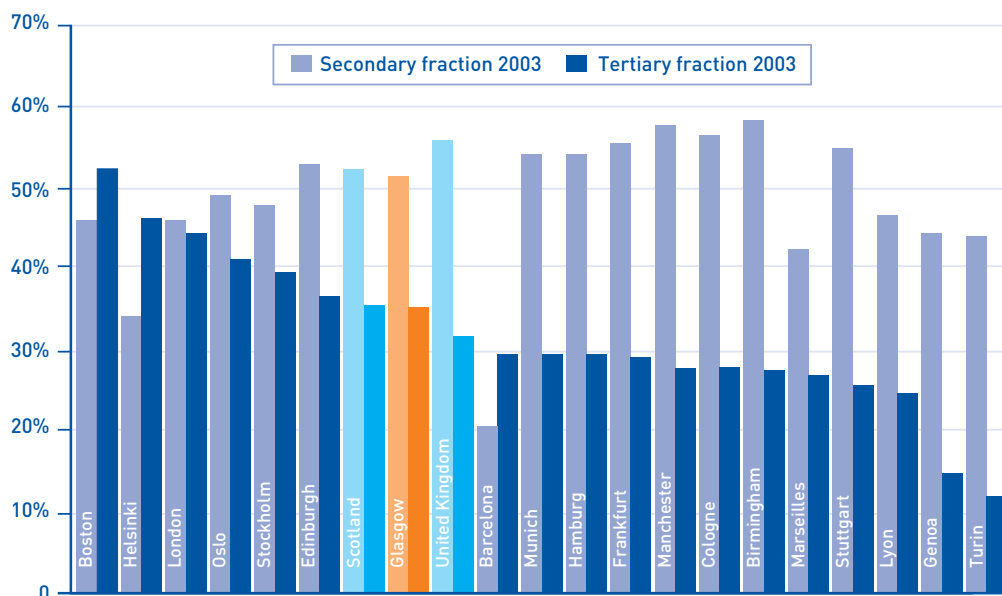
4.1 Innovation Resources

Availability of a highly-qualified workforce

Increasing economic growth can be achieved by two possible ways: increasing workforce participation and labour productivity. A highly-qualified workforce with a high degree of practical know-how is a key factor for sustained economic growth, particularly in service-intensive urban regions. As human capital cannot be measured directly, indicators have to be used to benchmark a region's position. The share of the workforce with a formal degree, either secondary or tertiary is a possible indicator of the quality of human capital^[27].

Fig. 33: Highest completed education (secondary/tertiary) in the labour force

Percentage of individuals in total employment with secondary/tertiary degrees (2003)



Source: BAK Basel Economics - IBC Module Innovation

All regions including Glasgow are metropolitan regions.

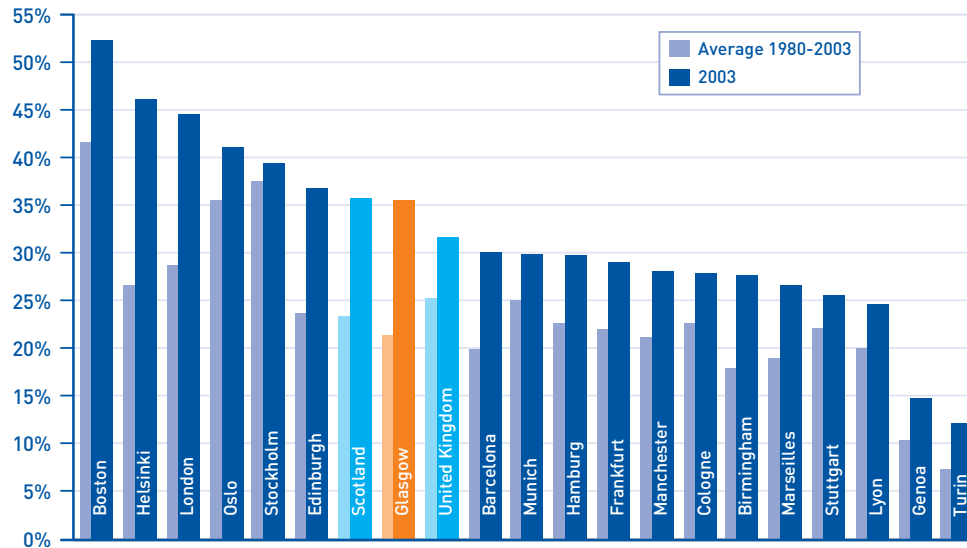
[27] UK secondary education includes: General National Vocational Qualification [GSVQ] Foundation or Intermediate Level, GCSE courses/SCE standard grades, SQA National Certificate Modules, Work-based training for adults, Activities leading to National Vocational Qualification Level 2 and equivalent, Activities leading to National Vocational Qualification Level 1 and equivalent, Traditional apprenticeships, Work-based training for young people (including national traineeships)
Tertiary education includes: Activities leading to National Vocational Qualification Level 4 or 5 and equivalent, Higher National Certificate (HNC), Higher National Diploma (HND), Diploma in Higher Education, Bachelor's degree 2 (accelerated), 3 or 4 years, Open University (bachelor's degree), Post-graduate certificate programme (e.g. teaching), Master's degree programme (short and long): (MA, MS, MFA), First Professional Degree Programme, Doctorate (Doctor of Philosophy - PhD.)

With a share of 35.5 percent of highly qualified individuals (those with tertiary education) in total employment, Metropolitan Glasgow is close to the Scottish average of 35.7 percent. International comparisons show that there is a gap between Glasgow's share of tertiary educated employees and those in the top performing regions such as Boston (52.3 percent), Helsinki (46.2 percent), London (44.5 percent) and Oslo (41.1 percent). On the other hand, Metropolitan Glasgow outperforms the majority of regions. Barcelona (30 percent) and all German, French and Italian benchmarking regions display significantly lower shares. Metropolitan Glasgow is in line with or above its UK competitors shown in the sample, with the exception of London.

In making any statement about the qualification of the labour force, one has to keep in mind that the institutional settings vary substantially. To gain a comprehensive view of the structure of a workforce's qualifications, it is also necessary to take employees with secondary education into account. Although not highly qualified, their skills and ability to adapt to different workplace requirements substantially improve productivity and flexibility within the production process.

Metropolitan Glasgow is in a competitive position regarding employees with secondary education. Only the German regions (probably due to the formal apprenticeship system there) along with Manchester and Birmingham display slightly higher shares than Glasgow. All of them have lower shares of tertiary-educated individuals.

In this context, it is helpful to regard the sum of tertiary and secondary-educated individuals in total employment. Since the higher tertiary degree includes the secondary degree, it is possible to measure secondary education in a broader sense. Most regions have close to 90 percent of secondary-educated individuals in total employment. There are some exceptions. Boston stands out with high numbers of people educated to both secondary and tertiary education levels, and it heads the list with 98.5 percent. In general, strong national patterns are present in the ranking. Barcelona ranks last with only 50.7 percent. The Italian regions (Turin 56.5 percent, Genoa 59.2 percent) perform somewhat better. The French regions of Lyon and Marseilles reach around 70 percent. The German regions together with Manchester and Birmingham are in the upper part of the ranking due to the high proportion of (only) secondary-educated individuals.

Fig. 34: Share of tertiary-educated individuals in total employment

Percentage in 2003 and average 1980-2003

Source: BAK Basel Economics - IBC Module Innovation

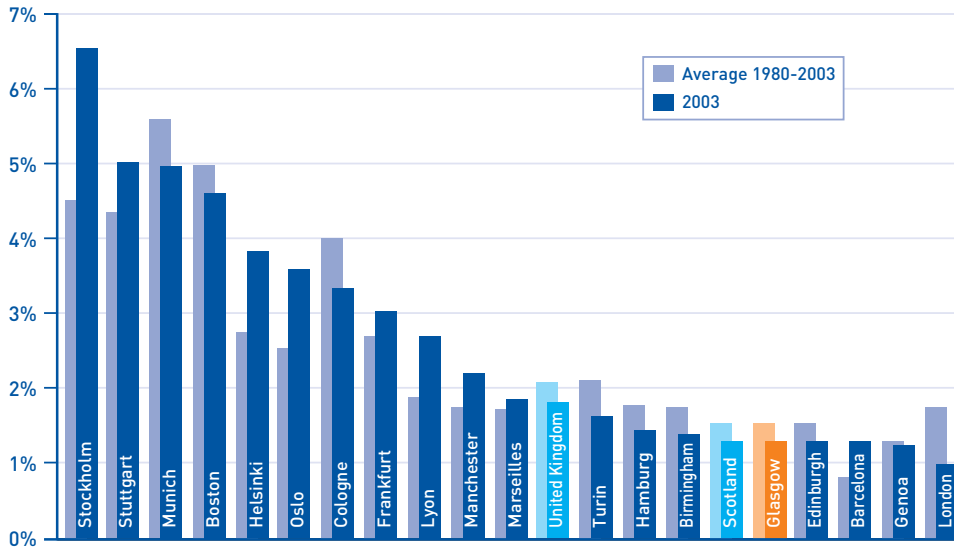
All regions including Glasgow are metropolitan regions.

Not surprisingly, the share of tertiary-educated people in the labour force increased in all regions over the last 25 years. In most regions, the share increased by about 0.5 to 1 percentage points per year, a substantial structural change. Metropolitan Glasgow did even better. Glasgow's average annual increase of 1.14 percentage points is above average. Only Helsinki (1.74 percent) and London (1.43 percent) surpass this achievement. Edinburgh and Boston are close behind with improvements above 1 percentage point annually. On the far end of the distribution are Scandinavian cities like Stockholm and Oslo, which started from a very high level but showed little improvement, as well as the Italian regions, which were barely able to improve on their weak starting positions.

Expenditure on research and development

Expenditure on research and development (R&D) represents a crucial resource for the ability to innovate. The expenditures on R&D are calculated as a ratio of the gross domestic product (GDP) of a region to allow different sized regions to be compared.

Fig. 35: Share of expenditure on research and development in GDP



Percentage in 2003 and average 1980-2003

Source: BAK Basel Economics - IBC Module Innovation

All regions including Glasgow are metropolitan regions.

With a share of expenditure on R&D as a proportion of GDP in 2003 below 1.5 percent, all UK regions in the sample, except Manchester, are located far below the average of all metro regions (2.7 percent). Metropolitan Glasgow’s distance from the regions with the highest share of R&D expenditure is astonishing. In 2003 the amount spent on R&D in the Scandinavian regions, in most of the German regions and in Boston was more than three times that spent in Metropolitan Glasgow (e.g. Stockholm: 6.5 percent).

Even worse, Metropolitan Glasgow’s expenditure in 2003 was slightly lower than its 1980-2003 average. In fact, most metropolitan regions with low 1980-2003 averages of R&D expenditures show an even lower share in 2003. The opposite is true for metro regions with a high 1980-2003 average. Their expenditure in 2003 was, in general, above the average. The gap between the best and the worst performing metropolitan regions has widened.

A further issue makes the position look even worse for Metropolitan Glasgow. R&D expenditure is more important for developing and maintaining industries’ ability to stay competitive than it is for services. In services, expenditure on innovation may not

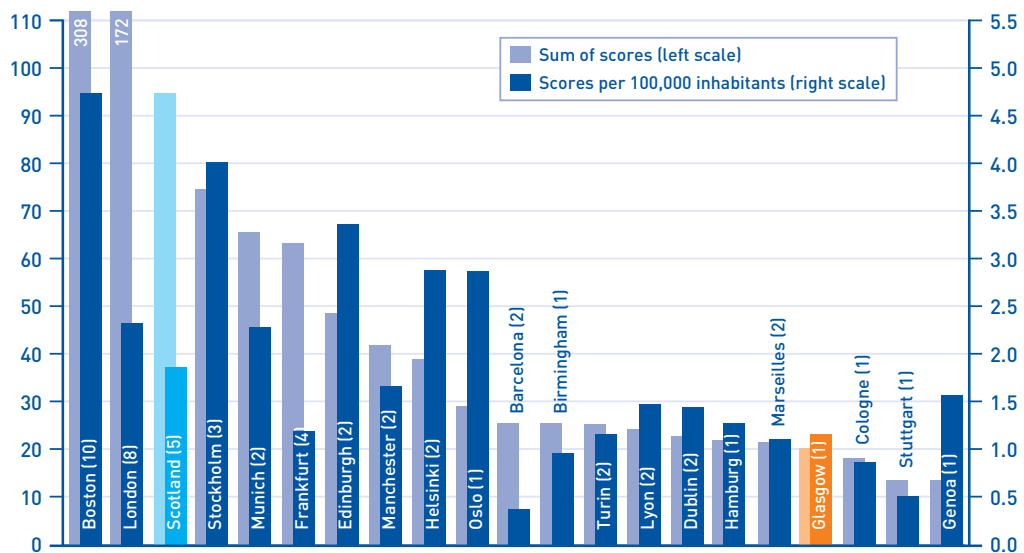
be classified as R&D since it takes place in a different way. A service-focused region like London can allow itself a low R&D expenditure ratio. Metropolitan Glasgow, as shown previously, has an above average emphasis on the Secondary Sector compared to other metro regions, and this, coupled with its industrial structure, makes its low ratio of R&D expenditure even more damaging. Other regions that are also oriented toward Secondary Sector industries such as Stuttgart, Lyon or Manchester perform better than Metropolitan Glasgow.

Quality of Universities

An aspect of quality, used to assess the innovative potential of a region, is the research potential embodied in universities located in a region. An indicator used to measure this potential is the Shanghai Jiao Tong University's 'Academic Ranking of World Universities'. This ranking comprises the 500 best universities in the world and considers, amongst others, sub-indices on publications in journals and the number of Nobel Prize winners. Figure 36 shows the sum of the scores achieved by all universities situated within a region as well as the number of universities. The scores of the regions are also shown as per-capita values for comparison.

Fig. 36: Sum of scores of all included universities in a region

Total score in 2004 and score per 100,000 inhabitants.



Brackets indicate the number of Universities in the region.

Source: BAK Basel Economics - IBC Module Innovation

All regions including Glasgow are metropolitan regions.

The metropolitan regions are ranked in the figure by their total Shanghai Ranking score. Innovative regions need to attract the best researchers and students possible and, in order to attract them, they must become known as prominent centres of learning with a critical mass of high-ranking universities. Building innovative networking structures is facilitated by the number of universities in a region. Not surprisingly, Boston and London rank highest because of their many first-class universities, with Stockholm and Frankfurt also ranking well. Although Metropolitan Glasgow has six higher education institutions including four universities, with only one university included in the Shanghai Index, it is ranked much lower.

Compared to the other regions included in this analysis, Metropolitan Glasgow (1 university) is among the worst performing regions, both in terms of its total score and score per inhabitant. Glasgow achieved 1.17 points per 100,000 inhabitants. It scored lower than Edinburgh (3.37). At the very top of the rankings, Boston (10 universities, nearly 5 points per 100,000 inhabitants) is of the most prominent university locations worldwide. The Scandinavian cities, Stockholm, Helsinki and Oslo, follow closely behind. With two universities, Edinburgh's third place ranking is primarily due to its smaller population as compared to, for example, Munich or Barcelona which also have two institutions. Edinburgh also performs well in the total score.

Metropolitan regions with a score below 2 still have good research potential, but are not among the leaders. They include Italian, French, and most German metro regions as well as Barcelona. Astonishingly, Frankfurt, which has four universities in the ranking and consequently a high total score, does not perform much better from a per capita perspective than Metropolitan Glasgow with only one university.

The benchmarking analysis of the research quality of universities is influenced by two important factors. First, the regional classification is important. More universities can be situated within a region with a large definition. Second, the focus of research strongly affects the ranking. The Shanghai index puts more weight on the natural sciences and a university with a focus on the social sciences consequently ranks lower.

The innovative position of Glasgow

Metropolitan Glasgow is well equipped with human capital. Its workforce offers both a substantial share of tertiary-educated individuals and a large pool of secondary-educated individuals. This combination corresponds well to the share of producing industries in Metropolitan Glasgow, which is higher than the metro average. Even better for Glasgow, the share of tertiary-educated individuals increased at a faster rate than in most other metropolitan regions. This should have increased Metropolitan Glasgow's competitiveness and capacity for innovation. The potential of its human capital and, therefore, of future innovation in the economy would seem promising. Human capital, however, is only one of a variety of factors which must come together to have an impact on potential economic growth.

The findings for research and development (R&D) expenditure should alert Metropolitan Glasgow to the dangers of this situation. Not only is the share of GDP spent on R&D quite low, but Glasgow is also identified as a metropolitan region with a high share of industries in the Secondary Sector (compared to other metro regions). The competitiveness and innovation ability of the Secondary Sector relies much more on R&D expenditure than the Tertiary Sector. R&D is especially important for the New Economy Sector and the Old Economy Sector (see chapter 2). In Metropolitan Glasgow, the Traditional Sector is still relatively strong, while the New Economy sector in comparison performed poorly throughout the last few years. Whether or not the Traditional Sector is sustainable and the New Economy Sector can pick up again to above average growth rates without considerable investment in R&D is questionable. If Metropolitan Glasgow is to remain an above average Secondary Sector driven economy, an effort to increase R&D investment seems appropriate. Alternatively, the shift towards services should be speeded up.

For Metropolitan Glasgow, the Shanghai Index does not show a large potential for growth driven by top scientific results. Although this does not rule out individual successes, the potential within Metropolitan Glasgow seems limited. This is only half the story. As the comparison with Frankfurt shows, results depend a great deal on the boundaries chosen for a metropolitan region. If the Technical University of Darmstadt counts for Frankfurt, it would be appropriate to look at Glasgow and Edinburgh together. The combined regions would achieve a good positioning regarding their total score. Such a view would also have a positive impact on the relative position of Metropolitan Glasgow. Given the strong arguments from everyday observation that the economic 'impact radius' of top research is extensive, such an approach would be justified. A coordinated or even joint policy regarding university development and the transfer of know-how has the potential to increase substantially the economic profits from the research for the two metropolitan regions.

4.2 Regulation

Regulation can correct market failures and compensate for externalities and can thus improve economic performance through better resource allocation. It can also be costly. There are direct costs such as administration and monitoring as well as indirect costs possibly generated by incompatible incentives with negative economic consequences. For example, protecting a market might reduce the pressure to innovate and setting up bureaucratic obstacles could discourage entrepreneurship. From an economic perspective, the most important regulations concern product markets and labour markets.

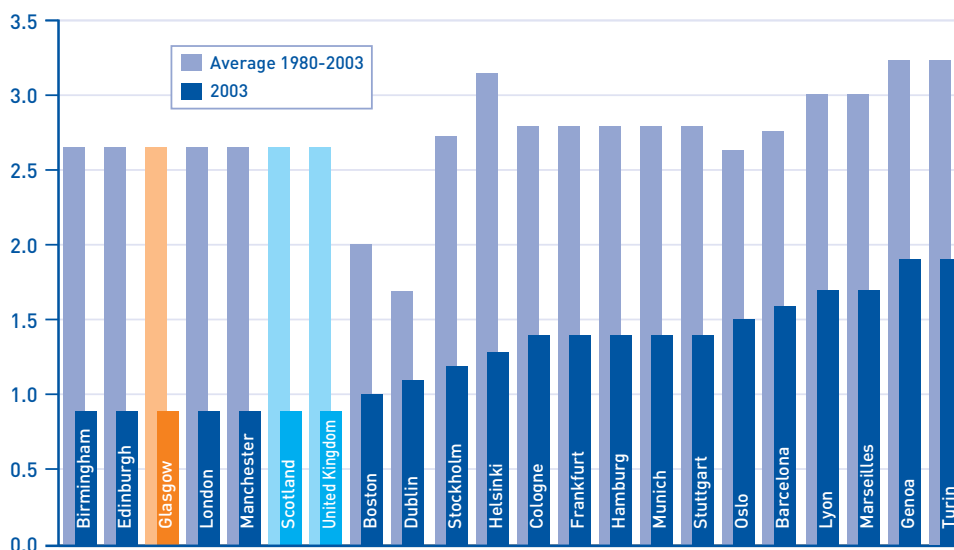
Regulations work through many channels of an economic system and mechanisms are complex. A policy change towards a more liberal system of product markets and increasing competition can lead, first, to more economical, more efficient resource allocation. While this effect results in a one-time shift in productivity, increasing competition can lead to higher productivity growth through enhanced efforts to innovate and faster diffusion of those innovations.

Liberal labour markets allow the optimal use of the labour force potential. Furthermore, a transition to more flexible labour markets can also lead to faster innovation processes. The implementation of innovative developments requires employing people with the appropriate mix of qualifications. Greater flexibility in labour markets means that companies can react to new requirements faster and more cost-effectively. Labour market deregulation can lead to dynamic efficiency gains.

Unfortunately, no general valid and internationally comparable regulation indicator on the regional level is currently available. An international benchmark analysis is restricted to national regulation. Most formal regulations regarding product and labour markets are determined at the national level. Their influence on the regional location quality is significant and they should not be forgotten in an international benchmarking exercise.

Within the sample of regions, Metropolitan Glasgow and the other UK regions show the lowest index numbers for product market regulation (0.9), indicating the most liberal product market regime. Boston (1.0) and Dublin (1.1) have index numbers only slightly higher, reflecting a common product market regulation approach in all Anglo-Saxon countries. The Continental European regions and most of the Nordic regions show a competitive disadvantage with respect to product market regulation with the exception of Stockholm and Helsinki which both show index values similar to the Anglo-Saxon regions. The strongest need for further product market deregulation is found in the French and Italian regions.

Fig. 37: Index of product market regulation



0 = liberal / 6 = restrictive

Source: BAK Basel Economics – IBC Module Regulation / OECD / The Frasier Institute

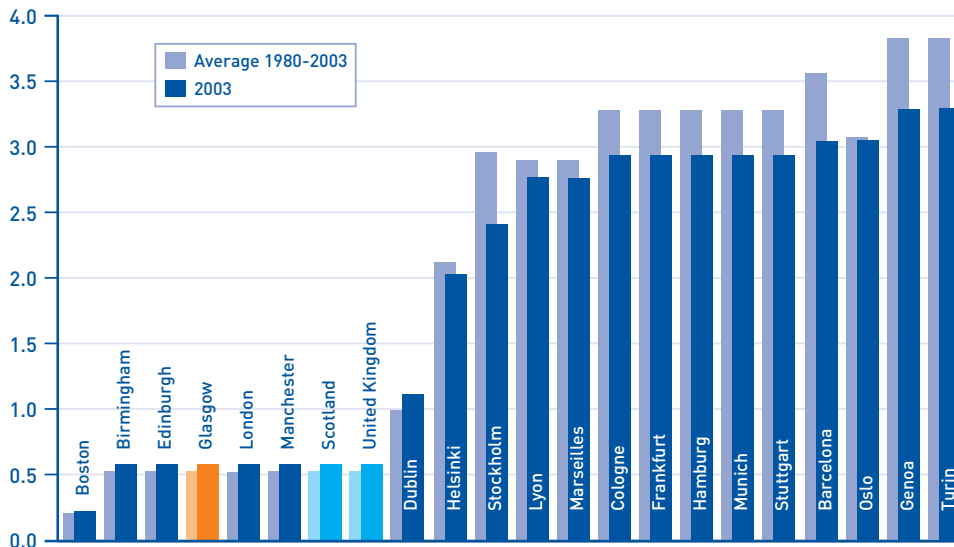
All regions including Glasgow are metropolitan regions.

For further information see Conway, P., V. Janod and G. Nicoletti (2005), Nicoletti, G., S. Scarpetta and O. Boylaud (2000) and Gwartney, J. and R. Lawson (2005).

The progress made in Europe during the last 25 years is impressive. All regions, except Dublin which already had achieved some progress in this area, deregulated product markets substantially. The influence of the EU Common Market programme and its advantages for European regions are clearly visible. Metropolitan Glasgow did especially well in this respect, undergoing an above average deregulation effort to reach the top position in the ranking. This development is common to the UK and is not specific to Metropolitan Glasgow.

Turning to labour market regulation, the Anglo-Saxon regions again differ from the other metro regions covered. The difference is even larger than for product market regulation. Compared to the low index values of Boston (0.2), Metropolitan Glasgow (0.6) and Dublin (1.1), the French (2.7), German (3.0) and Italian (3.3) metro regions show a clear need of labour market deregulation. The poor growth performance of the latter countries in recent years is, to a large extent, caused by low labour input. Deregulating labour markets could lead to rising labour participation and integration of low-qualified employees. The additional resources in the production process would increase GDP growth, although average productivity might be lowered.

Fig. 38: Index of labour market regulation



0 = liberal / 6 = restrictive

Source: BAK Basel Economics – IBC Module Regulation / OECD / The Frasier Institute

All regions including Glasgow are metropolitan regions.

For further information see Conway, P., V. Janod and G. Nicoletti (2005), Nicoletti, G., S. Scarpetta and O. Boylaud (2000) and Gwartney, J. and R. Lawson (2005).

In contrast to the way product market regulation has evolved, the position of the metropolitan regions has not changed much during the last 25 years. Although there has been some movement towards liberalisation, the highly regulated regions have not greatly improved their relative positions. More changes would have been expected as a result of the common EU labour market, increasing labour mobility and political deregulation discussions. There is probably potential for future adjustments.

Combining product and labour market findings, the United Kingdom and other Anglo-Saxon countries are characterised both by extremely open product and labour markets. In contrast to the USA, the UK and Ireland, most Continental European and Nordic countries are characterised by a combination of a fairly liberal system of product markets and tight labour market regulations. When compared with the Anglo-Saxon countries, even their product market is more regulated. It seems the results are driven by a general attitude towards open markets or towards more regulated markets. The lack of broad variations of product market regulation among the EU countries is the consequence of the Common Market programme.

Fig. 39: Indices of product and labour market regulation 2003



0 = liberal / 6 = restrictive

Source: BAK Basel Economics – IBC Module Regulation / OECD / The Frasier Institute

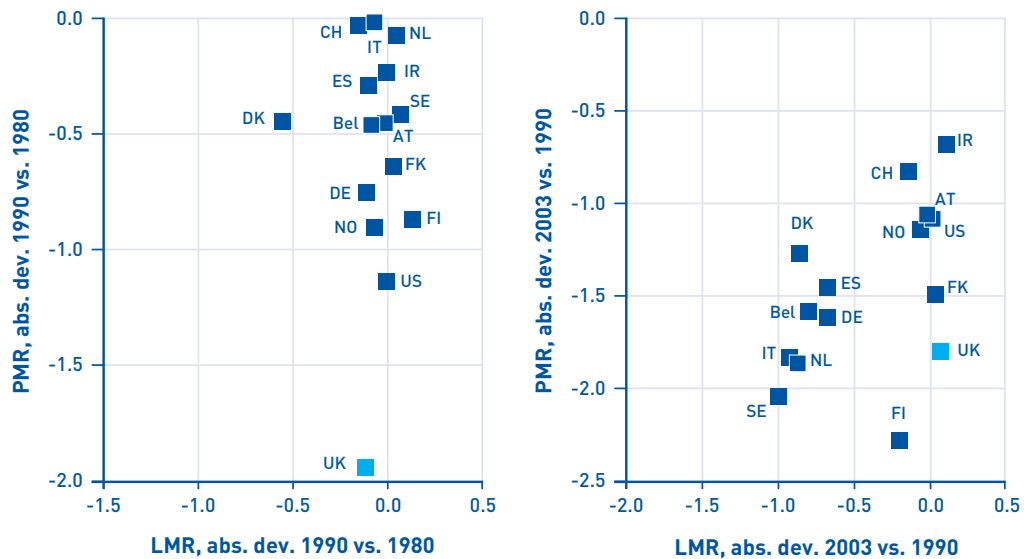
For further information see Conway, P., V. Janod and G. Nicoletti (2005), Nicoletti, G., S. Scarpetta and O. Boylaud (2000) and Gwartney, J. and R. Lawson (2005).

Analysis of regulation shows that the UK has largely improved its competitive framework since the beginning of the eighties. In 1980, the UK had the most restrictive product market regulation in the sample. It successfully implemented, many deregulation measures in the eighties (2 points decrease of the regulation index) and this policy of liberalisation continued during the nineties. Today, the UK has the most liberal product market regime within Western Europe.

Most of the continental European countries only started to follow the UK in the nineties with the liberalisation of product markets, mainly motivated by the single market programme. This deregulation process has led to a convergence in product market regulation levels. The strongest liberalisation effects in the nineties can be observed for Finland (-2.3 index points), Sweden (-2.1), the Netherlands (-1.9), Italy (-1.8) and the UK (-1.8).

Fig. 40: Change in regulation 1980-1990 and 1990-2003
Indices of product (PMR) and labour market regulation (LMR)

positive = more restrictive / negative = more liberal



Source: BAK Basel Economics – IBC Module Regulation / OECD / The Frasier Institute
 For further information see Conway, P., V. Janod and G. Nicoletti (2005), Nicoletti, G., S. Scarpetta and O. Boylaud (2000) and Gwartney, J. and R. Lawson (2005).

Whereas European product market regulation is increasingly harmonised through EU initiatives, labour market regulation is a national domain. In the eighties, there was little observable labour market liberalisation. In the nineties, there was no common trend either, although labour markets became more integrated within Europe and many countries made some effort to liberalise labour markets.

Fortunately for Metropolitan Glasgow, both its product and labour markets are liberally organised. As pointed out already, a liberal regulation system is an important factor for restructuring an economy and for innovative industries. In the service sector, regulation is a key aspect of capacity for innovation. For example, in the financial services sector, overly restrictive regulation can prevent the development of new financial instruments and the subsequent development of completely new branches within the sector.

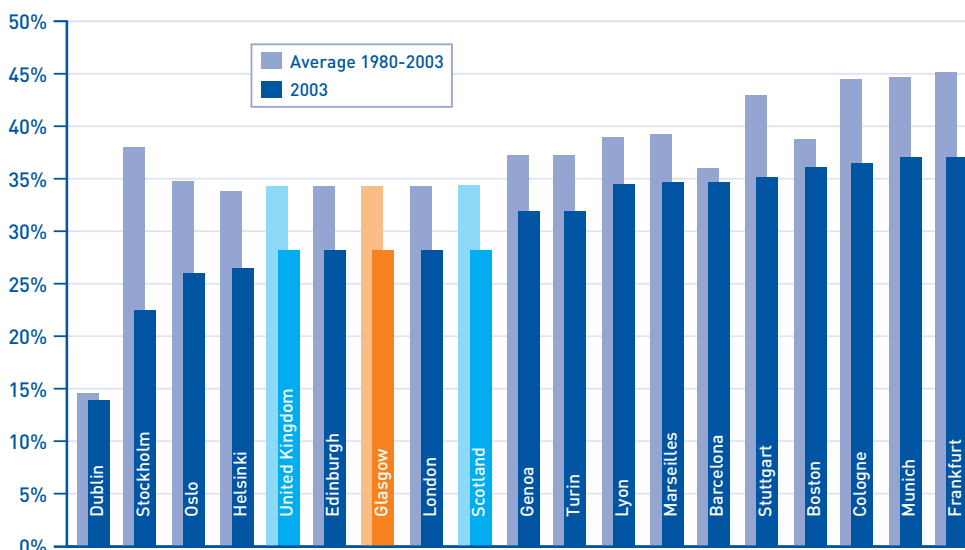
All in all, Metropolitan Glasgow has a competitive advantage over many other metro regions due to the low level of regulation in the UK. This advantage is not guaranteed, however. It has already diminished to some extent with regard to product market regulation and it is expected to diminish further in the next few years. Although the developments are less clear regarding labour market regulation, it is possible that Metropolitan Glasgow could lose ground on its relative position. A keen eye should be kept on the discussions in Germany and France.

4.3 Taxation

Taxation is a key topic for businesses evaluating the attractiveness of a location. In view of intensive international competition for capital, and hence for workplaces, the tax burden on companies is one of the most important policy location factors. A lower tax burden attracts new companies to a location and provides an incentive for existing companies to stay. It increases competitiveness by lowering the tax costs for a company, which in turn allows the company to lower prices.

Company taxation is particularly high on the political agenda, especially in the new EU member countries that follow an aggressively low tax strategy. Tax reform is an issue for all metropolitan regions. In all metro regions of the benchmarking sample, the current level of company taxation is lower than the average during the last 23 years.

Fig. 41: IBC Taxation Index - Companies



Source: BAK Basel Economics - IBC Module Taxation

All regions including Glasgow are metropolitan regions

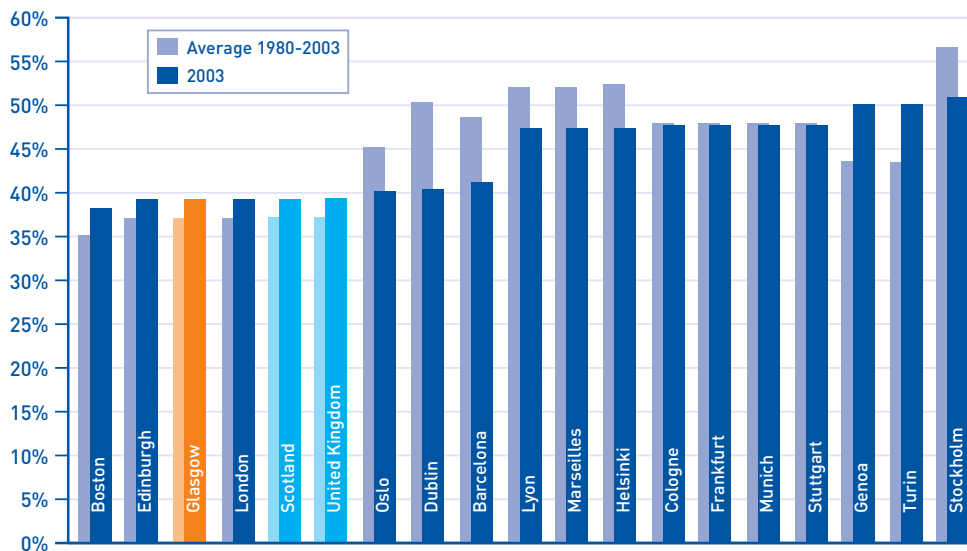
Effective Average Tax Rate as a percentage including all types of direct company taxes. For more details see BAK Basel Economics (2005b), Elschner, C. and R. Schwager (2003) and Elschner, C. and M. Overesch (2004).

The tax burden today, especially in Sweden, Norway, Finland and Germany, is substantially lower than it used to be. The UK, Italy and France follow close behind but less action was taken in the US and Spain. All in all, the relative positions regarding the company tax burden have not changed significantly.

Although Metropolitan Glasgow did not improve its relative position regarding direct company taxation during the last 23 years, it remains competitive, even though some Scandinavian regions now have lower tax levels. Company taxation has been at a low level compared with other metropolitan regions throughout the last two decades. This favourable position is not guaranteed to continue. There is increasing competition from the new EU member countries as well as from the other metropolitan regions included in the benchmarking exercise.

The increasing international mobility of the highly educated and their growing importance in a knowledge-based economy means that income taxation is also an issue in international competition between regions. Employees focus on net available income. Firms competing for them have to bear the tax and social security burdens that vary from country to country. A lower tax burden on highly educated manpower, as well as lower company taxation, makes a region more attractive for companies.

Fig. 42: IBC Taxation Index - Highly Qualified Manpower



Source: BAK Basel Economics - IBC Module Taxation

All regions including Glasgow are metropolitan regions.

Effective Average Tax Rate as a percentage for a highly qualified employee (available income after taxes: 100,000 EURO; single). Taxes include expected tax burden on pensions and social security contributions if mandatory and appropriate (has a tax characteristic). For more details see BAK Basel Economics (2005b), Elschner, C. and R. Schwager (2003) and Elschner, C. and M. Overesch (2004).

The position of Metropolitan Glasgow is again fairly good compared to the other metro regions. Even though the tax burden on highly qualified employees is currently somewhat higher in the UK than the average during the last two decades, only Boston has lower taxes. The distance has decreased between Metropolitan Glasgow and the other regions, especially the French, Spanish and Scandinavian regions. Oslo and Barcelona actually improved enough to switch to the 'Anglo-Saxon Group' regarding the taxation of highly qualified manpower, with tax levels around 40 percent. The remaining metro regions, with tax levels round 50 percent form the 'Continental European Group'.

Income taxation is less of an issue in current public or political debate which means that no common trend is observable. It changes less than company taxation, showing a decrease in some cases and an increase in others. Interestingly, some econometric analyses suggest that nowadays the taxation of highly qualified employees in a region plays a more important role for economic growth, especially for productivity growth, than company taxation^[28]. This empirical finding supports the theoretical arguments that the attractiveness of a metropolitan region for highly qualified persons plays an increasingly vital role in a knowledge-based economy and that firms include income tax burdens into their location assessment.

Fortunately for Metropolitan Glasgow, its position regarding both kinds of taxes is reasonably good compared to other metro regions. This position is not guaranteed and has deteriorated somewhat during the last few years. International discussion shows that international competition for companies and for people with high potential will continue to grow. Income taxation and company taxation are both issues in this competition. Some countries, such as the new EU members, are following more aggressive strategies than others.

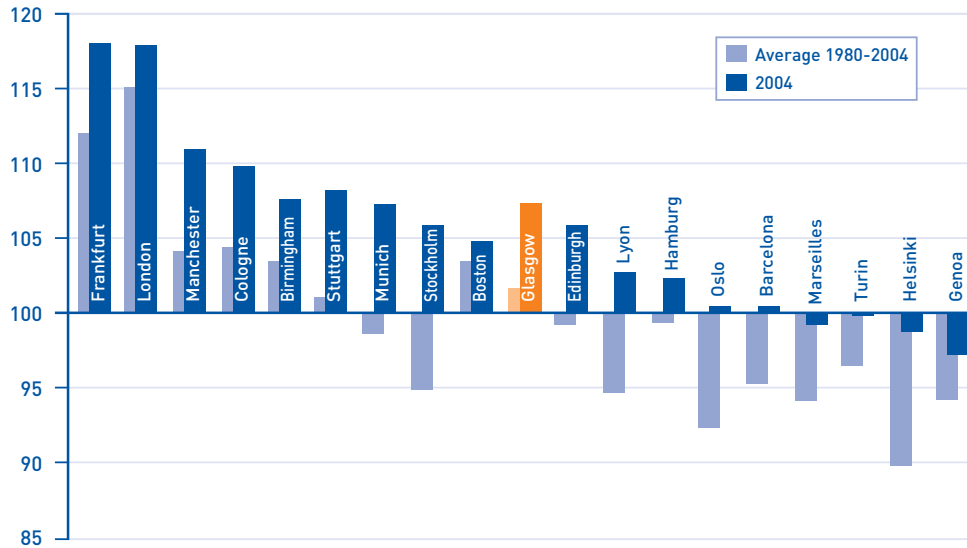
4.4 Accessibility

In an increasingly globalised world, a location's accessibility is an important determinant of the region's ability to participate in the economic growth process. So accessibility is a relevant subject in the discussion of location factors. There are two different indicators of accessibility: global accessibility and continental accessibility. Global accessibility measures the connection of a region to regions on other continents. Continental accessibility measures the connectivity between European regions. This analysis calculates outbound accessibilities, which measures how well other metro regions can be reached from the metropolitan region in question. Accessibility as an indicator of potential encompasses all available opportunities without any time limitation. It weighs the destinations regarding travel time (with a non-linear function) and the GDP of the destination.

[28] See BAK (2005a) and Eichler, Blöchliger, Grass, Ott (2005).

Fig. 43: Global Accessibility

Index (average of the sample 2002 = 100⁽²⁹⁾), and evolution 1980-2004 as a percentage



Source: BAK Basel Economics - IBC Module Accessibility

All regions including Glasgow are metropolitan regions.

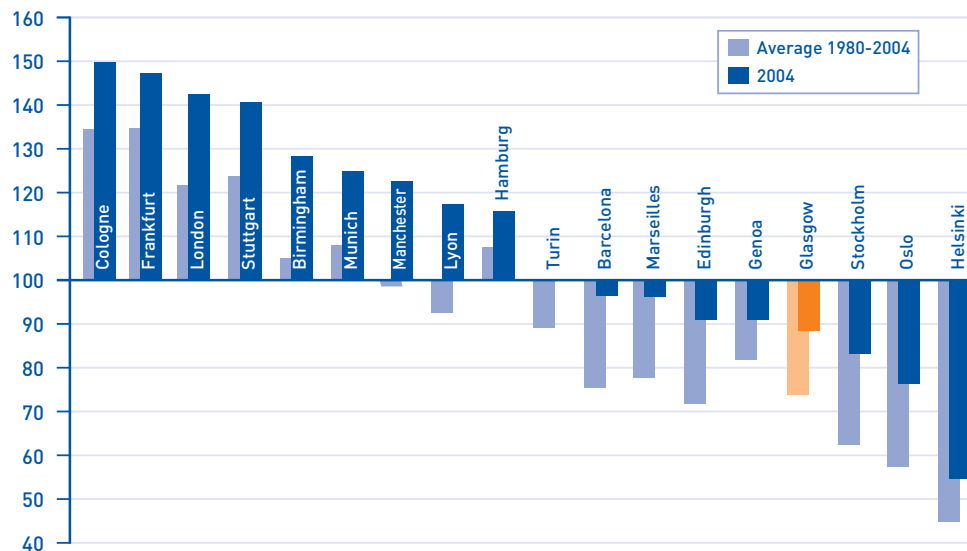
The global accessibility of Metropolitan Glasgow is of average quality. It is less developed compared to Europe’s major metropolitan areas, e.g. London and Frankfurt, but better than that of several medium-sized cities, e.g. Stockholm, Hamburg, Barcelona, Helsinki and Edinburgh. It is not surprising those cities with large intercontinental hubs such as Frankfurt, London, Amsterdam or Paris rank highest regarding global accessibility. Taking that and the geographical location of Metropolitan Glasgow at the northern periphery of Europe into account, the Metropolitan region’s position is a significant achievement.

However, global accessibility of Metropolitan Glasgow only improved by 0.3 percent annually from 1980 to 2004. This is less than the improvements made by most of its competitors such as the Scandinavian or Central European metro regions and even less than the improvement made by Edinburgh.

(29) Please note that the available sample in 2002 consisted of regions from the Alpine area. The comparability of the numbers is not hampered by the index base being drawn from different regional sample.

Fig. 44: Continental Accessibility

Index (average of the total sample 2002 = 100), and evolution 1980-2004 in percent



Source: BAK Basel Economics - IBC Module Accessibility

All regions including Glasgow are metropolitan regions.

The accessibility of Metropolitan Glasgow to the European Continent is not particularly well developed. Glasgow's peripheral geographical location is a major handicap. Overland connections to Continental Europe hardly play a role because distances are too far which means that good air transportation is of crucial importance.

Since 1980, the accessibility of Metropolitan Glasgow has seen an average amount of improvement, yet most of the metropolitan regions with less improvement are more centrally located in Europe. Metro regions which are more comparable to Metropolitan Glasgow in their peripheral location such as Scandinavia and other UK regions (except London) were able to improve their accessibility more than Glasgow.

Generally, the geographical position of a region is important. Although a good connection to a big hub is significant, fast overland connections (railway, road) and a central geographic location are also important. The top positions in the continental ranking are therefore occupied by cities in the economic centre of the European market dominated by the pentagon London-Paris-Frankfurt-Ruhrgebiet-Randstad.

Given Glasgow's geographical location, air connections are essential. In spite of this, Metropolitan Glasgow will probably never achieve a huge comparable advantage in European accessibility. To try to attract businesses which are heavily dependent upon easy and direct travel options for their employees or customers, such as the European head offices of consulting firms, is not a promising strategy.

5. Regional Aspects of the Glasgow Economy

Administratively, Metropolitan Glasgow is divided into a core city and the surrounding metropolitan region. Such political fragmentation is common for most European metropolitan areas and in many cases, is presumed to affect an economic region's development. Metropolitan Glasgow will therefore need to find the right governance mechanisms for overcoming fragmentation and adopt common strategies for the entire economic region. In addition, Glasgow will have to clarify its position vis-à-vis Edinburgh and explore how both cities might combine their strengths to become leading places in the UK and in Europe.

The first section of this chapter looks at the comparison of Glasgow City with Metropolitan Glasgow, giving their similarities and differences an international perspective by comparing them to other metropolitan areas with a core city and a city region. It highlights Glasgow's particular metropolitan development. The second section presents an analysis of Glasgow and Edinburgh that tries to answer the question of whether both cities' economies combined have the critical mass to play a fundamental role in the economies of Scotland and the UK. The third and final section shows the contribution of Glasgow and Edinburgh to the Scottish and the UK economy.

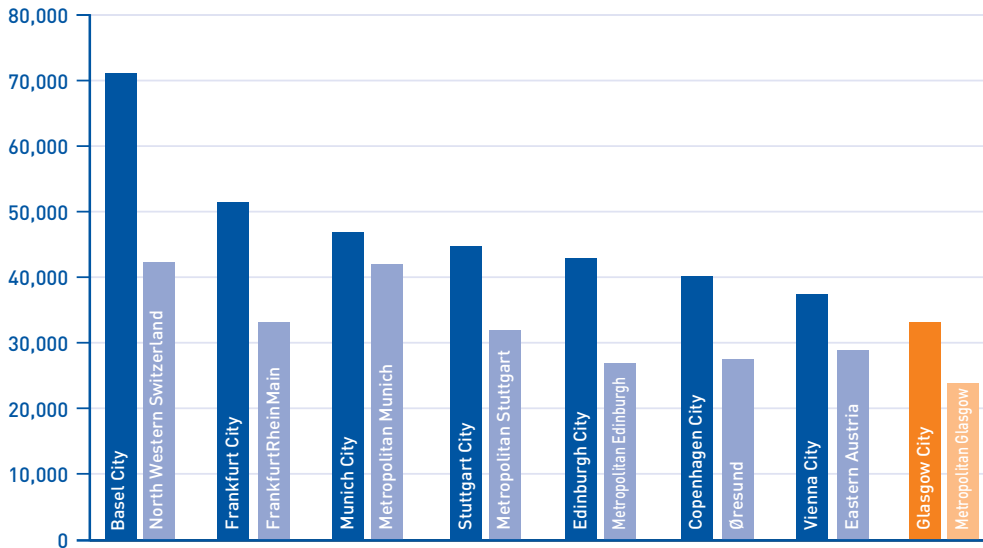
5.1 City and Metro Region: an International Comparison

Cities have long since surpassed their old city boundaries and extended far into the countryside. They form integrated systems called 'functional regions' straddling political borders. Functional regions are most often divided between a core, where economic activities take place, and the surrounding suburban areas. Together they form the metropolitan area. The following section gives an overview of the phenomenon of metropolitan areas and compares the situation in Glasgow with other metropolitan areas in Europe.

In most European metropolitan regions (and probably in North American regions as well), the central city is more productive and has a higher GDP per capita than the surrounding metropolitan area. For some regions, the city's GDP per capita is 50 percent above that for the metropolitan region. The differences reflect the economic and demographic evolution of most European cities. While economic activities are increasingly concentrated in the central areas of a metropolitan region, the population lives in the suburban areas and commutes daily to their workplaces. Highly productive activities are also more concentrated in the central city for economic reasons such as good accessibility.

Fig. 45: Real GDP per capita 2004

in USD (based on USD at 1995 prices and 1997 PPP)



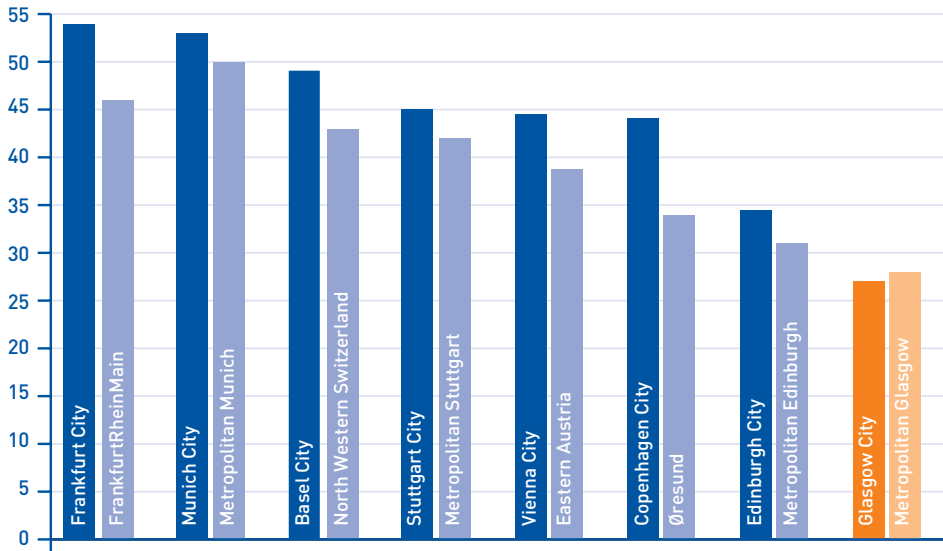
Source: BAK Basel Economics

For all metropolitan areas, GDP per capita is higher in the city than in the surrounding area. The gap is particularly marked in Basel, Switzerland, and Frankfurt, Germany. Both regions are marked by a relatively narrow definition of the city area and an industrial focus in industries that profit highly from density (financial services, life sciences). In Glasgow, however, the GDP gap between City and Metropolitan region is relatively low, pointing to an unusual spatial distribution of economic activities. By contrast, in Edinburgh, the difference between the city and its metro region is significantly higher, which hints at the different spatial and economic developments of the two leading Scottish cities.

Comparing the productivity of the city with the surrounding area reveals the particular position of Metropolitan Glasgow more clearly. While for most metro regions, city productivity is considerably higher than metropolitan productivity, in Glasgow the city displays slightly lower productivity. This productivity 'anomaly' reveals a particular spatial pattern of the Metropolitan Glasgow economy. Unlike most other metro regions, traditional low value added sectors are still located close to the city, while highly productive sectors are locating in places that are more distant from the city centre. Comparing hourly productivity could lead to the conclusion that Glasgow City has, to a certain extent, replaced high productivity manufacturing jobs with relatively low productivity service jobs.

Fig. 46: Real hourly productivity 2004

in USD (based on USD at 1995 prices and 1997 PPP)



Source: BAK Basel Economics

There are several possible explanations for the unusual spatial pattern of economic activities in Metropolitan Glasgow. First, new and highly productive firms could be diverted to the outskirts of the Metropolitan region because of lack of available land in the central parts of the City. Second, a policy of establishing decentralised growth poles could make it beneficial for firms to settle at the fringes of the Metropolitan region. Third, zoning and urban planning may not have kept pace with the conversion of former industrial sites or may even have prevented service sector firms from settling in the City. In view of the peculiar spatial pattern of economic activities, Metropolitan Glasgow may not altogether benefit from density and agglomeration economies and the higher productivity they entail.

Politico-territorial fragmentation could itself hamper economic development. Some economic research hints at a 'fragmentation trap' that can hamper long term growth of politically divided metropolitan areas⁽³⁰⁾. The different political entities may place limits on necessary public services or follow uncoordinated development strategies to the detriment of the entire Metropolitan Glasgow area. Metropolitan governance can help to overcome the fragmentation trap. The UK trend of devolution towards regional and local governments may even accelerate the need for better regional governance. The various political entities located within Metropolitan Glasgow may find it necessary to set up new forms of voluntary coordination and cooperation across political borders on selected policy areas (transport, economic development, urban planning, etc.) or to even set up a more institutionalised and all-encompassing metropolitan government.

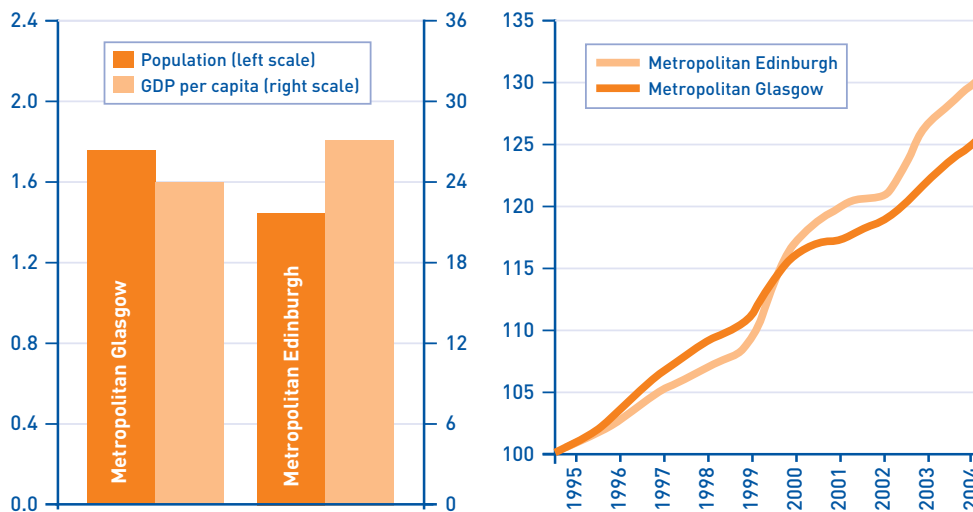
(30) See for example Cheshire and Magrini (2000) and Haughwout and Inman (2002).

5.2 Glasgow and Edinburgh: Combined an Economic Powerhouse?

Glasgow and Edinburgh are the two largest cities of Scotland. In many respects, they are different, in others, they are similar. The following section compares the two cities with respect to size and economic structure and tries to answer the question of whether together the two cities form a stable backbone of the Scottish economy and of the United Kingdom.

Fig. 47: Level of Population and GDP per capita 2004, growth of real GDP 1995-2004

Population in million persons, GDP per capita in 1'000 USD, growth of GDP as index (1995-2004) based on USD at 1995 prices and 1997 PPP



Source: BAK Basel Economics.

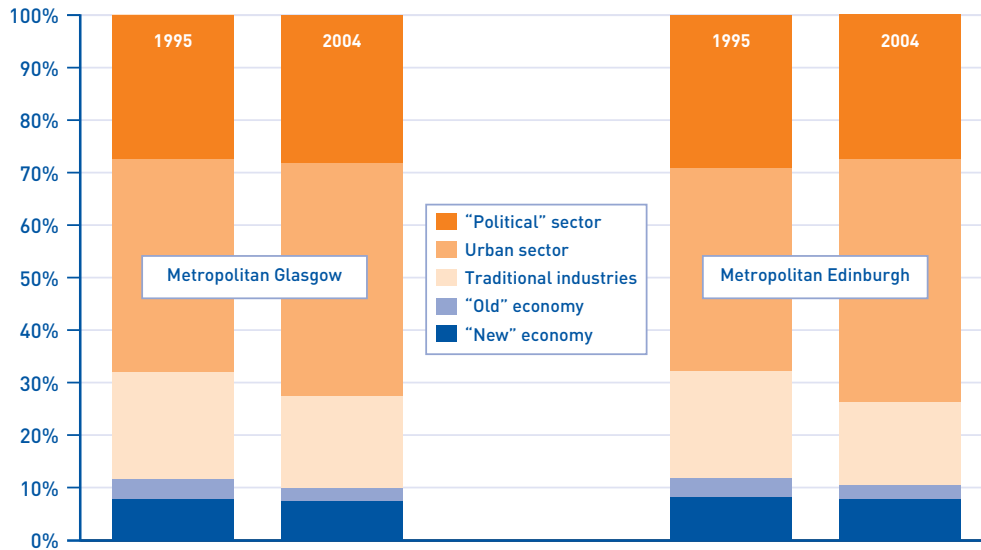
Metro Edinburgh extends far into the countryside, which somewhat exaggerates population numbers.

Of the two cities, Metropolitan Glasgow is larger, while the Edinburgh metro region is slightly richer. This is the result of a comparison of population size and economic power of the two cities. While Metropolitan Glasgow has a population of nearly 1.8 million, the Edinburgh metro region has slightly more than 1.4 million inhabitants. While GDP in Glasgow is around 24,000 USD per capita, the respective value for Edinburgh is 27,000 USD. Growth rates do not systematically differ between the two metro regions: while Glasgow grew a little faster between 1995 and 2000, growth in Edinburgh was higher between 2000 and 2004. The proximity of the two cities tends to level out large GDP per capita growth differences.

Combined, Metropolitan Glasgow and Edinburgh metro region account for 63 percent of the total population of Scotland and 67 percent of GDP. Both cities together form the backbone of the Scottish economy. Both regions also have (though not shown in the graph) higher growth rates than the rest of Scotland. They can thus be considered the powerhouses of Scotland.

Fig. 48: Evolution of the shares of the five Driver Sectors

Share of sectors GVA in regional GVA in percentage points (based on USD at current prices and exchange rate)



Source: BAK Basel Economics

Metropolitan Glasgow and Edinburgh metro region have similar economic structures, as depicted in the figure above, but a closer look reveals some differences. Edinburgh's Urban Sector, particularly banking, insurance and real estate, is more significant than Glasgow's and has a higher growth rate, reflecting the capital functions as well as the fast growing tourism industry. The Traditional Sector in Glasgow plays a more important role than in Edinburgh. Interestingly, the Political Sector, i.e. sectors strongly shaped by state intervention, plays a more prominent role in Glasgow than in Edinburgh, while the New Economy has almost identical significance in both city regions.

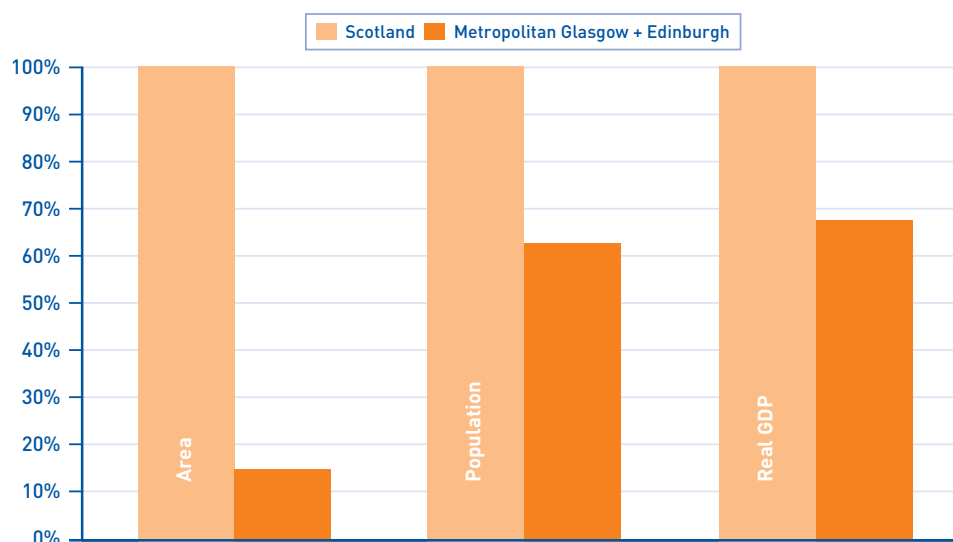
Glasgow and Edinburgh do not yet form an integrated economic area. In particular, the two metropolitan labour markets are still separate; only about 3 percent of the respective metropolitan workforce commutes from the Edinburgh metro region to Metropolitan Glasgow or vice versa. A larger and more integrated labour market could offer more productive and more specialised jobs. Having reached a 'critical mass', the two economies would probably be more balanced, less prone to business cycles and better protected from external shocks, and Scotland's economic potential would increase. In order to achieve this, both Glasgow and Edinburgh metropolitan regions will have to pay more attention to policies fostering integration by coordinating regional economic development and by improving accessibility and transport infrastructure quality.

5.3 Glasgow and Edinburgh: Weight in Scottish and UK Economy

What is Glasgow's and Edinburgh's combined weight in the Scottish and in the United Kingdom economy? What are the growth rates of Glasgow, Edinburgh and both metros combined compared to the growth rates of Scotland and the United Kingdom? The following section compares Glasgow to Scotland and to the United Kingdom as a whole.

Fig. 49: Shares in Scottish economy

in 2004, real GDP based on USD at current prices and exchange rates as a percentage
 (Metropolitan G + E = metropolitan regions of Glasgow and Edinburgh combined)



Source: BAK Basel Economics

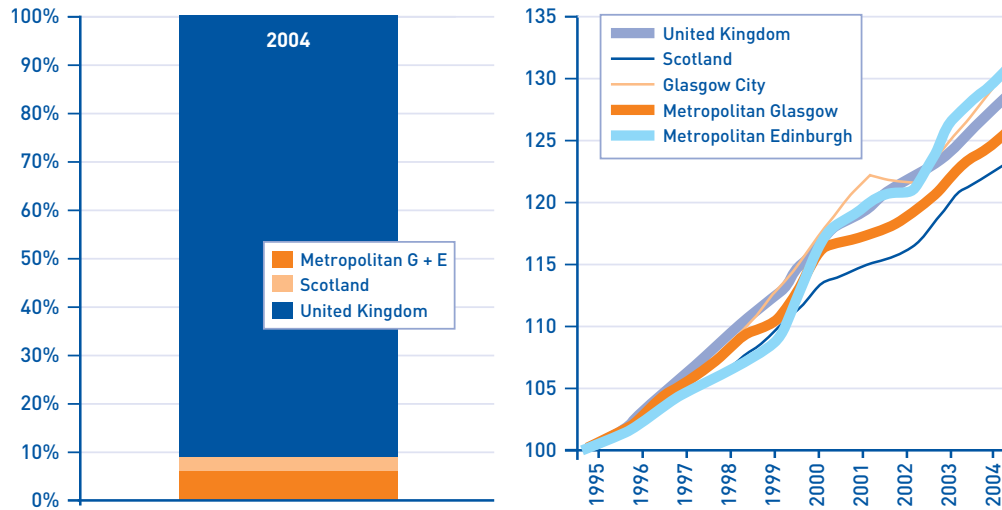
The graph shows the significance of Glasgow and Edinburgh within Scotland. While both metropolitan regions cover only a tiny fraction of the Scottish mainland, more than 60 percent of the population and more than 65 percent of economic power are concentrated there. The cities alone (not shown in the figure) each provide roughly a third of the total economic production of Scotland.

Even with respect to the UK as a whole, the combined Glasgow and Edinburgh economy is significant, making up around 6 percent of the UK economy. Compared to the UK average, GDP per capita is higher in Glasgow City though lower in Metropolitan Glasgow. Scotland's GDP per capita is slightly below the UK average despite the significance of the oil industry. The same picture holds true for growth rates: the UK rate is slightly above the Scottish rate, and the Metropolitan Glasgow growth rate is above the Scottish growth rate.

Fig. 50: Comparing Glasgow and Edinburgh, Scottish and UK economy

shares in real GDP / growth rates

(Metropolitan G + E = metropolitan regions of Glasgow and Edinburgh combined)

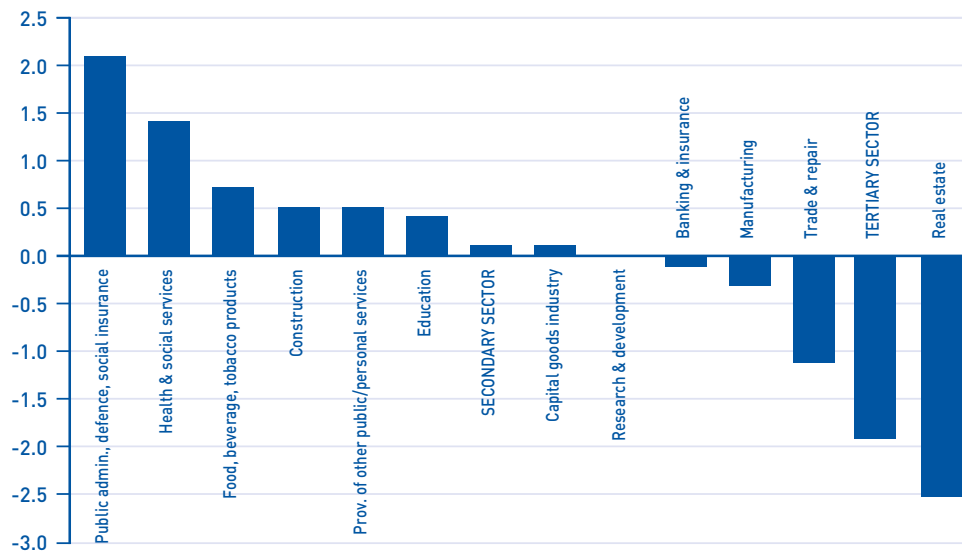


Source: BAK Basel Economics

Finally, the structure of the Scottish economy is compared to the entire UK economy. While the Industrial Sector plays a similar role in Scotland as in the rest of the UK, the Service Sector remains less developed and public administration and health and social services have a larger share in Scotland than in the UK. Scotland, however, has not matched the fast growth of the banking, insurance and real estate sectors in the rest of the UK.

Fig. 51: Deviation of industry's shares between Scotland and the UK

in 2004, in percentage-points (based on USD at current prices and exchange rates)



Source: BAK Basel Economics

6. Glasgow's Strategic Position and Policy Options

Policy makers are focusing on regional growth and regional growth policies for two reasons. First, globalisation has exposed regions to international competition more than countries. Trade statistics reveal clearly the growing openness as well as the vulnerability of regions towards the outside world. Second, most regions have gained in fiscal and regulatory power and have more leeway to shape their own development than they had 15 or 20 years ago. Decentralisation ratios reveal increasing power and responsibility at the regional level. Regional factors and regional policy (or policies at the regional level) are becoming crucial elements in regional and national growth strategies. Regional benchmarking can analyse the regional economic performance and help to shape policy strategies at the regional level. This report analyses the competitiveness and attractiveness of Glasgow in a national and international context. The analysis includes Metropolitan Glasgow as well as Glasgow City and uses more than 20 metropolitan regions in Europe and the US with similarities in size and economic structure as benchmarks.

For Glasgow, two different definitions are used. The first is Glasgow City, the political unit of Glasgow. As the local authority's political responsibility corresponds to this demarcation, this is the most interesting from a political point of view. From an economic point of view Metropolitan Glasgow is the focus of all areas closely tied to the city in terms of commuting, commercial activities and use of retail and leisure facilities. This definition includes Glasgow City, East and West Dunbartonshire, Inverclyde, East Renfrewshire and Renfrewshire, and North and South Lanarkshire and is the focus of attention in the international benchmarking analysis. Only a definition covering the complete functional urban area allows useful conclusions to be drawn from the benchmarking exercise.

To enable conclusions to be drawn for Glasgow City as well, this is analysed separately from Metropolitan Glasgow. Both are compared with each other and to the average of a sample of metropolitan areas and the UK. As is usual for the centre of a metropolitan region, Glasgow City has a higher concentration of workplaces and a higher GDP per capita than Metropolitan Glasgow. This is due to a net inflow of commuters rather than different economic performance. Productivity is at about the same level in both Glasgow City and the Metropolitan Glasgow. This is surprising, as usually productivity is higher in the city of a metro region. Generally, cities are more dense, focus on more productive industries and profit from economies of scale more than the surrounding

metropolitan region. This productivity 'anomaly' reveals a particular spatial pattern of the Metropolitan Glasgow economy. Unlike most other metro regions, traditional low value added sectors are still located close to the city, while highly productive sectors are locating in places that are more distant from the city centre. Comparing hourly productivity could lead to the conclusion that Glasgow City has, to a certain extent, replaced high productivity manufacturing jobs with relatively low productivity service jobs. In Metropolitan Glasgow, as the comparison shows, highly productive industries such as financial and business services are more concentrated in the City. This is also true of public services, which tend to be less productive. Metropolitan Glasgow, compared to other metro regions, has a high share of less productive traditional industries, and a substantial part of these are located in Glasgow City (10% of the City economy, 15% of the Metropolitan region economy). This industrial structure is a major cause of the slightly lower productivity levels in the City.

Benchmarking results at a glance

- Metropolitan Glasgow as a region is catching up with other metropolitan regions. In the past few years, it has had some success in doing so. Most of this is due to the success in generating employment.
- Productivity levels are significantly below other metro regions, and productivity has decreased in recent years. For a highly developed economy, productivity is the competitive driver in a globalising world and a key factor determining the welfare of a region's population. Productivity should be the major issue and focus for Glasgow's economic policy and strategy.
- Glasgow City displays slightly lower productivity than Metropolitan Glasgow. Normally, cities are more dense, focus on more productive industries and profit from economies of scale more than the surrounding metropolitan region. This productivity 'anomaly' hints at an unused density and agglomeration potential.
- Metropolitan Glasgow is well equipped with location factors. Its workforce offers substantial human capital, markets are organised liberally and tax burdens are low. Although not always a Glasgow-specific achievement, Glasgow should be aware of these advantages, value them highly and include them in any strategic assessment. Furthermore, it should be noted that these advantages are not guaranteed in the future.

Metropolitan Glasgow as a region is catching up with other metropolitan regions, most successfully in the past few years. In 2004, the GDP per capita in Metropolitan Glasgow reached 24,000 USD. This corresponds to 73 percent of the average metropolitan region level, which is a significant improvement since 1980, when GDP per capita in Glasgow only reached 64 percent of the metro average. GDP per capita levels are, however, still comparatively low.

This improvement is mainly due to success in increasing employment in the region. Both the increase in the total number of jobs and the associated growth rates were higher than in an average metropolitan region. The employment-to-population ratio also increased considerably. In 2004, it was well above the average of other metropolitan areas as well as above the UK average. As Glasgow improved in relation to the UK, Glasgow's labour market success is not exclusively due to the favourable regulatory environment in the rest of the country.

At the same time, productivity is substantially lower in Metropolitan Glasgow than in other metropolitan regions, and Glasgow has lost further ground over the period of analysis. For a highly developed economy, the level and growth of productivity is a key issue. It is the competitive driver in a globalising world and a factor determining the welfare of a region's population. Glasgow could, to some extent, rely on the employment-to-population ratio as source for growth during a period of catch up. Natural limits exist, however, and in the long run, it is productivity which determines the economic success of a highly developed economy. Productivity performance should be the major issue and focus for Glasgow's economic policy.

The development of the population in Glasgow highlights the difficult situation Glasgow faced in 1980. In most metropolitan regions, population has increased since 1980. The 'renaissance of cities' as places to work and live and better economic perspectives within metropolitan regions are driving factors behind this development. In Glasgow, the population decreased until around 2000. Only in recent years was Glasgow attractive enough to generate a net population growth. Apart from the economic reasons within the region, fewer employment opportunities per inhabitant in 1980 and lower productivity which indicates lower average earnings, the attractiveness of metropolitan mega-regions like London / South East England have influenced the population pattern by pulling population into these areas.

Some of the driving factors behind the above findings can be found in the industry mix in Metropolitan Glasgow. The existing economic structure and the industrial mix are the base any future policy must build on. Without an analysis of the industrial structure and its development, no informed economic policy decisions can be made. As for all developed economies and metropolitan regions in particular, the industry mix has shifted more towards services over the last 25 years. In Glasgow the change has been even more pronounced. It started in 1980 with a higher share of the production sector, notably parts which were less productive and innovative. As a result, Glasgow still has a higher share of this so-called 'Traditional Sector'. This can be found in Metropolitan Glasgow as well as in the City itself and is part of an explanation for the findings regarding productivity.

With regard to future perspectives, the 'Political Sector' is the most unusual feature in the structure of Glasgow's economy. The Political Sector subsumes industries which are at least potentially highly influenced by political decisions. Most important within the Political Sector in Glasgow are public services and health services. The industries in the Political Sector account for nearly 25 percent of the economy in the City and about 30 percent in Metropolitan Glasgow. Both figures are substantially higher than in a typical metropolitan region (20%). The share in this sector has increased in Glasgow since 1980, whilst typically decreasing across the benchmarked metropolitan regions. In some sense, this is a success for Glasgow, as the industries in the Political Sector not only grew, but did so at a higher rate than in the average metro region. Some doubts, however, should be raised as to whether politically driven industries are really a powerful and sustainable source of growth for a metropolitan region.

For a better understanding of future options and more informed decisions, not only should today's economic conditions be taken into account, but also information about the quality of the location. Various location factors are important for future economic growth and the policy development options that could follow. Examples include the human capital available in the workforce, land reserves and natural resources, regulations and taxation, and the regional competence to change these issues. A variety of location factors is included in the benchmarking exercise.

Metropolitan Glasgow is well equipped with human capital. Its workforce offers a substantial share of tertiary-educated individuals, and a large pool of secondary-educated individuals, a combination corresponding well to the above average share of producing industries. The share of tertiary-educated individuals increased more than in most other metropolitan regions over the period of analysis. Glasgow's human capital seems to have potential, but this is only one of a variety of factors determining the regional innovation capacity. The findings for research and development (R&D) expenditures look less optimistic. The share of GDP spent on R&D is lower than in an average metropolitan region, especially compared to regions with a focus on producing industries. This ratio has decreased recently. In Glasgow, the Traditional Sector has a large share of the economy, while the New Economy sector did relatively poorly throughout the past few years. Whether or not the Traditional Sector is sustainable and the New Economy Sector can pick up again without considerable investments in R&D, is questionable. If Glasgow is to remain an economy profiting from an above average share of the producing industries, innovations in these industries are a fundamental prerequisite and efforts to increase R&D investment are necessary. The indicators measuring the research quality of Glasgow's Universities show that the region is not in a bad position, but is not a leading region either. Given that the 'impact radius' of top quality research is large, it is reasonable to look at Glasgow and Edinburgh combined. Taken together, the regions achieve a good position regarding the total amount of top-ranked research potential, and the relative position measured per capita is competitive as well. Assessed in this way, Glasgow can rely on high-quality University research as a source of innovation. A co-ordinated or even joint policy regarding University development and the transfer of know-how has the potential to substantially increase the economic profits for both regions.

Glasgow has a competitive advantage over many competing metropolitan regions resulting from the liberal labour and product markets in the UK. The tightness of labour and product market regulations significantly influences local competitiveness. Liberal labour markets allow the optimal use of the labour force potential and provide the flexibility necessary for fast innovation processes. In the product market, overregulation shelters companies from competition and lowers the incentives to innovate. New business start-up could be stopped by bureaucratic hurdles. Although not a Glasgow-specific achievement, liberal markets are an asset for Metropolitan Glasgow. It should be noted, however, that this advantage is not guaranteed and the relative position of Glasgow has already weakened somewhat, mainly in product markets, where EU harmonisation has forced liberalisation throughout Europe.

A further asset for Metropolitan Glasgow is the low level of taxation, for companies as well as for highly qualified employees. In view of intensive international competition for capital, the tax burden that companies face is key location factor. Today, with increasing international mobility of the highly educated and their growing importance in a knowledge-based economy, the income taxation of highly qualified employees is

just as important as taxation of company profits. Interestingly, and opposite to the mainstream of public opinion, some econometric analyses suggest that the taxation of highly qualified employees currently plays a more important role for economic growth, especially for productivity growth, than company taxation. Fortunately for Glasgow, its position regarding both kinds of taxes is good compared to other metropolitan regions. Although this achievement is not a Glasgow specific but UK-determined, Glasgow can profit from this position and, if possible, try to improve it further. This is all the more necessary as international competition for companies and for people with high potential will continue to grow. Income and company taxation are both issues in this competition, and some countries are following more aggressive strategies than others (e.g. some new EU members' flat tax regimes, etc.).

In terms of accessibility, on an intercontinental scale Metropolitan Glasgow is in a very competitive position due to its proximity to London. In European dimensions, however, its geographical location at the periphery of Europe does not allow such a favourable assessment. Given its air connections, Glasgow is well connected to Europe but can never reach a leading position. Trying to attract businesses which are heavily dependent upon easy and direct travel options for their employees or customers (e.g. the European head offices of consulting firms) is probably not a promising strategy.

Strategic options at a glance

Challenges for strategic economic policy in Glasgow are to increase productivity of the total economy, fostering the structural change and supporting the 'renaissance of the city'. Benchmarking reveals some possible strategic approaches:

- Glasgow is suitably placed to become a Consumer City. Consumer Cities focus on personal services offered locally as well as to an international clientele. Apart from trade and tourism-related activities this also includes education or health services. Already well developed, a variety of factors would support such a strategy.
- Glasgow should be aware of the advantages of the liberal economic setting in the UK, value them highly and include them in any strategic assessment.
- An increased awareness of the importance of Metropolitan Glasgow and institutional settings formalising collaboration and co-ordination, voluntary or binding, could foster growth. This includes co-operation with Edinburgh.
- Efforts regarding the improvement of productivity and industrial structure should put most emphasis on the City, as the city is the driver of the Metropolitan region economy. Furthermore, the 'renaissance of the cities' includes a renewed interest in working and living in the cities which should be encouraged.

To summarise, benchmarking Metropolitan Glasgow against a sample of European and US metropolitan regions reveals a number of weaknesses as well as some optimistic findings. Metropolitan Glasgow lags behind with lower GDP per capita and productivity. The industrial structure shows a greater concentration in production industries which are often less productive, and do not include High-Tech or high value-added services. Since 1980, however, Glasgow has shown a significant improvement with GDP and GDP per capita rising substantially. More impressive is the increase in employment, particularly as the population declined over most of the period. As a consequence, the employment-to-population ratio rose sharply and is today above the metropolitan average as well as the UK average. Furthermore, Glasgow's economy experienced a strong structural shift especially towards services, although it has not yet reached the structural conditions of other metropolitan regions. The positive findings are even more pronounced when a sample of metro regions is used for comparison which had similar starting positions, especially regarding the industrial focus on production industries. Some part of Glasgow's success seems due to its position in the UK and the economically favourable environment there. When comparing Glasgow with other UK or similarly liberal organised regions, Glasgow's success is less impressive, but still observable.

The benchmarking analysis shows impressive successes in Glasgow from a fairly disadvantageous starting position in 1980. It also shows that some of the strategies chosen have been developed to their limits. New directions have to be taken. Three interrelated future challenges are clearly identified:

- Productivity in Glasgow is comparably low and productivity growth is below that of other metropolitan regions. Given that productivity is the key issue that influences the competitiveness of a region and the well-being of its inhabitants, improving the productivity of the Glasgow economy is the key challenge for the future.
- Glasgow has already undergone significant structural change, but there is still some way to go. Further structural changes should support the goal of increasing productivity.
- If Glasgow City is to remain the centre and driver of the Metropolitan region economy, efforts regarding the improvement of productivity and industrial structure should put most emphasis on the City. Furthermore, the 'renaissance of the cities' includes a renewed interest in working and living in the cities. The restoration of the centre should be encouraged.

In addition to these central aims of economic policy for Metropolitan Glasgow, benchmarking reveals some possible strategic approaches to reach the goals.

1. Glasgow, a High-Tech, Business or Consumer City?

Three different industrial emphases for metropolitan regions in highly developed economies have been identified. One option is a focus on a value-added intensive and innovative industry from the production sector. This usually entails a single industry or a few related industries forming an internationally well recognised cluster. Life sciences, car manufacturing or ICT hardware are examples of such industry clusters. A metropolitan region focused in these areas could be called a High-Tech City. Another option is for metropolitan regions to concentrate in business-related services in the financial sector or consulting. This is often called the Business City concept. Finally, the third option could be termed the Leisure City or Consumer City. In this case, the focus is on personal services, not only offered locally but to an international clientele as well. These are tourism-related activities, that can also include culture and sport events, education or health services.

Glasgow's starting position towards the first two options is less than advantageous. For a High-Tech City, Glasgow does not exhibit clear, existing, above average shares of any of the industries in question. There has also been no exceptional growth in these industries in recent years. The New Economy-related industries declined far more in Glasgow than they did on average elsewhere. Finally, the below average (and decreasing) expenditure on research and development in Glasgow raise doubts about the possibility of substantial growth in the near future.

The potential for Glasgow as a Business City is slightly better. Although today's industrial mix does not show a specific concentration, a couple of factors could support such a strategy. First of all, many of the services related to a Business City are fast-growing and highly productive. Second, Glasgow's well educated labour force could support such a development. Finally, the regulatory and tax environment is also appropriate. There are a number of drawbacks to this strategy, however. Glasgow would face huge competition, since many metropolitan regions see themselves as Business Cities and some are much better positioned. There is also the danger that lower value-added and less productive services newly attracted to Glasgow are not sustainable. With ongoing globalisation they could quickly be in danger of outsourcing abroad. With the English language spoken worldwide this threat increases further. Finally, Glasgow's position at the periphery of Western Europe with less favourable accessibility and a lack of critical mass would hamper its development as a business hub. If such a strategy is followed, collaboration with Edinburgh seems an absolute necessity to increase the chances of success.

The prospects for Glasgow to become a Consumer City are much better. It would benefit from a fast growing, highly productive market, providing the services associated with such an approach to an international, worldwide clientele, especially in the areas of education and health services. Already well developed, Glasgow can profit from a variety of factors. Its highly educated labour force as well as the regulatory and taxation framework would support this strategy. Positioning itself as a Consumer City worldwide would be easier than positioning itself as a business location since accessibility and its peripheral position in Europe would not be so critical. A further advantage is the English language which opens up an extensive market, especially as the largest English-speaking competitor, the US, currently faces some difficulties. Combined with surrounding assets (the tourist attractiveness of Scotland generally and Edinburgh in particular) there is potential in such a strategy. If Glasgow manages to join forces with Edinburgh to gain visibility and critical mass, the chances of success are even better.

2. Making use of UK advantages, devolution and local collaboration

Glasgow as part of the UK enjoys a liberal economic setting. Product and labour markets are comparatively open. Tax rates for companies and for individuals are modest. This environment favours innovation and allows the economy to adapt to new demands quickly and easily. Glasgow should be aware of these advantages against the majority of metropolitan competitors, value them highly and include them in any strategic assessment.

At the same time the UK trend of devolving power and responsibility provides more leeway at the local and regional level. This gain of autonomy allows Glasgow to adapt policies to local needs and circumstances. Glasgow could and should use its newly acquired freedoms particularly over public finances and set expenditure priorities for policy areas that favour growth, such as on education and innovation or on infrastructure. It could also lower tax rates in order to attract people and firms.

Metropolitan and regional governance is a challenge to Glasgow. European and US experience shows that collaboration and coordination across local governments or an institutionalised metropolitan government can enhance growth. The analysis shows that from an economic point of view Metropolitan Glasgow should be the focus of policy and strategy. Much of the economic policy still concentrates on sub-regions, however, and an increased awareness of the importance of Metropolitan Glasgow and institutional settings formalising collaboration and co-ordination, voluntary or binding, could foster growth.

This includes co-operation with Edinburgh, which could generate a further boost to economic outcomes. Although locally a competitor, a joint effort could generate the critical mass needed to withstand international competition. Co-ordination of the education and innovation systems between Glasgow and Edinburgh can avoid duplication. A larger labour market could offer more specialised jobs and labour. Having reached a 'critical mass', the two economies would probably be more balanced, less prone to business cycles, and better protected from external shocks. Finally, a combined metro region Glasgow-Edinburgh would without doubt be recognised as Scotland's urban centre. This might help to clarify that it is the economic development and performance of the urban centre that largely defines the well-being of Scotland's population.

3. Continuing urban renaissance?

Glasgow reveals an unusual and peculiar spatial pattern of economic activities. While industrial activities still cover a certain part of the city's economy, the service sector seems to settle more towards new 'growth poles' at the fringes of the metropolitan area. Unlike most other metropolitan areas, productivity is higher in Metropolitan Glasgow than in the City. This hints at an unused density and agglomeration potential. Is a policy for higher density and productivity needed for the city, or will new growth poles at the metro fringes compensate for low productivity in the core of the Metropolitan region? What obstacles prevent highly productive firms from settling in the city? Given that density is generally considered a driver of productivity, strategies for metro-wide spatial development will be a key issue for city growth.

4. Innovation push

Innovation is undoubtedly a key issue for any developed economy that wishes to remain competitive in a globalised world. Innovation and an innovation-fostering environment must always be at the top of the economic policy agenda. For Glasgow, this is even more of an issue, as the findings regarding productivity raise some doubts about its innovation capacities. Policies sustaining and improving the quality and quantity of University research and education are required. Since Universities are not the only source of human capital, consideration also needs to be paid to measures and institutions earlier in the education process and continuous learning. Another way is to import human capital from other regions. Local development can be significantly helped by providing an attractive, welcoming environment for incoming labour, especially highly educated labour, from the UK or from abroad. Other relevant policy areas include regulation and taxation, where incentives to innovate should be promoted. Strengthening the links between business and research institutes may direct resources to more innovative activities. Finally, universities tend to undertake better research if they have greater financial autonomy and incentives.

Metropolitan Glasgow as a region, started from a fairly unfavourable position in 1980 compared to other metropolitan regions, in terms of its economic performance and industrial structure. Although not yet reaching the average level of other metropolitan regions, Glasgow has been successful in catching up. Most of the success in economic performance is due to an increase in employment, although productivity still lags substantially behind the development in other metropolitan regions. Part of this success can be attributed to the UK's liberal economic environment. Glasgow-specific issues, such as the human capital available in the labour force, have also shown improvement.

Challenges for future economic policy in Glasgow are to increase the productivity of the whole economy, encouraging structural change and supporting the 'renaissance of the city'. A strategic option for Glasgow is to move towards becoming a Consumer City, providing personal services locally and to an international clientele. The Consumer City option holds more potential than the Business City option, which faces fierce competition from many other metro regions. The High-Tech City is also less achievable given the lack of a clear industry cluster. An increased awareness of the importance of Metropolitan Glasgow and institutional settings formalising collaboration and co-ordination, voluntary or binding, could foster growth. This includes co-operation with Edinburgh, which could generate the visibility and critical mass needed to withstand international competition. Glasgow should be aware of the advantages of a liberal economic and value them highly. Finally, innovation is undoubtedly a key issue for any developed economy.

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8. Annex: Data Sources and Methodology

8.1 Regions Selected for Benchmarking

Notation	Official name of regions used	Group
Glasgow City	Glasgow City	Anglo-Saxon
Metropolitan Glasgow (‘Glasgow’ in benchmark section)	East Dunbartonshire and West Dunbartonshire, Glasgow City, Inverclyde and East Renfrewshire and Renfrewshire, North Lanarkshire, South Lanarkshire	Anglo-Saxon
Birmingham	West Midlands of England	Anglo-Saxon
Marseilles	Département Bouches-du-Rhône	Continental
Barcelona	Comunidad Autonoma de Cataluna	Continental
Edinburgh City	Edinburgh City	Anglo-Saxon
Metropolitan Edinburgh (‘Edinburgh’ in benchmark section)	Clackmannanshire and Fife, East Lothian and Midlothian, Scottish Borders, City of Edinburgh, Falkirk, West Lothian	Anglo-Saxon
Frankfurt	Frankfurt RheinMain (SK Darmstadt, SK Frankfurt am Main, SK Offenbach, SK Wiesbaden, LK Bergstrasse, LK Darmstadt-Dieburg, LK Gross-Gerau, LK Hochtaunus-Kreis, LK Main-Kinzig-Kreis, LK Main-Taunus-Kreis, LK Odenwaldkreis, LK Offenbach, LK Rheingau-Taunus-Kreis, LK Wetteraukreis, LK Giessen, LK Limburg-Weilburg, LK Vogelsbergkreis, SK Mainz, SK Worms, LK Alzey-Worms, LK Mainz-Bingen, SK Aschaffenburg, LK Aschaffenburg, LK Miltenberg)	Continental
Genoa	Provincia Genova	Continental
London	Greater London	Anglo-Saxon
Cologne	IHK-Köln (SK Köln, LK Erftkreis, LK Oberbergischer Kreis, SK Leverkusen, LK Rheinisch-Bergisch Kreis)	Continental
Manchester	Greater Manchester	Anglo-Saxon
Boston	State of Massachusetts	Anglo-Saxon
Oslo	Oslo, Akershus	Nordic
Munich	Region München (LK Freising, LK Erding, LK Eichstätt, SK Ingoldstadt, LK Neuburg-Schrobenhaus, LK Pfaffenhofen a.d. Ilm, SK München, LK München, LK Starnberg, LK Dachau, LK Fürstentfeldbruck, LK Ebersberg)	Continental
Stuttgart	Region Stuttgart (LK Esslingen, LK Göppingen, LK Ludwigsburg, SK Stuttgart, LK Böblingen, LK Rems-Murr Kreis)	Continental
Lyon	Département Rhône	Continental
Stockholm	Stokholm	Nordic
Turin	Provincia Torino	Continental
Helsinki	Uusimaa	Nordic
Dublin	Greater Dublin Area (Dublin, Mid-East Ireland)	Anglo-Saxon

The Metropolitan Average consists of:		
• Bruxelles/Brussels	• Bouches-du-Rhône	• Zürich
• København	• Rhône	• Espace Mittelland
• Region Stuttgart	• Torino	• Uusimaa (Helsinki)
• Region München	• Milano	• Stockholm
• Berlin	• Venezia	• Greater London
• FrankfurtRheinMain	• Randstad	• Metropolitan Glasgow
• Barcelona	• Oslo og Akershus	• Metropolitan Edinburgh
• Comunidad de Madrid	• Ostösterreich	• Greater Dublin Area
• Ile de France	• Bassin Lémanique	• Massachusetts
• Bas-Rhin	• Basel (BS, BL)	• New York
The Western Europe Average (WE15) consists of:		
• Germany	• Sweden	• Ireland
• France	• Finland	• Luxemburg
• Italy	• Belgium	• Norway
• United Kingdom	• Nederland	• Austria
• Spain	• Denmark	• Switzerland

8.2 IBC International Benchmark Club

The “IBC BAK International Benchmark Club”®, established in 1998, advises governments, administrations, trade associations, foundations and companies at the national and regional level on matters of business location quality and economic policy. The Clubs’ unique database currently covers about 400 regions and up to 64 industry and business sectors and is regularly extended and updated. This database allows the Clubs’ members to assess in detail strengths and weaknesses of their region and to benefit from the experiences of other regions.

Globalisation and decentralisation are challenging the region’s capacity to adapt and improve their competitiveness. It is at the regional level that the pressure to maintain economic growth and social development is felt most. This is why the “IBC BAK International Benchmark Club”® focuses increasingly on the regional level. Benchmarking is a means to compare and assess the multitude of regional location factors and the success of national and regional policy strategies to use their potential. Since regions tend to be more specialised than countries, the “right” set of location factors that satisfies the needs of firms and people is particularly difficult to find. Benchmarking can therefore contribute to develop policy strategies that lead to sustainable economic growth.

The IBC Clubs' database is unmatched in Europe in terms of both regional and sector-specific differentiation and data actuality. The database includes indicators of economic performance as well as quantitative measurement of several location factors and framework conditions. In the remainder of this chapter we provide a short overview on the data available and used in this research and its definitions. For a more comprehensive explanation the reader is referred to the publications of the IBC, especially the IBC report 2005, Part III: Sources and Methodology, from which most of the following is taken.

8.3 Performance Indicators of the IBC-Database

Gross Domestic Product and Value Added

Gross domestic product at market prices is the final result of the production activity of resident producer units. It can be defined in three ways:

- GDP is the sum of gross value-added of the various institutional sectors or the various industries plus taxes but minus subsidies towards products (which are not allocated according to sectors and industries). It is also the balancing item in the total economy production account.
- GDP is the sum of final uses of goods and services by resident institutional units (actual final consumption and gross capital formation), plus exports but minus imports of goods and services.
- GDP is the sum of uses in the total economy generation of income account (compensation of employees, taxes on production and imports minus subsidies, gross operating surplus and mixed income of the total economy).

Value added is defined as the difference between the value of output (= sales plus net increase in stocks of finished goods and work in progress) and the value of intermediate consumption (= the goods and services consumed in the production process). Value added may be calculated in gross or net terms. The data in the IBC database are gross, meaning before deduction of consumption of fixed capital.

Value added may be calculated at basic prices, factor costs, producers' prices or market prices. The 1995 European system of accounts (ESA 1995) recommends valuing output at basic prices or producers' prices. In the IBC database valuation is at basic prices, whenever possible. The only exceptions are data referring to the USA and the American regions. They are valued at market prices.

Basic Prices

The basic price is the price producers can obtain from the purchaser for a unit of goods or services produced as output minus any tax payable on that unit as a consequence of its production or sale (i.e. taxes on products) plus any subsidy receivable on that unit as a consequence of production or sale (i.e. product subsidies). It excludes any transport charges invoiced separately by the producer. It includes any transport margins charged by the producer on the same invoice, even when they are itemized on the invoice.

Factor Costs

Factor costs may be derived from basic prices by subtracting other taxes and adding any other subsidies towards production that are not related to the number of units produced.

Market Prices

Market prices are those paid by purchasers for the goods and services they acquire, excluding deductible value added tax (VAT).

Constant Prices

Valuation at constant prices means valuation of flows and stocks in an accounting period at the prices of a previous period. The purpose of valuation at constant prices is to break down changes over time in values of flows and stocks into changes in price and changes in volume. Flows and stocks at constant prices are said to be in volume terms. In the IBC Database, the basic year is 1995.

Purchasing Power Parities for Industry Comparisons

The use of exchange rates for international comparisons of output and productivity is not adequate for several reasons. One of the major drawbacks of exchange rates is that differences in price levels between countries are not reflected. Moreover exchange rates only deal with prices of tradable goods, and are subject to the impact of capital mobility and speculative movements.

Other than exchange rates, “Purchasing Power Parities” (PPPs) rely on relative prices. Purchasing power parities represent the amount of currency units for a country needed to buy a basket of goods that costs one unit of the currency of the ‘base’ country. For example, if the purchasing power parity for food products in Switzerland equals 2.1 relative to the United States, then a basket of food products purchased in Switzerland for CHF 2.1 costs \$1 in the United States. When the exchange rate is 1.4 francs to the dollar, this means that the relative price level of food products in Switzerland is 50 per cent above the level of the USA.

PPPs can be obtained in two ways. The first method is the “expenditure approach”, which is based on prices for final consumer and investment products. One of the weaknesses of this concept is that there are no PPPs for products, which are only used as intermediate inputs in the production process. Another drawback of the expenditure approach arises with international industry comparisons, because the prices used to calculate the PPPs do not reflect producer prices⁽³¹⁾.

The alternative method is the “industry-of-origin approach”, which develops PPPs by industry and sector. The main advantage of industry-specific PPPs are that they correct for the price of intermediate inputs (“double deflation”) as well as for indirect taxes, subsidies, transport costs and trade margins, so that they are based on ex-factory prices (producer prices). Therefore, in contrast to expenditure approach PPPs, industry-of-origin PPPs refer to the concept of value added.

This approach is followed in the IBC database, which contains industry-specific PPPs for the conversion of value added data. The IBC Database considers purchasing power parities (PPPs) for 29 sectors and 10 countries for the year 1997. The PPPs can be used to compare relative price levels across countries and to convert value added and GDP from national currencies to a common currency in order to compare levels of output and productivity by sector. Industry-specific PPPs are constructed for each sector and each country vis-à-vis the United States. The countries include Austria, France, Germany, Ireland, Italy, the Netherlands, Spain, Switzerland, and the United Kingdom. All PPPs are expressed in terms of national currencies to the US dollar. For international comparisons of output and productivity, PPPs are preferable over exchange rates.

(31) First, expenditure PPPs include wholesale and retail margins and transportation costs. When these margins differ between countries they affect the expenditure PPP but not the producer price PPP. Second, expenditure PPPs include indirect taxes and subsidies, which also vary between countries, and are also not part of producer prices. Third, expenditure PPPs include prices of imports, which do not affect producer prices, but exclude export prices, which are part of producer prices.

Labour / Employment

The European System of Accounts (ESA 1995) introduced a number of measurements of employment in particular:

- employment (= employees and self-employed)
- the number of jobs
- the full-time equivalence
- the total hours worked

The rationale is to find measurements of employment which match output data and hence allow analysis of productivity. The recommended measurement is the total number of hours worked. The IBC-Database contains two measurements of employment:

- total hours worked in order to analyse productivity
- employment for analysing labour participation

The concept of employment is generally used by OECD countries. One exception is the USA: employment data by industry are not available. This means the concept of jobs has to be used.

Employment

Employment covers all persons, both employees and self-employed, engaged in some productive activity that falls within the production boundary of the system.

Employees (in paid employment)

Employees are all persons who work under contract for another resident institutional unit and receive remuneration. They fall into the following categories:

- persons (manual and non-manual workers, management personnel, domestic staff, people carrying out remunerated productive activity under employment programmes) engaged by an employer under an employment contract
- civil servants and other government employees whose terms and conditions of employment are laid down by public law

- armed forces, consisting of those who have enlisted for both long and short engagements and also conscripts (including conscripts working for civil defence)
- ministers of religion, if they are paid directly by a general government or a non-profit institution
- owners of corporations and quasi-corporations if they work there
- students formally committed to contributing some of their own labour to an enterprise's production process in return for remuneration and (or) education services
- outworkers if there is an explicit agreement that the outworker should be paid on the basis of work done. That is to say, the amount of labour contributed to some production process
- persons employed by temporary employment agencies, who are to be included in the industry of the agency which employs them, and not in the industry of the enterprise they actually work for

Self-employed Persons

Self-employed persons are defined as persons who are the sole or joint owners of the unincorporated enterprises in which they work, excluding unincorporated enterprises classified as quasi-corporations.

Self-employed persons include:

- unpaid family members, including those working in unincorporated enterprises engaged wholly or partly in market production
- outworkers whose income is a function of the value of the output of some production process for which they are responsible, however much or little work they put in
- Workers engaged in production undertaken entirely for their own final consumption or own capital formation, either individually or collectively

Jobs

A job is defined as an explicit or implicit contractual relationship between a person and a resident institutional unit to perform work in return for compensation for a specified period or until further notice. That definition covers both employed and self-employed persons.

Full-time Equivalence

Full-time equivalent employment, which equals the number of full-time equivalent jobs, is defined as total hours worked divided by the average annual number of hours worked in full-time jobs within the economic territory.

Total Hours Worked (= Work Volume)

Total hours worked represent the aggregate number of hours actually worked by an employed or self-employed person during the accounting period, when their output is within the production boundary.

Total hours actually worked include:

- hours actually worked during normal working times
- hours worked in addition to those worked during normal working times, and generally paid at higher than normal rates (overtime)
- time spent at the place of work on tasks such as site preparation, repair and maintenance work, preparation and cleaning of tools, and making out receipts and invoices, keeping time sheets and writing-up other reports
- time corresponding to short rest periods at the work place, including refreshment breaks

Hours actually worked do not include:

- hours which are paid but not worked, such as paid annual leave, public holidays, or sick-leave
- meal breaks
- time spent travelling between home and the work place when paid for (construction workers)

Hours Worked per Person in Employment

Average annual hours actually worked per person in employment are defined as the total number of hours worked over the year divided by the average number of people in employment.

Productivity

Hourly Productivity (Output per Hour Worked or Man-hour Productivity).

In the IBC Report hourly productivity is calculated as real value added divided by the total number of hours worked over the year. Hourly productivity therefore is a measurement of labour productivity.

Labour Costs

For most sectors of the economy, labour costs contribute substantially to the overall costs. Firms' decisions about the location for their production are influenced to a great extent by regional differences in the expenses for labour. These are an important factor when measuring international competitiveness.

Labour costs consist of wages and ancillary costs. Direct wages and direct ancillary costs add up to gross wages. Adding indirect additional costs again yields the total cost of labour. The IBC Database uses data on labour costs that have been raised by the national statistical offices. Unfortunately, surveys on labour costs are not conducted frequently, and in most countries labour costs have been collected only twice within the last decade. For this reason, data on gross wages, which are available on an annual basis, are used to extrapolate the labour costs. For recent years, when wages are not available due to a considerable time lag in reporting, wage indices developed by Oxford Economic Forecasting (OEF) for their international industrial model are utilised. In this way, a continuous time series is constructed.

Unit Labour Costs

Unit labour costs are defined as labour costs per output unit. They are calculated as hourly labour costs divided by hourly productivity (which is calculated as annual real value added divided by the total number of hours worked p.a.).

8.4 Location Indicators of the IBC-Database

The IBC database includes not only data covering the economic performance of regions, but also an overview on the position of the regions regarding several location factors. These are organised in separate modules. The following introduces the modules and provides an overview on the information available for the econometric analysis. In some cases, the data were collected specifically for the project and have not been available before. They are described here, as they will form part of future IBC data.

Innovation

The ability to innovate (i.e. access to knowledge) is a central element of a business location's attractiveness. Textbooks on economic theory stress the close relationship between the development of the knowledge base and the creation of wealth. The results of the company surveys carried out repeatedly by BAK Basel Economics within the framework of the International Benchmark Report since 1995 have also underscored the importance attached to innovation by representatives of enterprises e.g. BAK (2003b).

For these reasons, BAK conceived and implemented the initial stage of the "Innovation Module". The studies conducted during the first phase (2000-2001) confirmed the advisability of following the example set by the Massachusetts Technology Collaborative [Massachusetts Technology Collaborative (2002)] in trying to describe and analyse the innovative capabilities of individual regions. This approach addresses the complex phenomenon of the innovative capacities of regional economies by investigating the specific subjects of innovation results, innovation resources and the innovation process itself. Studies for Europe carried out in the past failed to venture below the national level e.g. OECD (2000, 2002a, 2003) and EU Commission (2002). The IBC module on innovations started to fill this gap for Europe on a regional level.

The module provides data on a wide range of innovation indicators. These include among others innovation resources such as human capital, quality and quantity of the production of human capital, R & D expenditure (public and private), venture capital and communication infrastructure. Indicators for the innovation processes include patents, bibliometric indicators and information on business start-up.

Data on the educational structure of the workforce is taken from Eurostat (Labour Force Survey), BFS (Volkszählung 2000 and Schweizerische Arbeitskräfteerhebung) as well as from the U.S. Census Bureau. Data on expenditures on R & D originates from the BFS and Eurostat (Statistics on Science and Technology). The research quality is measured by using the 'Academic Ranking of World Universities' (Shanghai Jiao Tong University).

Taxation

Taxation of companies and highly qualified manpower plays an important role in the competition between regions as business locations and is currently being intensified by globalisation. BAK Basel Economics is conducting a study carried out by the ZEW (Zentrum für Europäische Wirtschaftsforschung, Mannheim) in order to underscore subjective estimates of the tax burdens of different business locations with objective data.

The objective of this IBC module consists in compiling and comparing indicators for the regions and countries. The module is divided into two parts, dealing with company taxation and tax burdens on highly qualified manpower.

Company taxation:

The method applied in this module is the Devereux-Griffith Approach (DG Ap-proach). It calculates "effective average tax burdens" in addition to "effective marginal tax burdens" (i.e. the tax burdens borne by capital projects whose return on investment is just high enough to be deemed worthwhile to investors). The effective average tax burdens are defined as the tax burdens on projects that yield returns greater than the minimum return. They take a set of different kinds of investment goods (e.g. machines, industrial buildings, financial assets) as well as different ways to finance the investment (e.g. profits, shares, credits) into account. National, regional and local taxes are included in the calculation.

Tax burdens on highly qualified manpower:

A traditional way of comparing the fiscal attractiveness of regions competing with one another internationally is to concentrate on the tax burdens borne by mobile capital and mobile companies. Lately this approach has been broadened by paying increasing attention to the mobility of employees, especially those with excellent qualifications. Local governments like to see such highly qualified people moving in, because they do not need social support services. Several surveys have shown that companies competing for the best-qualified job applicants are also interested in the level of taxation and other charges levied on these potential employees at the location in question. In the module the average tax burden on a typical highly qualified employee is calculated, taking into account not only all direct taxes on salary and other benefits, but also social security contributions in as far as there is no market identical return. This can be calculated for different level of available net income (50,000, 100,000, 200,000 EURO), different family settings (single, married with 2 children), or different pay-packets (normal, old age-oriented, incentive-oriented). The assumption can also be varied (pensions and all social security contributions are market equivalent).

Accessibility

Transport infrastructure plays an important role in the development of regions. According to economic theory, regions with well-established access to markets are more productive, more competitive, and hence basically more successful than regions with less developed access possibilities. This can be attributed to the lower transport and time costs borne by enterprises and individuals in easily accessible regions. Such lower costs allow a division of labour between regions and thus regional specialisation, which entails economies of scale and benefits of specialisation. In an increasingly globalised world, the part a region can play in economic growth depends mainly on its Accessibility. This is why the improvement of regional Accessibility has a high priority in the European Regional Development Fund (ERDF), one of the four structural funds of the EU.

Accessibility is a complex term. Before specifying indicators, Accessibility measurements need to be clarified. Accessibility analysis works on a combination of travel costs with structural data of locations. Two measurement components are necessary:

- Activity of regions (population, places of work, GDP, etc.)
- Impedance (geographical distance, travel cost, travel time, etc.)

Accessibility values are calculated from activities and impedances according to special functions:

- Specifications Focus on Accessibility requirements of companies and institutions
- Access to input and goods markets (activity)
- Only Accessibility of people
- Travel time as impedance measure
- Modes: road, rail and air

Separate views on intraregional, interregional and intercontinental Accessibility are necessary. An indicator for intra-regional Accessibility could be the highly qualified manpower within 60 minutes commuting distance. Infrastructure measures like bus stops or measuring actual average travel times can also be used. Until recently, data could only be calculated for a few model regions and these indicators cannot be used in the econometric part of the project.

The interregional indicator focuses on access to the European market available to clients, suppliers, partners, and advanced business services. Activity values are economic potential, level of advanced producer services, level of research, prominence as conference cities, etc. Impedance values are calculated on the basis of the fastest daily connection using all modes.

The focus in intercontinental Accessibility is on the worldwide contacts within the corporate group, the cooperation with partners, the Accessibility of trade fairs and conferences and also the access to worldwide clients and suppliers. Activity values of destination world cities are based on economic activity, density of headquarters, density of multinational companies and organisations, prominence as conference cities, etc. The calculation of total travel time takes into account access time to the intercontinental hub and the time spent at the hub.

Regulation

What is the optimal level of public regulation? Regulation corrects market failures and compensates for externalities. On the other hand regulation is costly. There are direct costs like administration and monitoring. There are indirect costs as well, e.g. incompatible incentives or government failure. The optimal level of regulation cannot be determined theoretically and empirical studies have to be used to attempt to answer this question.


Regulations work through many channels of an economic system, and the relationship between regulation and growth is complex. The two indicators used in this project were limited by data availability and the wider focus of the complete study. One is for product market regulation and one for employment protection.

The indicators are based on the OECD regulation database. The two indicators used are a summary of a wide range of regulation indicators collected by the OECD, weighted according to the results of a factor analysis. The individual indicators include among others economic regulation concerning market access, the use of inputs, output choices, pricing and international trade and investment; administrative regulation i.e. the interface between government agencies and economic agents including means for communicating regulatory requirements to the public as well as compliance procedures; and employment protection legislation (EPL) for regular as well as temporary employment contracts.

The OECD-regulation database contains indicators for the years 1990 (Labour Market Regulation), 1998 (Product and Labour Market Regulation) and 2003 (Product Market Regulation). To add variation in the time dimension, OECD time series information on the product market regulation in several industries have been used as well as data from the Frasier Institute (the so called CATO-Indices) to build up a time series for labour market regulation. The CATO regulation index follows an approach similar to the OECD, and a cross section comparison yields similar country ratings.

Population

Population and population growth is often related to economic development. Although the causality of the relationship is not clear, it is useful to take population into account when analysing economic performance. In the IBC a variety of population data is available. Separate information is included on gender and age. Age is split in groups according to possible labour market participation, covering from birth to age 15, from 16 to 64 and 65 and older. As the geographical size of the regions is also included in the database, population density can be calculated, for the complete population as well as for sections of the population according to gender and age group.



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