

Brussels Metropolitan Region Benchmarking Analysis 2007

Imprint

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Contents

1	Introduction	4
	Cities as nodes in global networks	4
	Benchmarking cities and regions	4
	The concept of functional city regions	5
	Defining the Brussels Metropolitan Region.....	5
	Choosing international benchmarking regions.....	6
	The key industries	8
2	The Brussels Metropolitan Region.....	10
3	Brussels Metropolitan Region under the International Benchmarking Lens	19
3.1	Economic Performance.....	19
3.2	The Driver Sectors	29
3.3	The BMR's Key Industries.....	36
4	The Benchmarking of Location Factors	57
4.1	Innovation Resources	57
4.2	Regulation	66
4.3	Taxation.....	68
4.4	Accessibility.....	71
5	Summary and Conclusions	73
6	References	76
7	Appendix	77
7.1	Detailed definition of the benchmark regions.....	77
7.2	The principle of the driver sectors.....	78
7.3	Data Sources	83

Figures

Figure 1-1	The Brussels Metropolitan Region.....	6
Figure 1-2	The Benchmark Regions	8
Figure 2-1	Growth of real GDP, Employment and Population, Brussels Metropolitan Region	10
Figure 2-2	Growth of real GDP, Employment and Population, Brussels Capital Region.....	11
Figure 2-3	Growth of real GDP, Employment and Population, Brabant Walloon and Halle-Vilvoorde	12
Figure 2-4	Share of the five driver sectors in nominal GDP.....	13
Figure 2-5	Share of the five driver sectors in total employment.....	14
Figure 2-6	The BMR's five driver sectors 1980-2000, 2000-2006	16
Figure 2-7	Share of the ten key industries in nom. GDP	17
Figure 2-8	The BMR's ten key industries 1980-2000, 2000-2006	18
Figure 3-1	Population 2006.....	19
Figure 3-2	Growth of population 1995-2000, 2000-2006	20
Figure 3-3	Growth of real GDP 1995-2000, 2000-2006	21
Figure 3-4	Nominal GDP per capita in 2006	22
Figure 3-5	Growth of real GDP per capita 1995-2000, 2000-2006	23
Figure 3-6	Growth of employment 1995-2000, 2000-2006	24
Figure 3-7	Growth of real GDP and employment 1995-2006 p.a	25
Figure 3-8	Nominal employment productivity 2006.....	26
Figure 3-9	Nominal hourly productivity in regions (large pillar) and corresponding countries (small pillar) 2006.....	27
Figure 3-10	Growth of hours worked and real hourly productivity	28
Figure 3-11	Urban Sector: Contribution to real GDP growth 1995-2006	30
Figure 3-12	Urban sector: Contribution to employment growth 1995-2006	31
Figure 3-13	Political Sector: Contribution to real GDP growth 1995-2006	32
Figure 3-14	New Economy: Contribution to real GDP growth 1995-2006	33
Figure 3-15	Traditional Sector: Contribution to real GDP growth 1995-2006	34
Figure 3-16	Old Economy: Contribution to real GDP growth 1995-2006.....	35
Figure 3-17	Business services excluding real estate: Contribution to real GDP growth 1995-2006	36
Figure 3-18	Business services excl. real estate: Contribution to employment growth 1995-2006	37
Figure 3-19	Banking and insurance: Contribution to real GDP growth 1995-2006.....	38
Figure 3-20	Banking and insurance: Contribution to employment growth 1995-2006.....	39
Figure 3-21	Real estate: Contribution to real GDP growth 1995-2006	40
Figure 3-22	Knowledge services: Contribution to real GDP growth 1995-2006	41
Figure 3-23	Transport: Contribution to real GDP growth 1995-2000	42
Figure 3-24	Transport: Contribution to real GDP growth 2000-2006	43
Figure 3-25	Transport: Contribution to employment growth 1995-2006	44
Figure 3-26	Health and social services: Contribution to real GDP growth 1995-2006	45
Figure 3-27	Health and social services: Contribution to employment growth 1995-2006.....	46
Figure 3-28	Hotels, restaurants, entertainment, culture and sport: Contribution to real GDP growth 1995-2006	47

Figure 3-29	Hotels, restaurants, entertainment, culture and sport: Contribution to employment growth 1995-2006	48
Figure 3-30	Chemicals and chemical products: Contribution to real GDP growth 1995-2006	50
Figure 3-31	Interest groups and other associations : Contribution to real GDP growth 1995-2006	52
Figure 3-32	Precision and optical equipment, watches: Contribution to real GDP growth 1995-2006	53
Figure 3-33	Trade and repair: Contribution to real GDP growth 1995-2006.....	54
Figure 3-34	Trade and repair: Contribution to employment growth 1995-2006	55
Figure 3-35	Postal service and telecommunications: Contribution to real GDP growth 1995-2006	56
Figure 4-1	Share of highly qualified and not qualified employment in total employment 2006.....	58
Figure 4-2	Share of expenditure on R&D in nominal GDP 1995 and 2004	60
Figure 4-3	Patent density (patents/1'000'000 inhabitants).....	61
Figure 4-4	The research quality of universities 2006	63
Figure 4-5	Number of academic publications and number of academic publications per 1'000'000 inhabitants 2006	64
Figure 4-6	Academic publications per sector 2006	65
Figure 4-7	Regulation of labour markets and product markets 2004.....	67
Figure 4-8	Company taxation and taxation of highly qualified* manpower 2007	69
Figure 4-9	Company taxation 2005 and 2007	70
Figure 4-10	Global and continental accessibility 2006.....	72

1 Introduction

Cities as nodes in global networks

Cities have become crucial actors in today's integrated world. Historically, cities have often played important roles as drivers of economic development, but, in the second part of the last century, many lost their attractiveness and dynamism. Today, one can again speak of a revitalisation of the function of cities as motors of a globalized economy. One indicator of the increased economic importance is the on-going urbanization process not only in the Third World, but also in cities within highly industrialised countries.

One main driver for this regained importance of cities is the process of globalisation, together with an augmented and internationally organised division of labour. "The current round of globalization is characterized by places selectively functioning as nodes within global networks" (Felsenstein et al. 2002), describing the regained importance of cities. Also, the path towards the knowledge driven economy goes along with increasing advantages of density, an asset specifically offered by cities.

How successful are cities in their function as nodes in the worldwide economic network? Are they competitive in the long run? What kind of factors play a crucial role and how can those factors be influenced and improved? To foster economic growth and to maintain regional prosperity, it is important for cities to become aware of the special role they play in the global economy and to know their deficits and strengths very well. An International Regional Benchmarking as provided by BAK Basel Economics can help a region evaluate its position in international competition, assess its strength and weaknesses, and shape its future strategic development and policy.

Benchmarking cities and regions

Benchmarking is understood as a process that leads to the identification of different benchmarks and to the comparison of the focus region to those benchmarks. The explicit aims of benchmarking are to identify the best performer, to enumerate the differences between the best and the rest and to clarify which factors make the best so successful. At the end, the gained knowledge is transferred into reality, e.g. into politics and policy decisions. The method of International Regional Benchmarking applied by BAK Basel Economics is to define the best regions which should be compared (city regions, metropolitan regions) and then to identify the 'best performers in a peer group of regions' following a set of criteria such as size, population density, economic structure, innovation degree, geographical location or other certain particularities (e.g. harbour cities, capitals, financial centres, etc.).

This report is the result of an international Regional Benchmarking of the Brussels Metropolitan Region produced by BAK Basel Economics on behalf of the Flanders' Chamber of Commerce and Industry and the Union des Entreprises de Bruxelles. It is meant to contribute to the discussion of the strengths and weaknesses of Brussels and its future development opportunities as one of Europe's leading metropolitan regions.

The concept of functional city regions

To achieve a high quality of regional benchmarking, it is essential to choose the right definition of a region, a parameter in which economic actors cooperate; workforce flows and new ideas pass the innovation chain to saleable products.

Today, a city relies more than ever on its economic surrounding areas. Like in the late Middle Ages, there is mutual support between the core city and its surrounding areas. However, in contrast to the sectoral split in former times, today the core city can provide those areas with high quality jobs, higher education infrastructure like universities, efficient public transport infrastructure, cultural facilities (theatres, museums) and other lifestyle amenities. On the other hand, the surrounding areas provide places to live for the people working in the city, areas for production or for down streamed functions that don't find space in the city's dense core.

Often administrative and political responsibilities differ widely from these functionally defined and interrelated regions. This is especially true for large metropolitan regions in Europe, where political regions are usually smaller than functional relationships.

The cooperation and interplay between economic actors as well as policy makers is therefore essential for the success of a functional interwoven area. In the following report, this area will be called a **metropolitan region**, consisting of the core city itself and the functionally associated surrounding areas that heavily depend on one another.

There are three main standard approaches for defining functional city regions:

- The US Metro area concept, which has a long period of development and is therefore well established (also in Canada). Disadvantage: the thresholds used are, due to the different historic evolution, hardly transferable into the European context
- The GEMACA approach, which was done for many European countries and therefore fits for the European context. Drawback: not extended beyond Europe.
- The Urban Audit Larger Urban Zones (LUZ), which covers most of Europe. Disadvantage: Definition is too much based on local judgements, not on the economic reality.

All of these different functional approaches have two things in common. They define a core city region and an area of commuting containing people that regularly travel into the core.

To foster long term economic growth and innovation it is very important for a city region to understand and define itself as one (functional) entity. Also a common identity, which is often underestimated with regards to economic behaviour, can more easily be created with a common definition.

To ensure data availability, it is suggested to define structural or functional regions alongside administrative borders.

Defining the Brussels Metropolitan Region

Given the above discussion, defining the Brussels Metropolitan Region as the administrative region Brussels Capital Region (NUTS1) would not be appropriate. Instead, a broader definition taking commuters and other economic links into account has to be used. The definition is

restricted by administrative units for which data is available at actable quality and costs; in the case of Brussels that meant sticking with Arrondissements (Nuts 3). This resulted in a definition of the Brussels Metropolitan Region (denoted as BMR) consisting of three administrative units: the Brussels Capital Region (Nuts 1), Brabant Walloon (Nuts 2) and Halle-Vilvoorde (Nuts 3) (fig. 1-1).

Figure 1-1 **The Brussels Metropolitan Region**



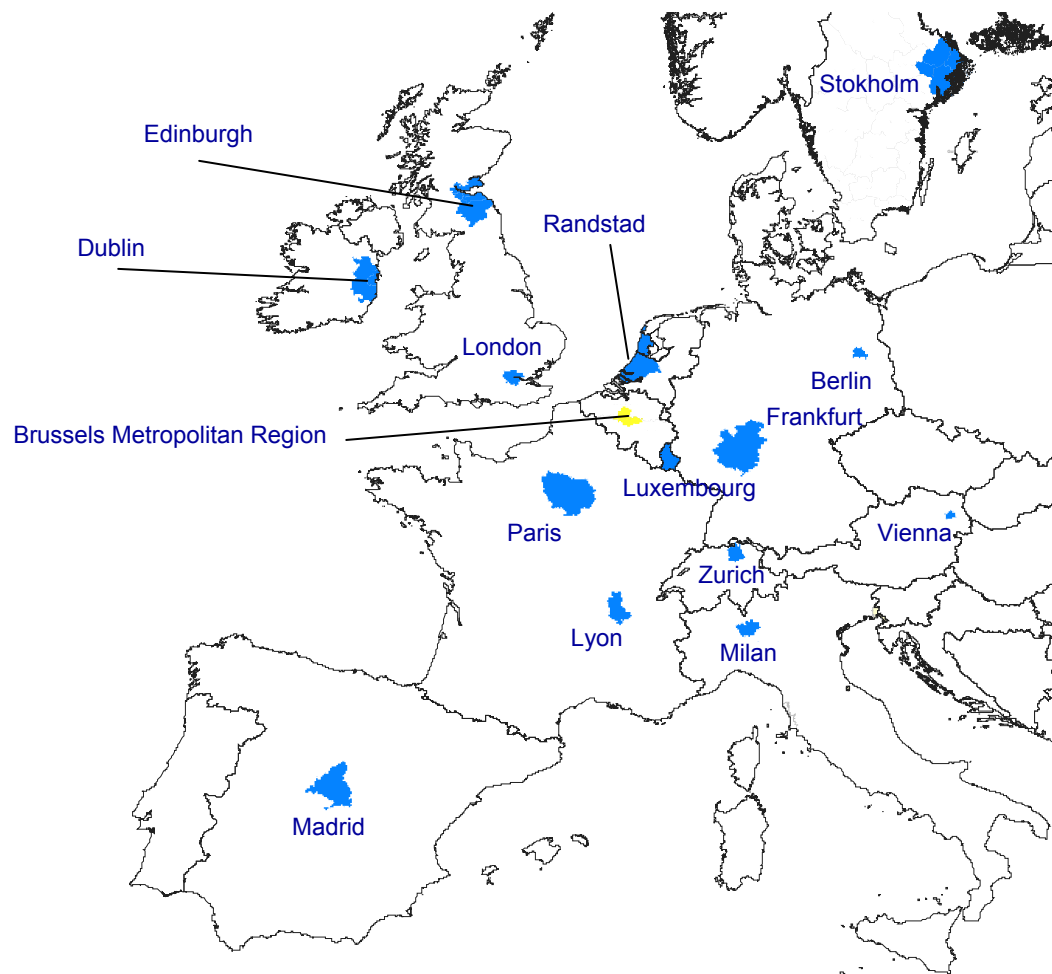
Choosing international benchmarking regions

Averages provide much information, but they can mask important information as well. There are regions performing far better than the metro average, and other regions performing much worse. Under such circumstances, even if the BMR performs better than the average, it can still learn from the top performing regions. Furthermore, the “average” strategy of successful regions might not be a promising strategy at all. Instead, the average can hide two (or more) strategies with completely different – and possibly opposing – focal issues both of which might be successful. This would, for example, be the case if regions based their strategies on clusters, but in different industries for which different location factors are important.

Therefore, the International Regional Benchmarking analysis focuses on comparing the BMR with specific international competitors instead of an average development. The selection of the regions to be used in the benchmarking has to fulfil two contradictory requirements. On the one hand, regions selected should be similar enough to the BMR to avoid comparing apples with oranges. On the other hand, they should differ enough to reflect a wide variety of economic settings, structures, strategies and levels of success. The regions were selected taking the following issues into account:

- First of all, all regions selected follow a concept of functional metropolitan areas. There is no sense in comparing regions that constitute only a part of a metropolitan region as any analysis of their performance and location factors would be biased.
- The regions are in some way 'similar' to the BMR. This includes issues as the size, the economic structure (at minimum, all regions are from highly industrialised countries and have a strong core city at the centre), but also issues like the capital function and specific sectorial strength of the BMR (e.g. financial sector) were taken into account.
- Although there is data available for some regions, it is known that the definition of the region does not correspond well with the concept of the functional region. Therefore, these regions are not chosen for benchmarking the BMR.
- Finally, the regions selected reflect a variety of more and less successful regions, although there is some emphasis on more successful metro regions because one goal of benchmarking is to learn from the best.

The following figure shows the regions chosen for the benchmarking analysis. For the precise definition of these regions, please see the appendix.

Figure 1-2 The Benchmark Regions

The key industries

The benchmark analysis focuses on economic structure and performance, as well as on the most important location factors, the basis of a successful economic development.

A special focus of the benchmark lies on the analysis of the key industries which are the most important drivers of the economy of the BMR. For a detailed analysis the following ten key industries have been identified a priori (ranked by their weight, measured as share of total economy):

- Business services excluding real estate (NACE 71-74)
- Banking and insurance (NACE 65-67)
- Real estate (NACE 70)
- Knowledge services (NACE 73 and 80)
- Transport (NACE 6063)
- Health and social services (NACE 85)

- Hotels, restaurants, entertainment, culture and sport (NACE 55 and 92)
- Chemicals and chemical products (NACE 24)
- Interest groups and other associations (NACE 91)
- Precision and optical equipment, watches (NACE 33)

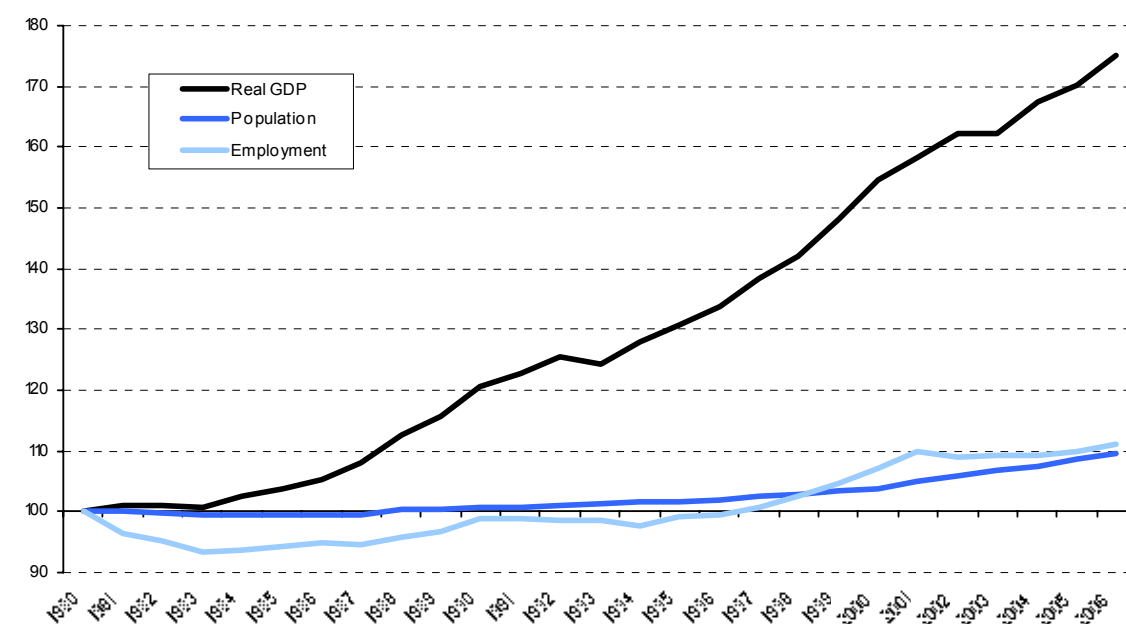
The analysis is primarily done for the period 1995-2006 or for the most recent year 2006. Sometimes this period will be split up into the sub-periods 1995-2000 and 2000-2006. In order to give a more complete overview, the analysis covers the period 1980-2006 in chapter 2. In chapter 4, the analysis is orientated to the availability of the data and, therefore, focuses on the most recent possible period or year.

The report is organised as follows. In chapter 2, the most important economic indicators of the BMR are analysed. Chapter 3 focuses on the benchmarking of the performance of the most important economic indicators as well as on the benchmarking of the ten key industries. In chapter 4, the location factors are put under the benchmark lens. Chapter 5 sums up the most important findings and concludes.

2 The Brussels Metropolitan Region

The objective of this chapter is to provide an overview of the development of the main economic indicators and of the industry structure of the BMR.

Figure 2-1 *Growth of real GDP, Employment and Population, Brussels Metropolitan Region*

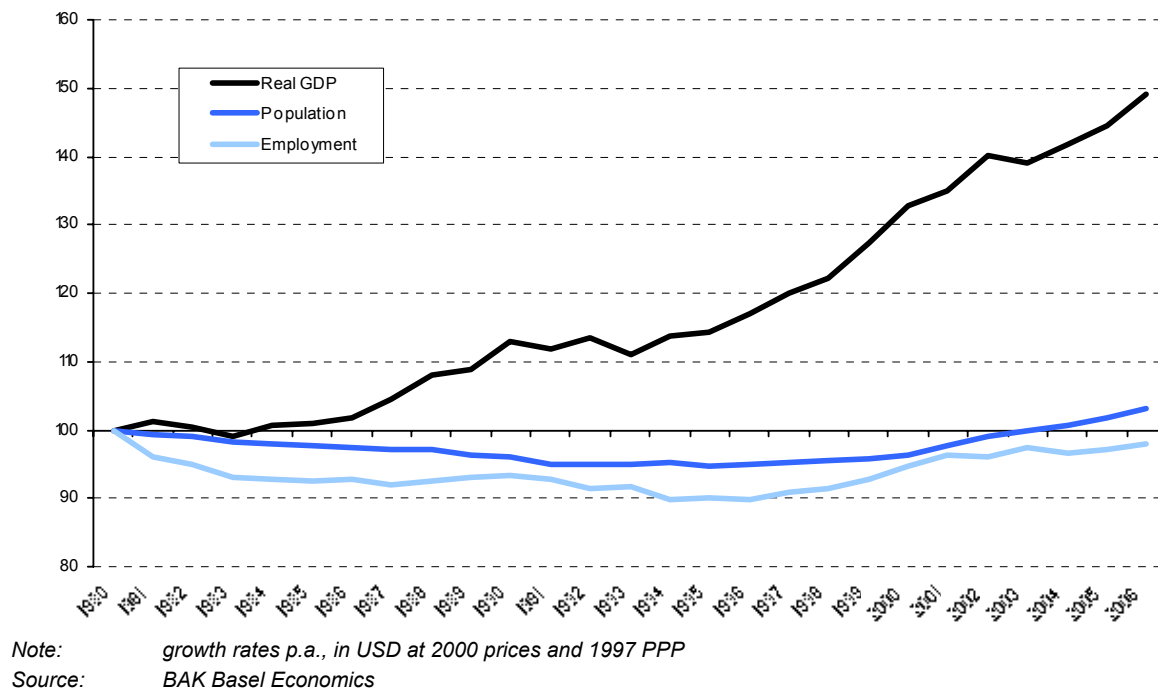


Note: growth rates p.a., in USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

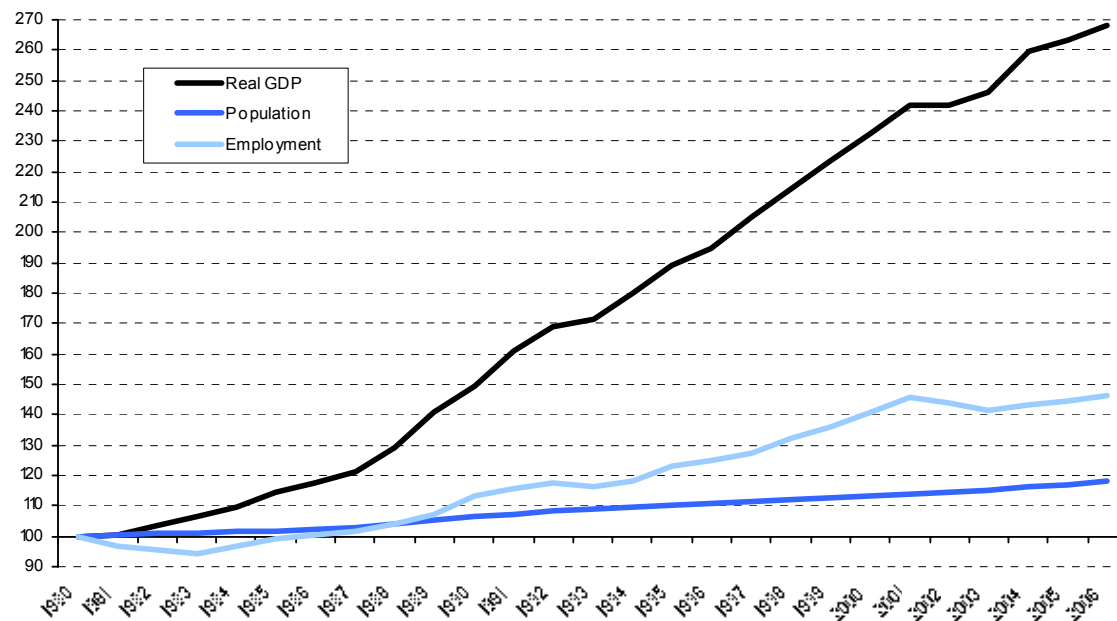
- Fig. 2-1 shows the standardised (1980 = 100) development of real GDP, employment and population between 1980 and 2006.
- Real GDP grew with a relatively constant rate over the whole time period.
- In contrast, employment decreased in the 1980s and only returned to the level of 1980 at the end of the 1990s. Employment then developed well, with an average growth rate of 2.2% p.a. between 1997 and 2001. Afterwards, there was practically no increase in employment, indicating that the GDP growth since 2000 was mostly driven by productivity gains and not by employment growth (so-called “jobless growth”).
- The BMR’s population developed very cautiously. Between 1980 and the mid-1990s, there was just a horizontal development. Thereafter, population grew at a constant, but low, rate (on average 0.7% p.a. between 1995 and 2006).
- The stagnation of employment since 2000 combined with substantial growth in both real GDP and in population indicates that the GDP growth was mostly driven by growth in productivity and not by an expansion of employment. Consequently, the impact of this development on the unemployment rate was rather negative.

Figure 2-2 Growth of real GDP, Employment and Population, Brussels Capital Region



- If the development in the BMR is split up into the development in each of its sub-regions, one can see that all the indicators performed far weaker in the Brussels Capital Region than in the BMR. Even though employment has grown consistently since the mid-1990s, it has not yet reached the level of 1980.

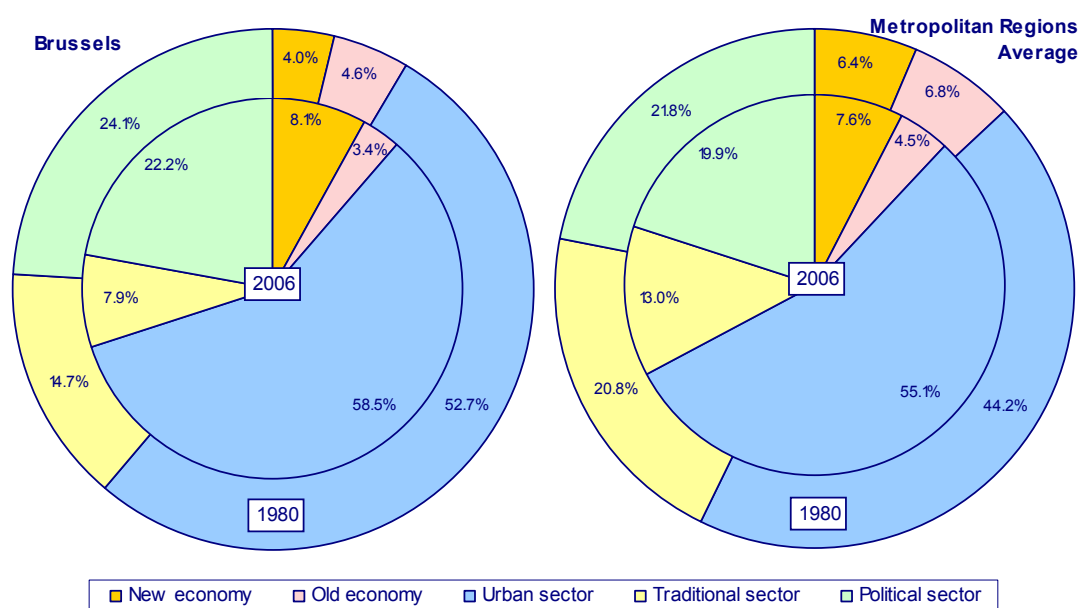
Figure 2-3 Growth of real GDP, Employment and Population, Brabant Walloon and Halle-Vilvoorde



Note: growth rates p.a., in USD at 2000 prices and 1997 PPP

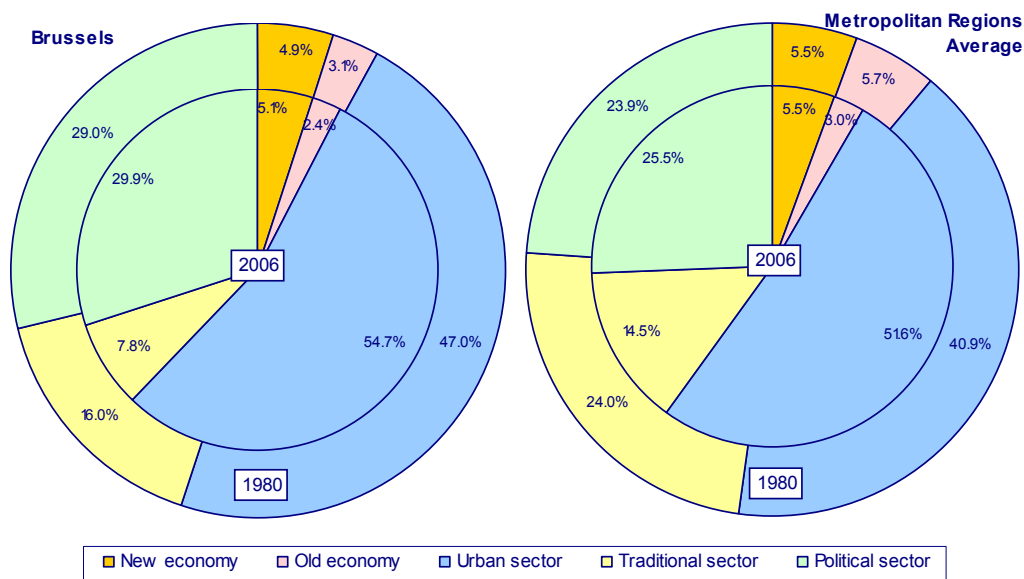
Source: BAK Basel Economics

- The growth in GDP, employment and population was much more substantial in the sub-regions and Halle-Vilvoorde than in the Brussels Capital Region. Therefore, Brabant Walloon and Halle-Vilvoorde provided very important impulses for the economy of the BMR even though their share of the economy of the BMR is smaller than that of the core city.
- The stagnation in employment after 2001 in these two sub-regions indicates that the growth in GDP since then was also a “jobless growth”.

Figure 2-4 Share of the five driver sectors in nominal GDP

Note: in %, based on USD at current prices and exchange rates
 Source: BAK Basel Economics

- Fig. 2-4 shows the share of the five driver sectors in nominal GDP in 2006 (inner circle) and 1980 (outer circle) for the BMR and for the Metro Average (average of the aggregate of the most important European Metropolitan Regions). For a description of BAK's concept of the driver sectors, please see the Appendix.
- Because the BMR is a metropolitan region and is also the capital of Belgium, the dominance of the urban and the political sectors as well as the substandard presence of the old economy and the traditional sector are no surprise.
- The comparison between the two time points reveals that the importance of the urban sector and the new economy grew over time; the new economy even doubled its share of GDP. On the other side, the traditional sector's importance was cut in half between 1980 and 2006.
- Note the substantially stronger increase of the new economy in the BMR as compared to the Metro Average. While in 1980 its share in the BMR was significantly below the share found in the Metro Average, today it surpasses the Metro Average by a clear margin. Interestingly, this pattern cannot be seen when looking at employment shares (fig. 2-5). Here, no change of shares can be observed over time, neither in the BMR nor in the Metro Average. Consequently, while in both regions the labour productivity growth was larger in the new economy than in the total economy, this was much more pronounced in the BMR than in the Metro Average.
- The comparison between the BMR and the Metro Average highlights that the importance of each of the five driver sectors is quite similar in both regions. Also, the shift between the sectors between 1980 and 2006 is similar in both regions. The only significant difference is the importance of the traditional sector which is less important in the BMR than in the Metro Average in 2006.

Figure 2-5 Share of the five driver sectors in total employment

Note: in %

Source: BAK Basel Economics

- The dominance of the urban and the political sectors is even more substantial when comparing the share of total employment.
- The growth of the new economy concerning its share of nominal GDP (seen in Fig. 2-4) had no significant impact on its share of total employment.
- Concerning the development of the traditional sector, one can see that the decrease of its share of employment was more substantial in relative terms than the decrease in the Metro Average.

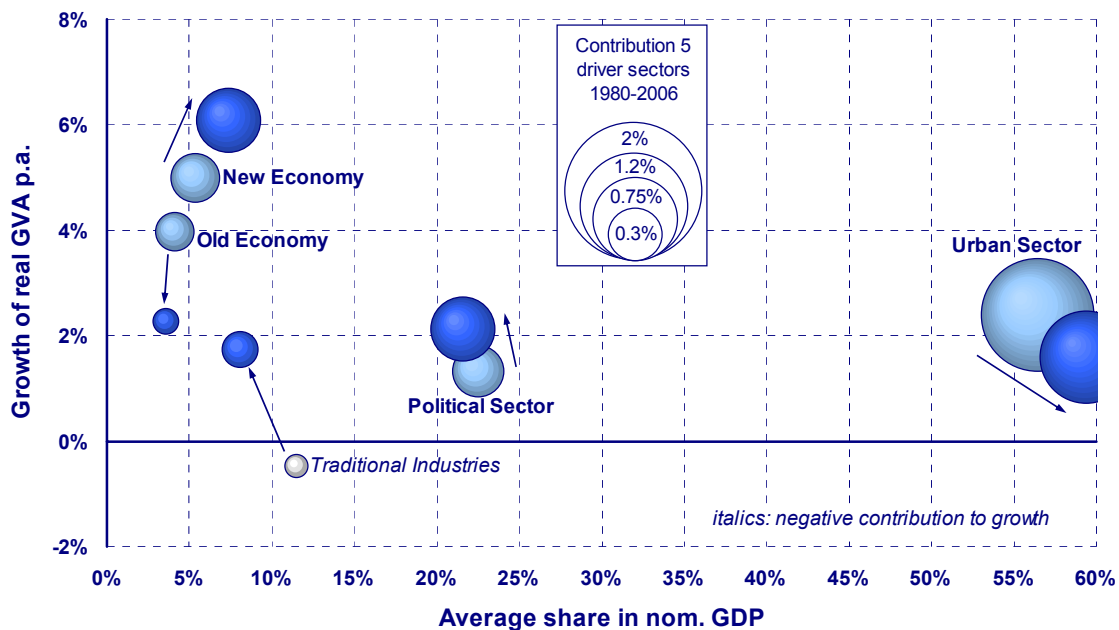
The following analysis of the structure of the driver sectors is done by means of so-called “bubble charts.” Later, the same principle is used in order to analyse the industrial structure. Because this is a central tool of the analysis, we will take a closer look at the underlying concept of these charts.

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 weight within the total (share) 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.

Figures like the ones following do provide all this information. Here, they focus on the contribution of the driver sectors and the key industries to GDP growth of a region. The x-axis holds information on the share (in percent). The y-axis reflects the average annual growth (in percentage points). Therefore, the growth contribution of a driver sector or a key industry increases when moving from the lower left corner towards the right and/or upwards. As the relationship is nonlinear, the growth contribution is also given in the graph: the size of the bubbles reflects the growth contribution. Negative contributions are marked with grey bubbles.

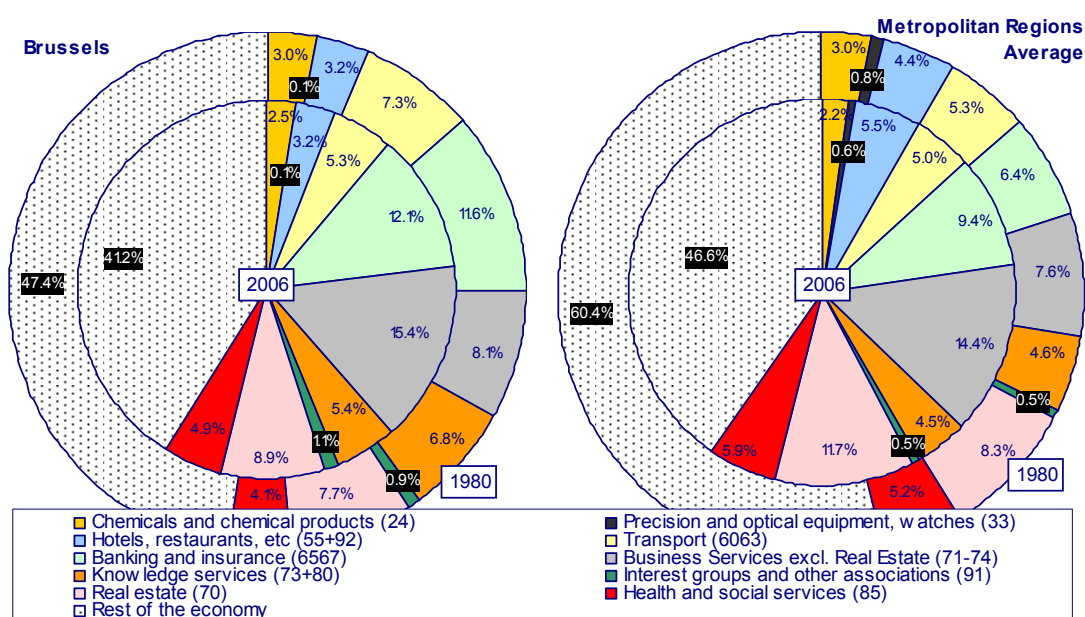
For example, consider the Political Sector in the BMR. It made up 22 percent of the economy in 1995. From 1995 to 2006, it increased on average more than 2 percent a year. Combining these, the Political Sector contributed 0.45 percentage points to the growth of the BMR economy annually. Or in other words, had the Political Sector in the BMR just not existed, annual economic growth would have been $\frac{1}{2}$ of a percentage point lower.

Figure 2-6 The BMR's five driver sectors 1980-2000, 2000-2006

Note: in %, based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

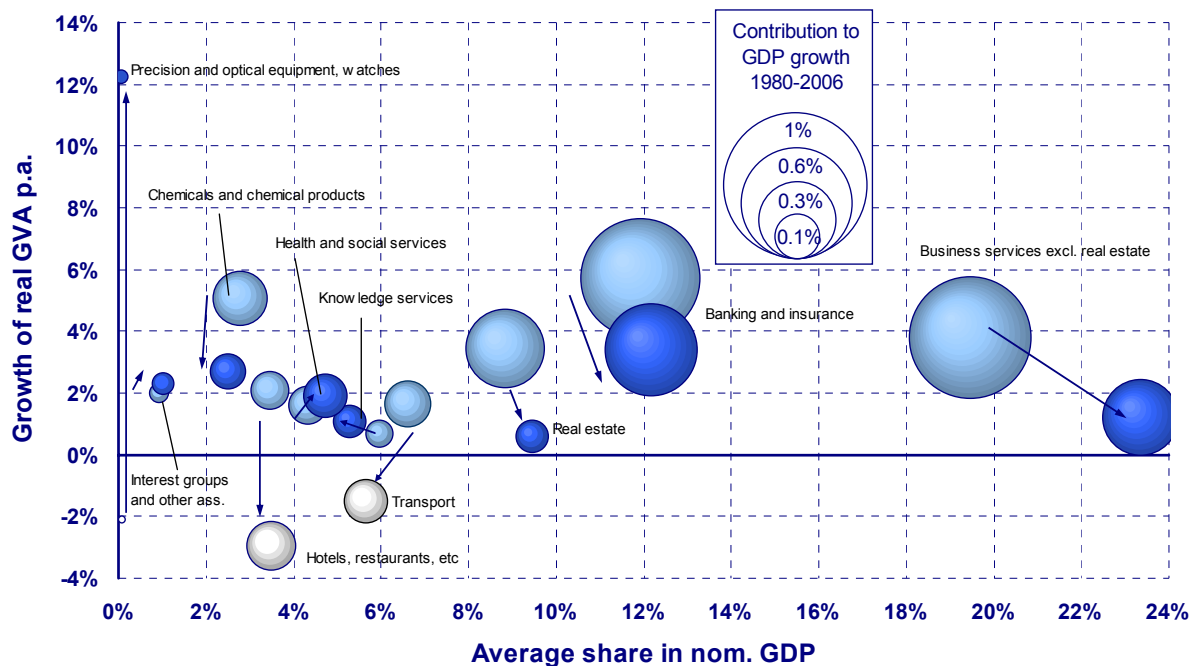
- Unfortunately, the urban sector, the most important of all the sectors, lost some drive in the period 2000-2006 when compared to the period 1980-2000. As its share of GDP is very high, this sector still remains by far the most important contributor to GDP growth (0.95 percentage points which adds up to 46% of the GDP growth).
- Otherwise, the development of the new economy provides very good news to the BMR. The growth rate of this sector accelerated in 2000-2006 when compared to the period before and added up to 6.1% on average. Even if its share of GDP is still rather small, its contribution to GDP growth was the same as that of the much bigger political sector and about half of that of the urban sector.
- Furthermore, fig. 2-6 provides some evidence of a downturn in the old economy and the regaining of a respectable amount of force in the traditional sector.

Figure 2-7 Share of the ten key industries in nom. GDP

Note: in %, based on USD at current prices and exchange rates

Source: BAK Basel Economics

- Fig. 2-7 shows the share of the ten key industries in GDP in 1980 and 2006 for the BMR and the Metro Average.
- In both time periods, these industries count for a larger and more important part of the aggregate economy in the BMR than in the Metro Average. On the level of individual industries, banking and insurance occupies a larger share of the aggregate economy in the BMR than in the Metro Average. Whereas, the BMR's most significant lag behind the average can be detected in its share of hotels, restaurants and tourism.
- It is very interesting to observe that the share of GDP of the ten key industries did not increase much in the BMR. Already in 1980, the key industries were of major concern in the BMR. This is different for the Metro Average, where quite a significant rise in the share of GDP of these industries took place between 1980 and 2006.

Figure 2-8 The BMR's ten key industries 1980-2000, 2000-2006

Note: in %, based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

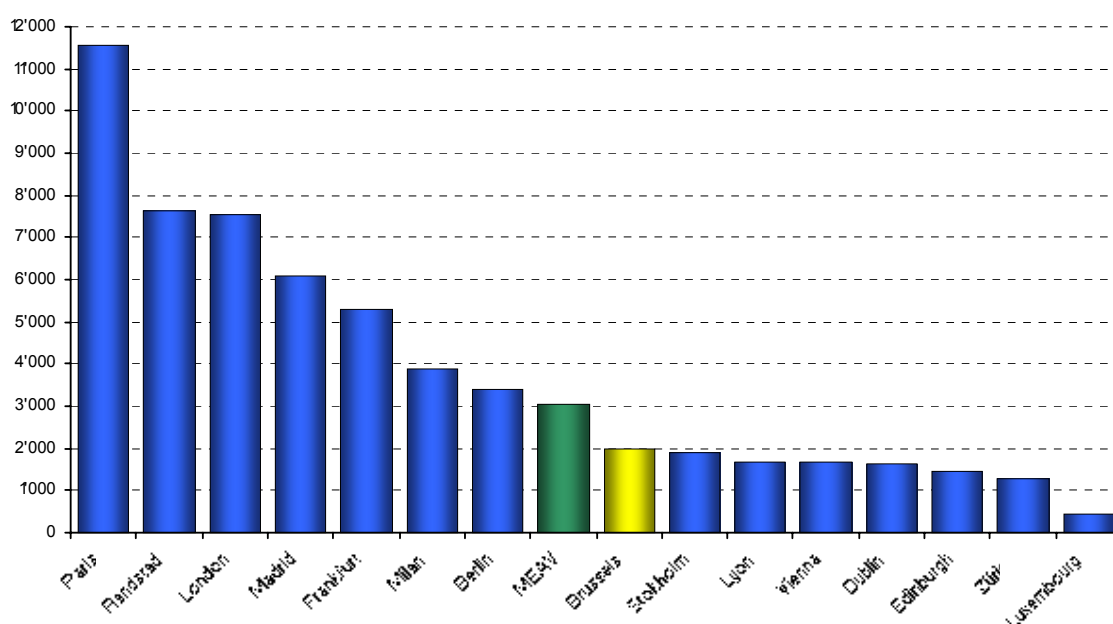
- The bubble chart reveals that most of the BMR's key industries performed much less dynamically in the period 2000-2006 than in the previous period.
- One of the most painful decreases took place in business services which, in the most recent period, was no longer the industry with the highest contribution to GDP growth. The leading position was lost to the financial services which lost some drive as well but much less pronounced.
- Another striking finding is the development in transport and tourism. In these two industries the growth rate sharply decreased between the two periods and became significantly negative in the latter period.

3 Brussels Metropolitan Region under the International Benchmarking Lens

In this chapter, the performance of the main economic indicators as well as the performance and the importance of the key industries of the BMR are compared to a set of European Metropolitan Regions, the benchmark regions.

3.1 Economic Performance

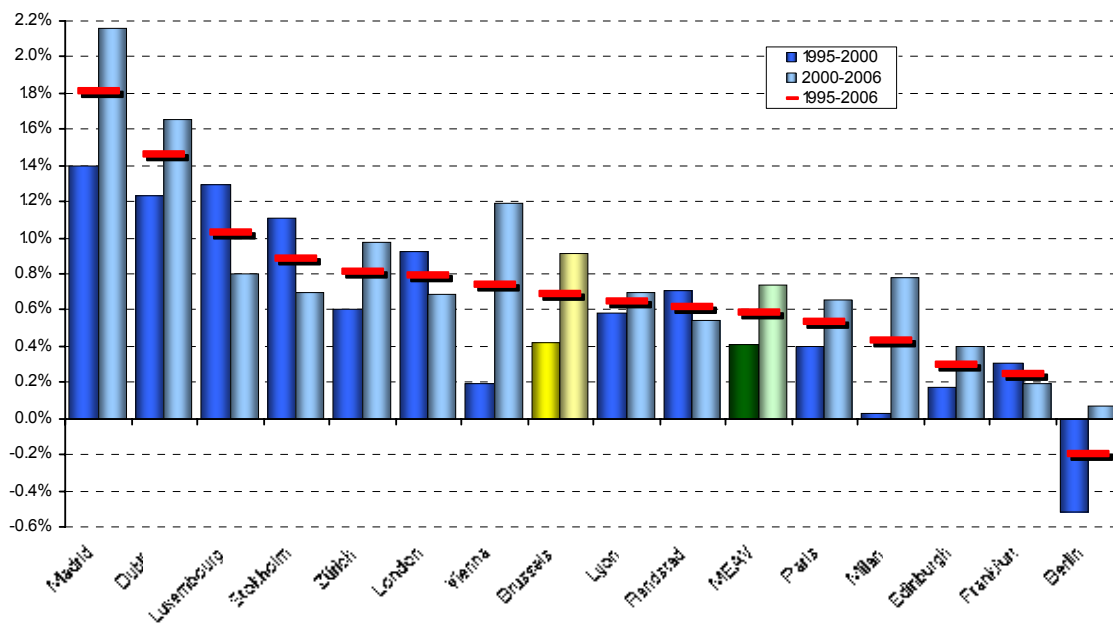
Figure 3-1 *Population 2006*



Note: in '000

Source: BAK Basel Economics

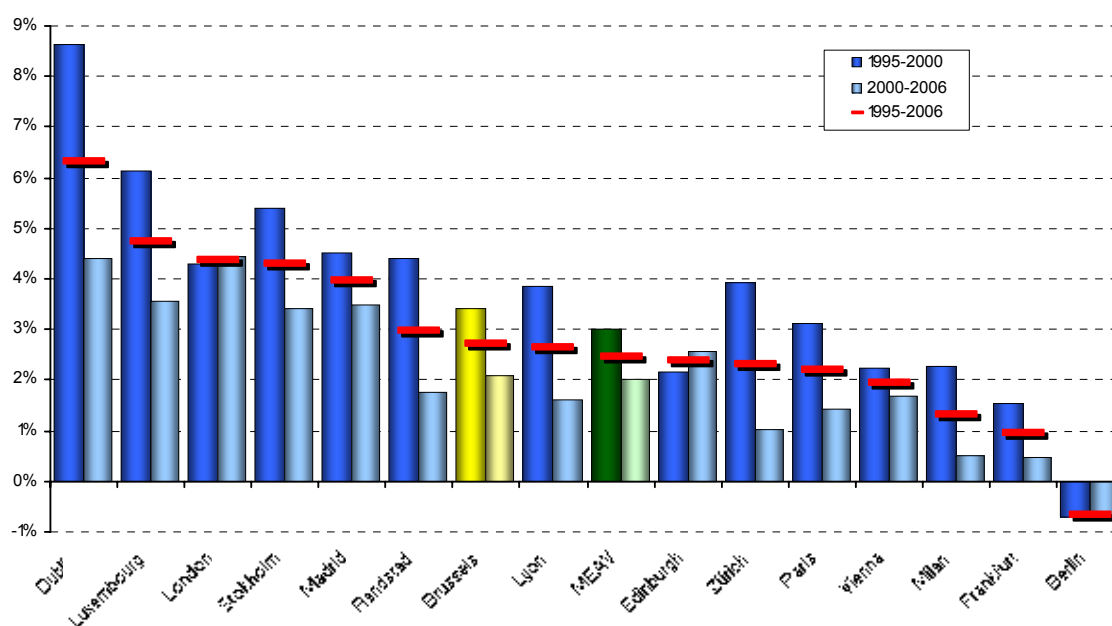
- Fig. 3-1 gives an idea of the size of the benchmark regions. The ranking reveals the wide disparity between the largest and the smallest regions. The BMR lies somewhere in the middle, but clearly belongs to the smaller regions in this benchmarking.
- Because of this size disparity, we will most often use relative indicators in the analysis that don't depend on the size of a region. Nevertheless, for the interpretation of some of the following results, it might be useful to keep the size of the regions in mind.

Figure 3-2 Growth of population 1995-2000, 2000-2006

Note: growth rates in % p.a.

Source: BAK Basel Economics

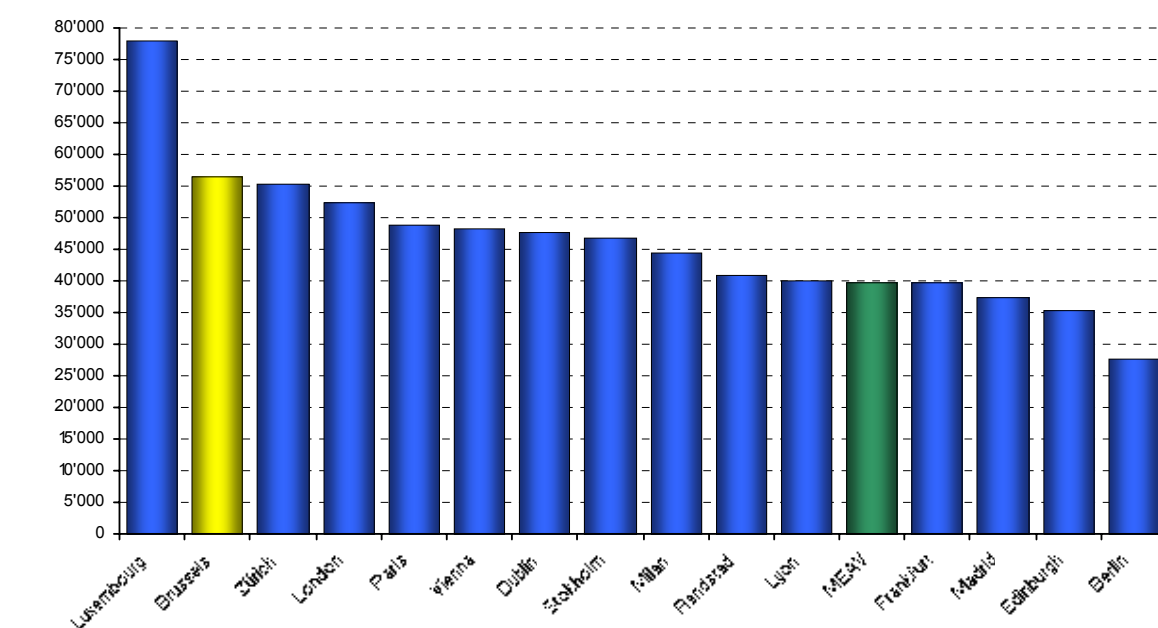
- Fig. 3-2 shows the development of the population for the three periods 1995-2000 (dark blue pillar), 2000-2006 (light blue pillar), and 1995-2006 (red bar).
- While the BMR belonged to the regions with a weaker population development between 1995 and 2000, more recently, there seems to have been a breakthrough. Between 2000 and 2006, the BMR was among the strongest regions, although the growth rate didn't reach a particularly high level (0.9% p.a.) and couldn't keep up with the most dynamic regions, Madrid and Dublin.
- Actually, when taking a longer perspective, the success of the BMR with respect to attracting population since 2000 is even more pronounced. From 1980 to 2000, the BMR was in fact amongst the weakest performing regions (just in front of the even weaker Edinburgh, Vienna and Milan).

Figure 3-3 Growth of real GDP 1995-2000, 2000-2006

Note: growth rates in % p.a., in USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

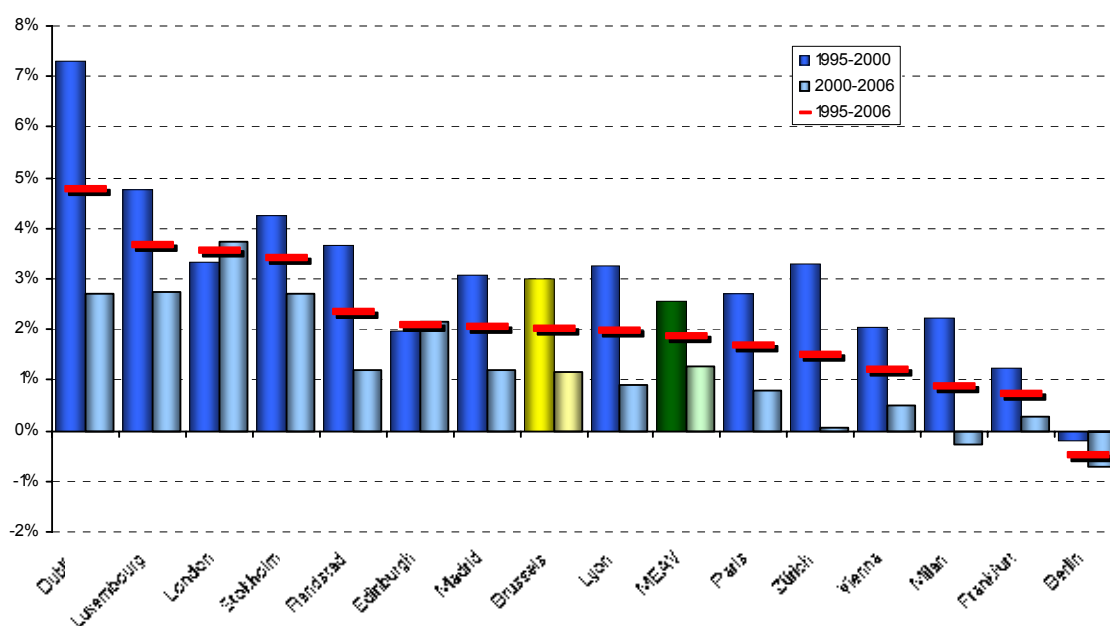
- Concerning the growth rate of GDP, the BMR is placed in the middle of the field. The growth rates reached a respectable level, but the gap to the most dynamic city regions is considerable. Still, especially in the later period, the BMR outpaced other leading regions such as Paris, Milan, Zurich and Berlin.
- The analysis reveals that the GDP growth in the BMR was much higher between 1995 and 2000 than in the most recent period. As the benchmarking shows, this loss of vitality can be seen in most of the other city regions as well and is closely linked to the overall recession at the beginning of this decade. So it is not a specific BMR failure and should not be taken too critically.

Figure 3-4 *Nominal GDP per capita in 2006*

Note: in USD PPP 1997, current prices

Source: BAK Basel Economics

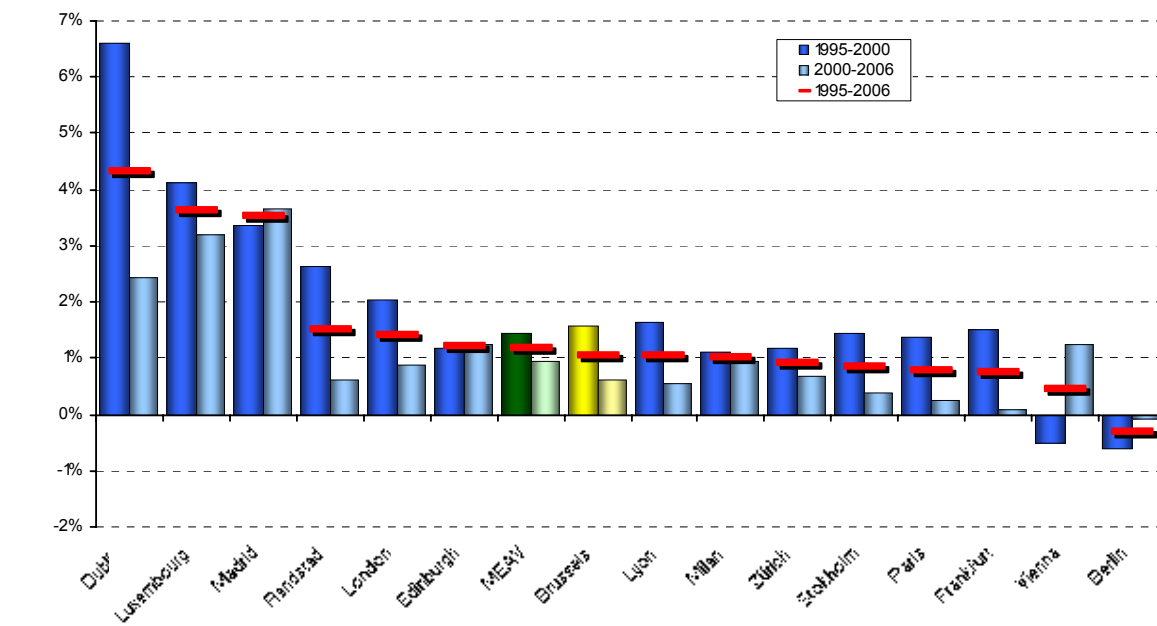
- Although based on production instead of income, for most countries and regions, nominal GDP per capita is a good measure of the wealth of the regions. Other indicators are often statistically less well-supported and therefore inferior. Within the sample of benchmark regions, it is especially Dublin (wealth overestimated) and Zürich (wealth underestimated) where production, measured with GDP per capita, and income do not correspond well. Note that GDP per capita does not provide any information on the distribution of the wealth of a region among the region and its inhabitants.
- The comparison of the GDP per capita for 2006 reveals the strength of the BMR. The level of generated value added in relative terms is just surpassed by Luxembourg with its very productive financial sector. Even London and Zurich, generally known as cities with a high ratio of GDP per capita, are placed behind the BMR.
- When comparing GDP per capita there could be a bias. While GDP is a production based concept, capita follows the concept of place of residence. A large number of net commuters increases the GDP per capita level in a region. As long as one is comparing city regions – as is done in this benchmarking – the bias should not be too large: all regions are defined to cover the complete metropolitan areas, which already reduces net commuting substantially. Furthermore, all metropolitan regions used here do profit from some net commuting. Therefore, comparing them should not be largely biased with a few exceptions where the definition of the regions is known to be too narrow: Luxembourg, Vienna and Berlin are expected to be upward biased compared to the other regions with respect to GDP per capita levels.

Figure 3-5 Growth of real GDP per capita 1995-2000, 2000-2006

Note: growth rates in % p.a., in USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

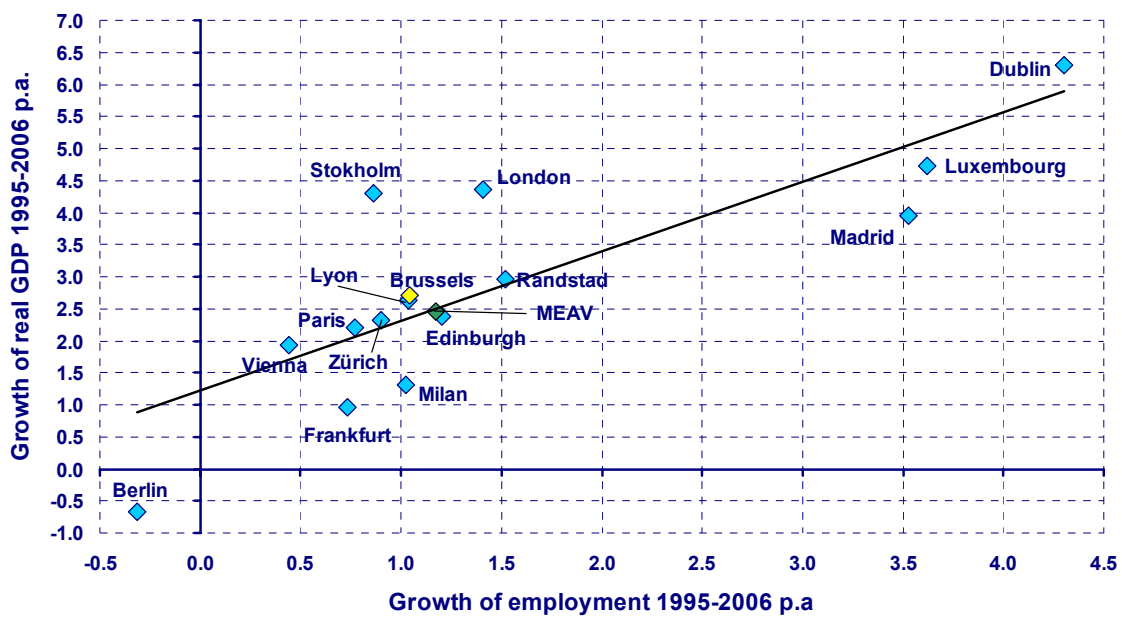
- Similar to the development of the population and the GDP, the growth of the GDP per capita in the BMR is placed in the middle range of the benchmarking.
- This finding indicates that the high level of GDP per capita in 2006 in the BMR is not primarily a result of the explosive development of the GDP per capita in recent years. The comparison of the GDP per capita for the year 1990 (not shown in the chart) indeed reveals that already in 1990 the BMR was ranked third best in the benchmarking.

Figure 3-6 Growth of employment 1995-2000, 2000-2006

Note: growth rates in % p.a.

Source: BAK Basel Economics

- The analysis now turns to employment. Due to the different sizes of the regions, only employment growth can be compared. Because the employment data is based on the place of work, the development can be analysed in relation to GDP.
- The overall picture of the development of employment is much less homogeneous over the time periods than, for example, the development of the population. Since this is due to cyclical reasons, in general, we can see a larger expansion in the boom period at the end of the 1990s than at the beginning of the present decade.
- It has to be mentioned that the BMR never belonged to the leading regions of employment growth. However, in contrast to other regions, there has never been a reduction in employment in the BMR either.
- Unfortunately, the decline in employment growth between the two periods 1995-2000 and 2000-2006 has been more significant in the BMR than in other regions, so that the BMR slipped closer to the end of the ranking in the most recent period.
- Such a pattern was not observed for GDP growth; the BMR actually ranks slightly better in GDP growth in 2000-2006 than in 1995-2000. Therefore, here again, we find a sign of jobless growth in the BMR from 2001 on, something not observed to the same extent in the other benchmark regions. Of course, the differences between the regions are far from extreme and should not be overly interpreted.
- And finally, the red bar indicates that the employment growth in the BMR performed very similarly to that in the Metro Average during the whole period 1995-2006.

Figure 3-7 Growth of real GDP and employment 1995-2006 p.a

Note: GDP based on USD at 2000 prices and 1997 PP

Source: BAK Basel Economics

- Fig. 3-7 combines the growth in real GDP and the growth in employment. Three main groups of regions can be identified: the leading regions with high growth rates in both indicators (Dublin, Luxembourg and Madrid), the regions with a high growth rate in GDP but with a more moderate growth rate in employment (London and Stockholm), and the regions with more moderate but still remarkable growth rates in both indicators (all the other regions apart from Berlin).
- Within this last group, the BMR clearly belongs to the leaders. Furthermore, its position close to the trend line indicates that the relation between GDP and employment growth is very similar to the average found in the benchmarking.

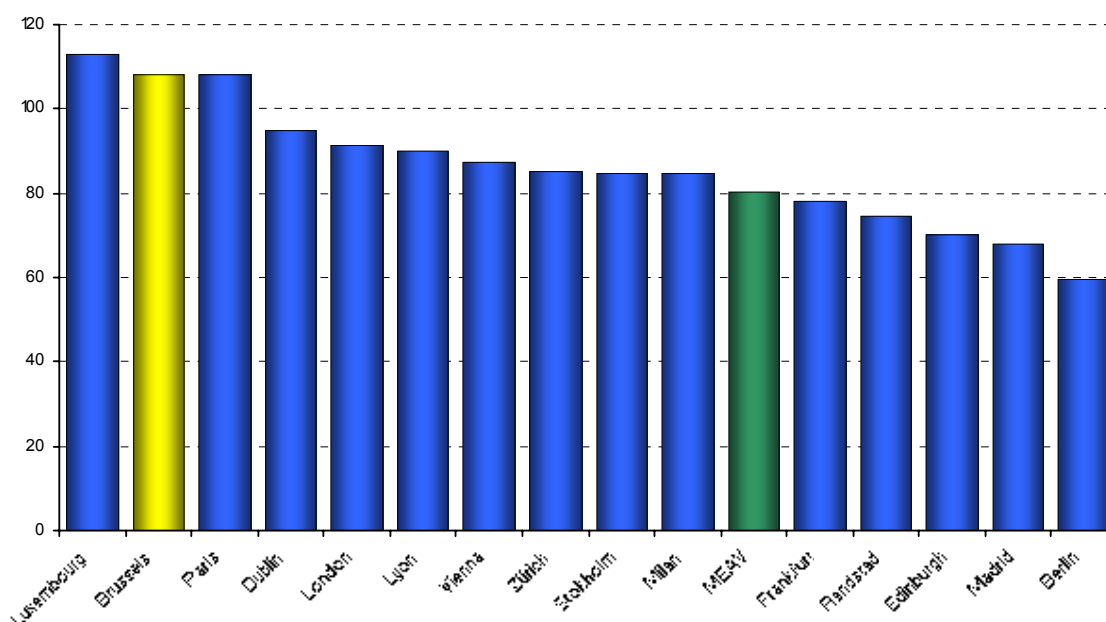
Productivity:

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 for differences are especially found in the usual hours worked and the part-time employment structures. Other issues like overtime, holidays, average sick leave duration and similar issues influence the results as well. The differences can be observed in the levels as well as in the dynamics of the indicators.

Neither of the indicators can be regarded as the superior one. 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. Furthermore, employment productivity does more directly fit into one analysis with figures like GDP per capita or the number of jobs.

Figure 3-8 **Nominal employment productivity 2006**

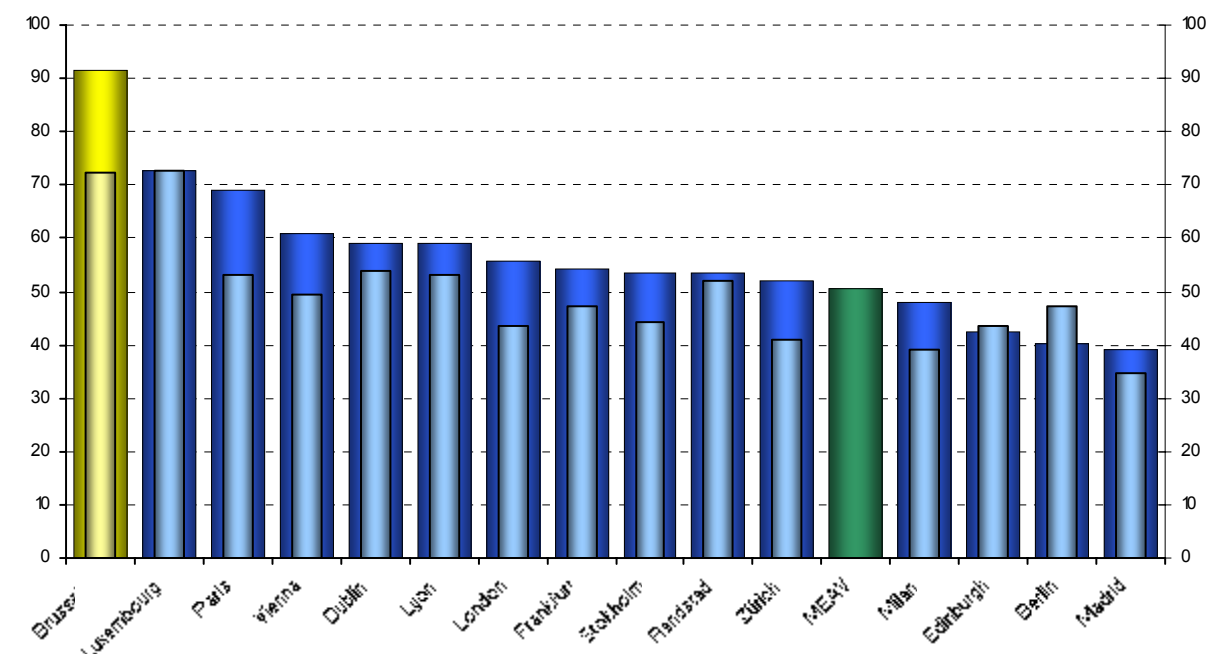


Note: in USD PPP 1997, current prices

Source: BAK Basel Economics

- Next, we will have a look at productivity. Employment productivity is an indicator of the efficiency of the economy as well as its capital intensity and industry mix.
- The benchmark of the employment productivity points out the leading position of the BMR within a group of some of the most competitive European city regions.
- The good position of the BMR confirms the results derived with GDP per capita that the BMR is quite a rich region in this benchmarking sample. The productivity indicates that this earlier finding is not biased due to specific commuting structures in the BMR.

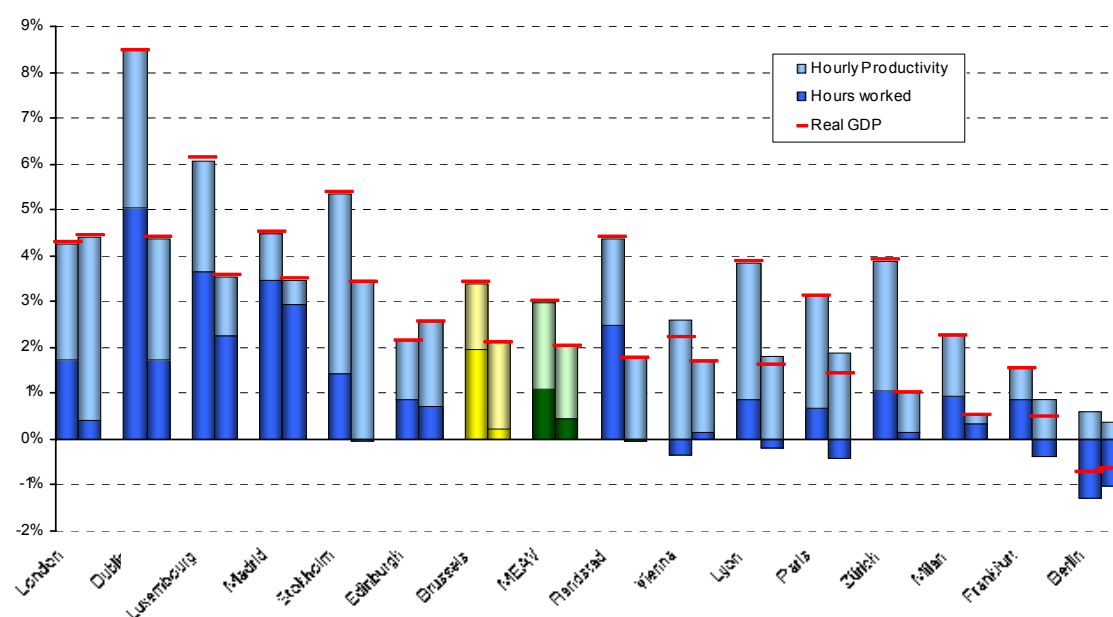
Figure 3-9 *Nominal hourly productivity in regions (large pillar) and corresponding countries (small pillar) 2006*



Note: in USD PPP 1997, current prices

Source: BAK Basel Economics

- A comparison of employment productivity is influenced by differences in working hours (due to different weekly hours, different yearly working days, and part-time working structures). We want to compare the efficiency of the use of labour input, so we turn to hourly productivity.
- The levels of nominal output per working hour in the benchmarking regions and the corresponding countries in 2006 are compared.
- When comparing hourly productivity, the judgement for the BMR gets even better than when comparing employment productivity. The hourly productivity in the BMR is by far higher than in any of the other benchmark regions.
- Furthermore, fig. 3-9 reveals that in general the output per hour worked is superior in the metropolitan regions than in the corresponding countries. This is particularly pronounced for the BMR which indicates that the high hourly productivity in the BMR cannot be explained only by a national pattern. The leading position of the BMR in the ranking of hourly productivity clearly is due to its favourable industry structure and other regional specificities.

Figure 3-10 Growth of hours worked and real hourly productivity

Note: First pillar: 1995-2000, second pillar: 2000-2006, based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- This chart divides the GDP growth into the growth of total hours worked and the growth of the hourly productivity in the two sub-periods 1995-2000 and 2000-2006.
- In most of the metropolitan regions, including the BMR, the GDP growth was realized to a large extent by means of an expansion of hourly productivity than by means of an expansion of total hours worked.
- In the BMR, the growth of hours worked was smaller in the second sub-period than in the first sub-period which is closely linked to the weaker employment growth between 2000 and 2006. Otherwise, the growth of the hourly productivity was stronger in the second than in the first sub-period (1.9% vs. 1.5%).

Summing up the findings from the international benchmarking of economic performance, the BMR turns out to be a rich and very productive region. GDP per capita is amongst the highest, only beaten by Luxembourg. As its very good position in productivity proves, this is not a biased result, e.g. one due to commuting patterns or the like.

Turning to the growth performance since 1995, the BMR is not in a position as good as with respect to levels. But it is also not lagging behind: The BMR is positioned in the middle of the benchmarking sample which is, notably, a sample of rather successful regions! Given the already high level of economic performance, its growth achievements should be quite satisfying to the BMR. If anything is to be mentioned critically, then it is the fact that employment is not keeping track with economic growth. Although the differences are not large, the BMR is not using the available labour input as well as other regions. As this lack of employment dynamics has worsened in the more recent time period, it should be watched carefully in the future. It should be mentioned that the lack of employment dynamics seems not to be due to

a labour shortage, at least, not due to a general labour shortage. Unemployment is still substantial and the population did grow at an increased rate in recent years.

3.2 The Driver Sectors

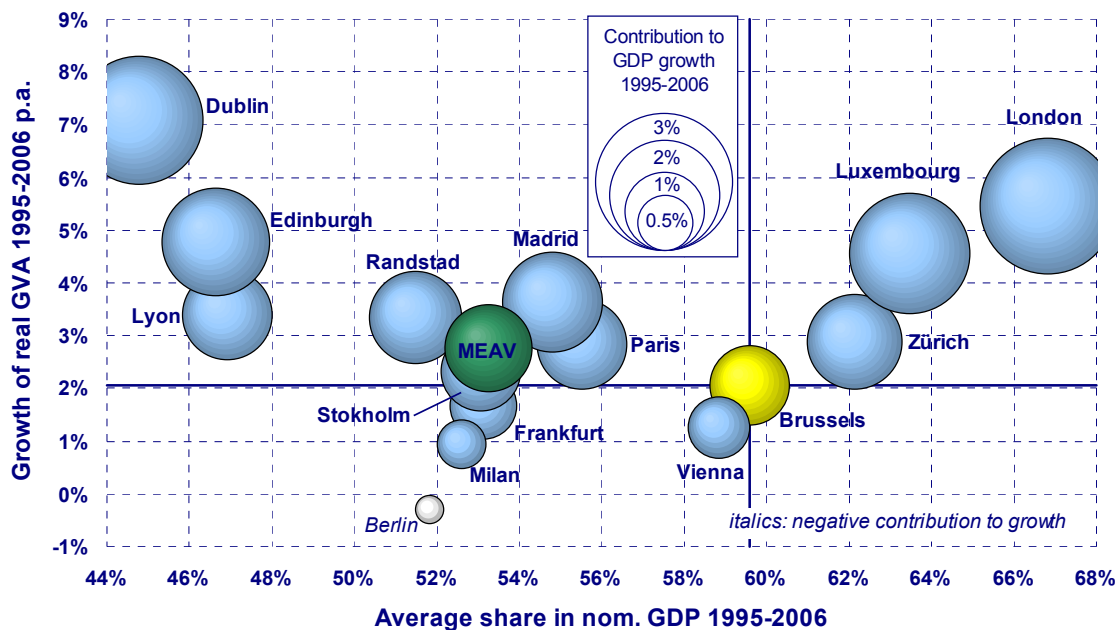
The previous analysis revealed a lot of information about the position and development of the BMR in an international comparison with regions facing similar situations and challenges. It showed that the BMR is doing quite well. To understand in more detail why the BMR is doing so well and to identify the stronger and weaker parts of the economy more precisely, the following part will compare individual industries between the benchmark regions.

This will provide information on the influence of the industry mix in the BMR on the economic performance. This is important in the interpretation of the previously discussed results. If the success of a region relies on its advantageous industry mix only, but these industries are not doing better than their international competitors and are losing competitiveness, then regardless of the overall good performance of the region, this reveals the dangers to future development. An industry specific analysis can reveal such a pattern.

Before starting with the analysis of the key industries, we first focus on the five driver sectors. The order of the analysis is oriented towards the share of the sector/industry in GDP, starting with the most important one.

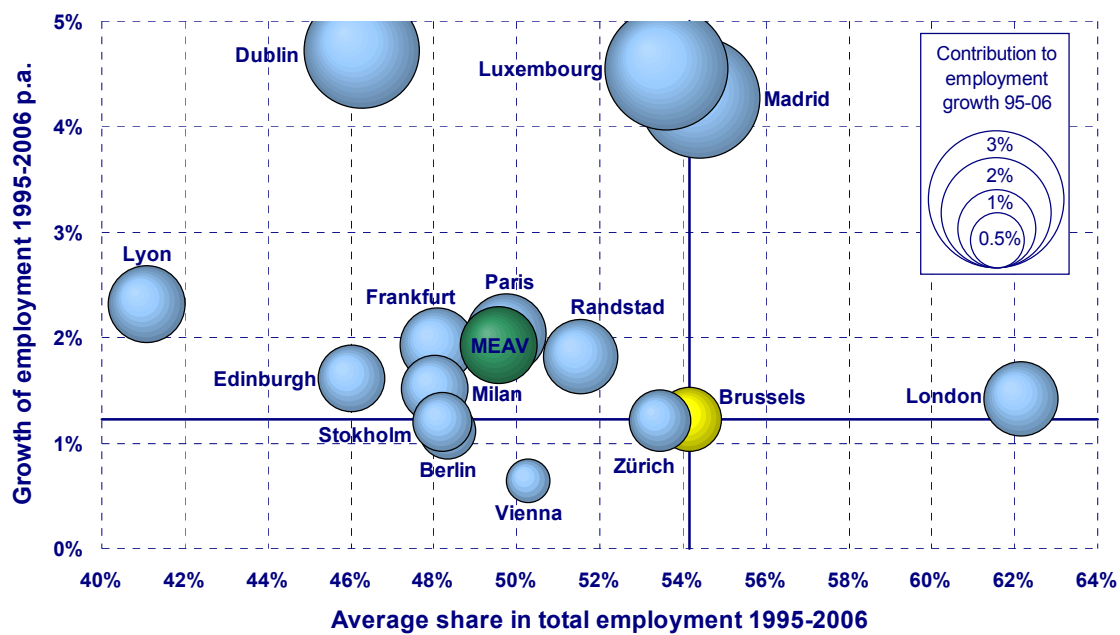
In the end, we will also analyse the trade and repair services as well as the postal and telecommunication services, two industries which do not belong to the key industries but are still of significant importance for the economy of the BMR.

The focus lies on the analysis of the gross value added. For some of the industries that are crucial for the development of the labour market, the analysis is performed for the employment as well.

Figure 3-11 Urban Sector: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP
 Source: BAK Basel Economics

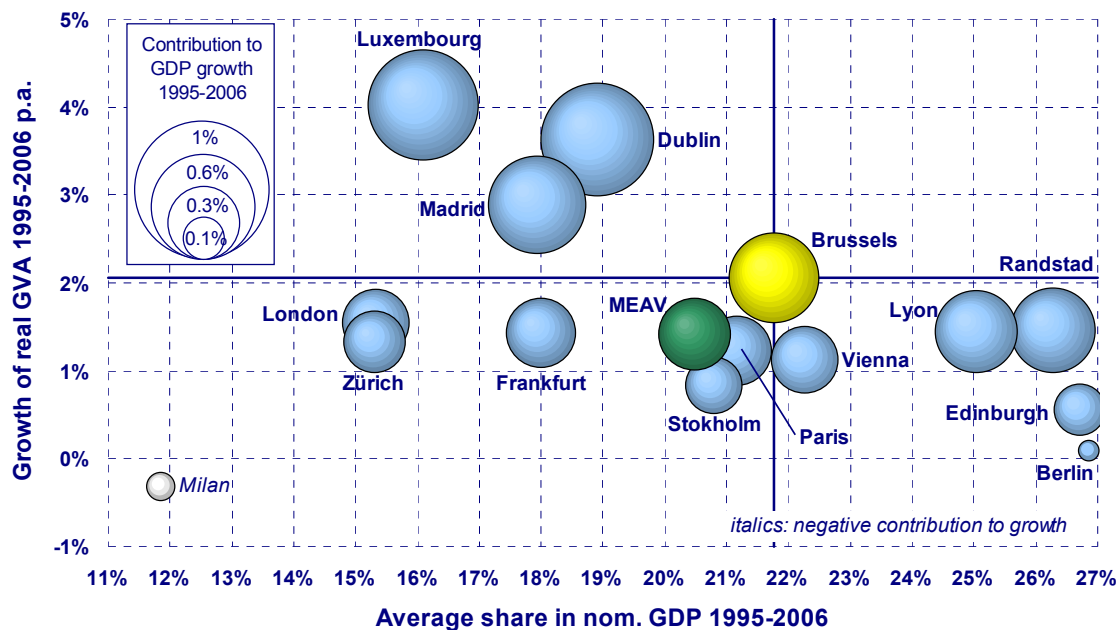
- The benchmarking shows the importance of the urban sector for the economy in the BMR. Even among the set of city regions there are just few regions with a higher share of this sector.
- In addition, the wide range of the share of the urban sector in the benchmark regions reveals that there are city regions that don't have such a distinct focus on this sector.
- Although the urban sector is of great importance to the BMR, its contribution to the GDP growth lies clearly below average. This is due to a relatively weak growth rate between 1995 and 2006. Within the benchmarking, there are just four regions with a weaker progression.
- In total, the contribution of the urban sector to the GDP growth in the BMR between 1995 and 2006 is 1.2 percentage points which makes up about 45% of the growth of the whole economy.
- Because the urban sector consists of a large set of industries, the following analysis of the key industries will shed more light on the question of why this sector didn't perform better.
- Nevertheless, a general conclusion can be drawn from the analysis of this driver sector. The urban sector is very important for the BMR, but it did not grow as much as it could have grown. The urban sector of city regions with a similar starting position to the BMR performed better than the BMR's urban sector. Their superior performance proves there is abundant, but as yet unrealized, potential for growth in the urban sector in the BMR.

Figure 3-12 Urban sector: Contribution to employment growth 1995-2006

Note: in % p.a.

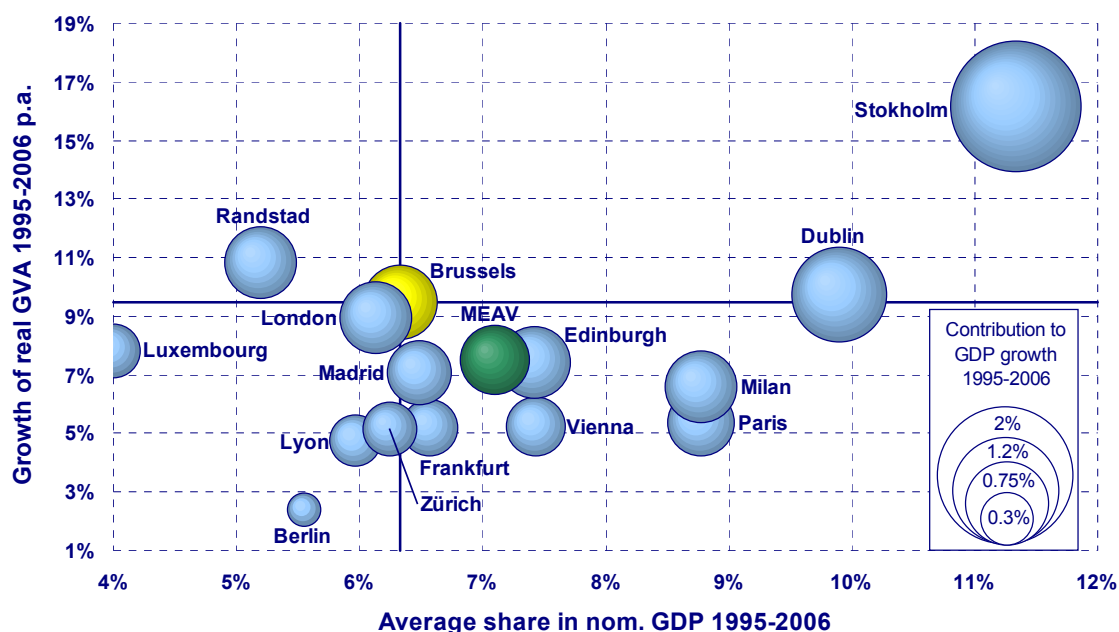
Source: BAK Basel Economics

- As fig. 3-12 shows, the majority of the labour force of the BMR is employed in the urban sector. London is the only benchmark region where the share of the urban sector in total employment is significantly higher than in the BMR.
- But, similar to the growth of GVA, the growth of employment was clearly below average in the BMR. This indicates a lack of momentum of this sector in the labour market and, therefore, is one important reason for the rather weak overall employment growth in the BMR.

Figure 3-13 Political Sector: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP
 Source: BAK Basel Economics

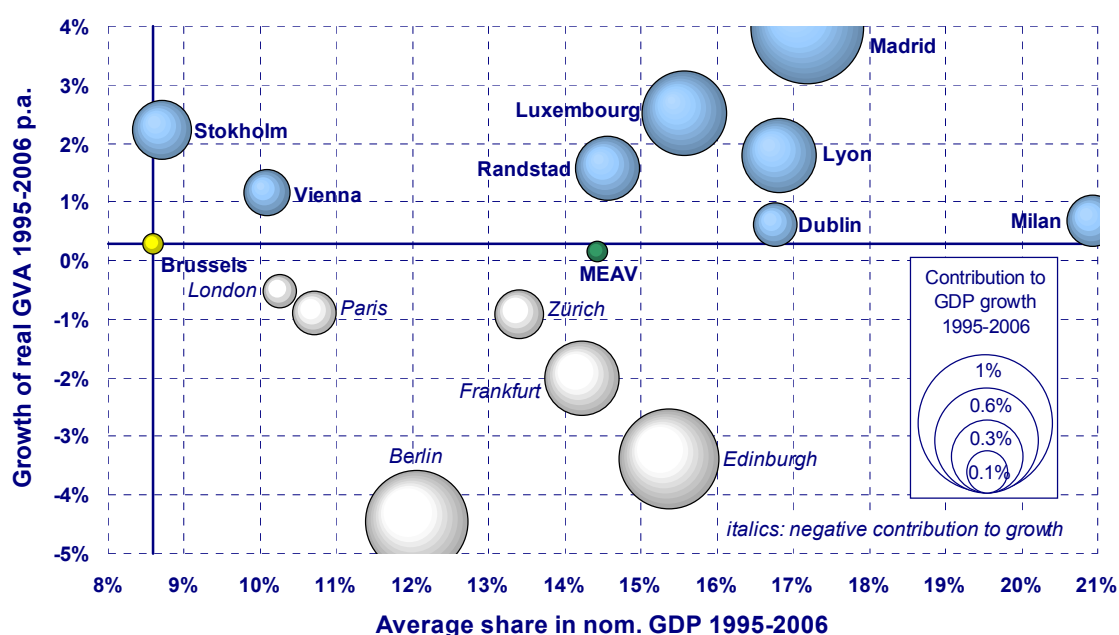
- Even if the weight is much smaller than that of the urban sector, the political sector nonetheless plays an important role in most of the benchmark regions. Given that the political sector usually is not an innovative nor highly productive sector – because the production is labour intensive – it is characterized by small or even negative growth rates. And this is what the bubble chart depicts. In most of the regions, the growth rate of the political sector lies below two percent, and, therefore, in most cases, lies significantly below the average growth rate of the economy.
- Furthermore, it is shown that the share of the political sector in total GDP in the BMR as well as its growth rate are above the benchmark average for 1995-2006, meaning that the contribution of this sector to the GDP growth is above average as well.
- For most regions, having a large political sector is, in terms of economic growth, not particularly good news. For the BMR, it is, at least, not particularly bad news (contribution of 0.45 percentage points which makes up 1/6 of the whole economy's growth).

Figure 3-14 New Economy: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

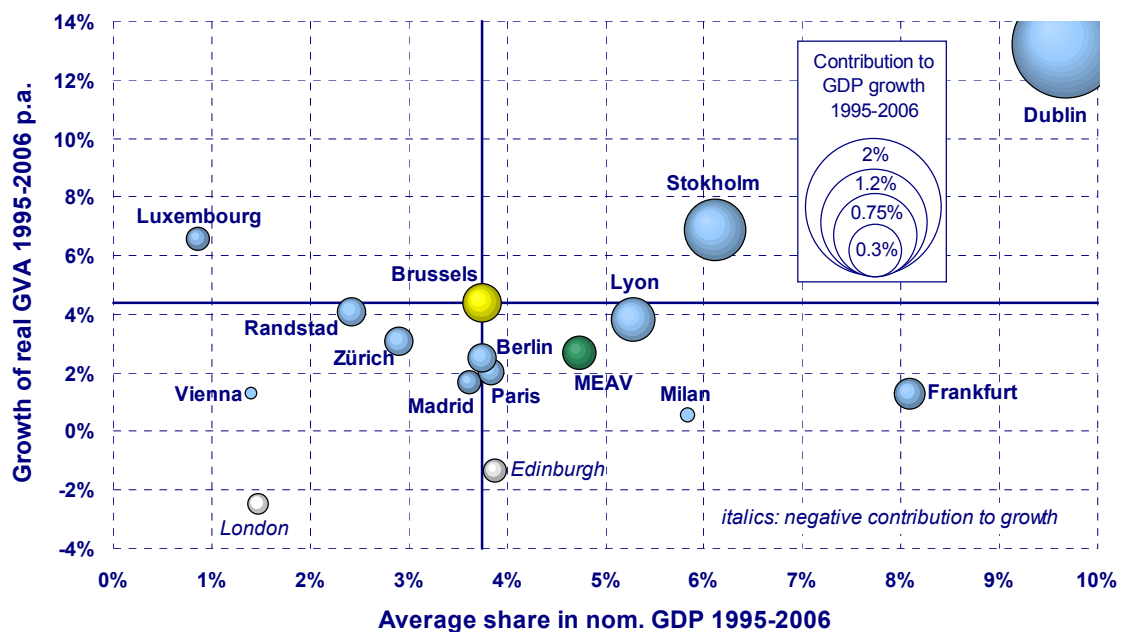
- The new economy sector consists mostly of very innovative industries which feature high growth rates. As the name of this sector already indicates, it is generally a rather young sector which does not, therefore, make up a major part of the overall economy. Still, due to its dynamism and future growth potential, this sector could be important for a region's development.
- Not very weighty but very dynamic – this fits quite well for the new economy sector in the BMR. It is particularly impressive to see that there are only two regions in which the new economy sector really expanded more dynamically than in the BMR.
- For the BMR, it is a precious asset to possess such a powerful new economy sector. Between 1995 and 2006, this sector contributed 0.6 percentage points to the whole GDP growth, more than the much weightier political sector did. Furthermore, if this sector continues to grow as it has recently, its importance will steadily augment as will its contribution to GDP growth.
- The more detailed analysis reveals that the growth was mainly driven by postal and telecommunication services which grew by 9.7% p.a. in real terms between 1995 and 2006.
- As the burst of the IT bubble at the beginning of the decade showed, some risks go hand in hand with the new economy. Furthermore, an important characteristic of the new economy is its geographical mobility which makes precise forecasts about its future development and its future impulses on the aggregate economy very difficult. As a more detailed analysis of the development in sub-periods reveals, there is no sign of such weaknesses in the BMR yet. In other regions of the benchmarking sample, such weaknesses can clearly be observed from 2000 on.

Figure 3-15 Traditional Sector: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- The traditional sector presents itself quite heterogeneously over the benchmarking. In some regions, it plays an important role, while in other regions, the traditional sector is rather negligible (depending on its growth performance, this can be both positive or negative).
- Generally, the traditional sector is characterized by radical structural adaptation which means that, on average, the growth performance of this sector often is neutral or even negative. Because we expect this general trend of such a labour intensive and less innovative sector to continue, it is more of an advantage than a disadvantage for the BMR that the share of the traditional sector in GDP is the smallest of all the benchmark regions.
- The small but positive contribution to GDP growth signifies that the structural adaptations in the traditional sector took place in a less dramatic way in the BMR than in some of the benchmark regions where the contribution to GDP growth was clearly negative between 1995 and 2006.
- In addition, the analysis of the sub-periods 1995-2000 and 2000-2006 reveals that there was a rupture between 1995 and 2006. While the growth rate of the traditional sector was negative in 1995-2000 (-1.4%), in 2000-2006 the growth rate was positive (+1.7%). This indicates that, contrary to many other regions, the traditional sector of the BMR achieved a veritable turnaround.

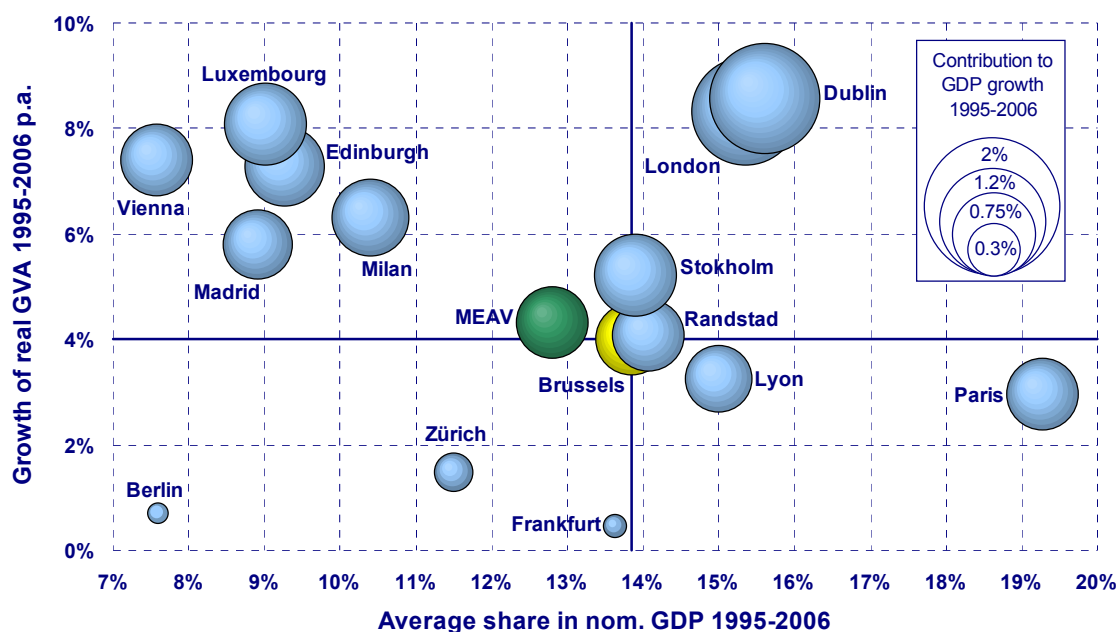
Figure 3-16 Old Economy: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP
 Source: BAK Basel Economics

- Except for a few cases in the benchmarking, the old economy sector doesn't play an important role in the economies of most of today's city regions. This also holds true for the BMR.
- It is important to notice that this is partly due to the selection of benchmarking regions. While the largest metropolitan regions do not generally focus on this part of the economy, it is the focus for a number of successful regions in the second row the driver of growth (examples are: Stuttgart, Gothenburg or Basel).
- Fortunately, the old economy in the BMR is very well positioned as seen by the clearly above-average growth rate of this sector.
- Comparing the old economy sector to the other sectors reveals that, in terms of growth rates, only the new economy sector performed better in the BMR.
- As a consequence, the BMR gets substantially more impulses from this industrial sector than most of the other benchmark regions.
- Although growth was good, it is obvious that the BMR does not rely on the old economy. The share is far too small. The old economy is a successful niche for the BMR but not its main driver of economic success.

3.3 The BMR's Key Industries

**Figure 3-17 Business services excluding real estate:
Contribution to real GDP growth 1995-2006**



Note: based on USD at 2000 prices and 1997 PPP

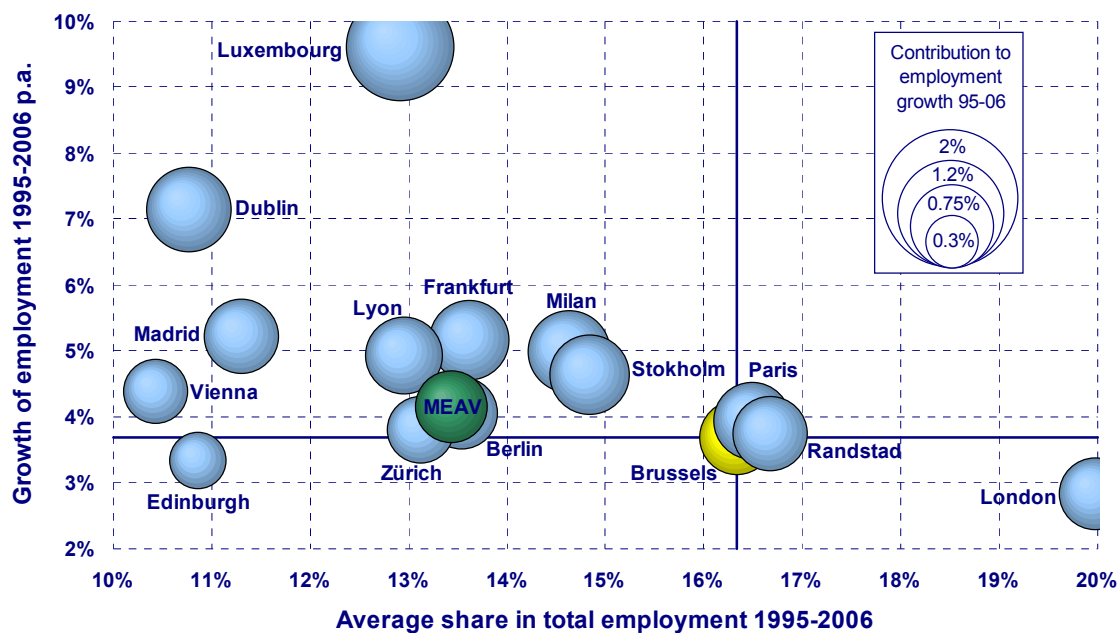
Source: BAK Basel Economics

- The industry aggregate business services excluding real estate is the most important key industry, when ranked in terms of the share in GDP in 2006. Basically this key industry covers the following four 2-digit industries: leasing of movables without operating personnel (NACE 71), IT services (NACE 72), research and development (NACE 73) and commercial services (NACE 74).
- As in other metropolitan regions, in the BMR in 2006 by far the most important of these four industries were the commercial services. The leasing of movables and the IT services have about the same weight and the importance of research and development is very small for the whole key industry.
- The benchmarking brings out the enormous variation of the importance of the business services in the regions, the range goes from 7.5% up to almost 20%.
- As fig. 3-17 depicts, there is just the Paris region where business services clearly make up a more important part of the whole economy than in the BMR.
- On the growth-side, the analysis reveals that even though the BMR's growth rate reaches a considerably high level of 4%, it is unfortunately still lagging behind. Since this rate is much higher than the overall growth rate of the urban sector (2.1%) and since the most important part of the business services belong to the urban sector, the below average performance of the urban sector is not due to underperformance of the business services. In total, the contribution of this key industry to GDP growth

constitutes 0.6 percentage points which are more than 20% and a remarkable amount for a single key industry.

- Nevertheless, it has to be pointed out that there are just three regions where the business services perform significantly worse. While the BMR is in the middle group, seven regions are growing substantially faster. As the next figure shows, this is partly due to a lack of employment productivity. Relative to other regions, the employment grew faster than the value added, indicating that the growth in employment productivity in the BMR was inferior to that in the other benchmark regions.

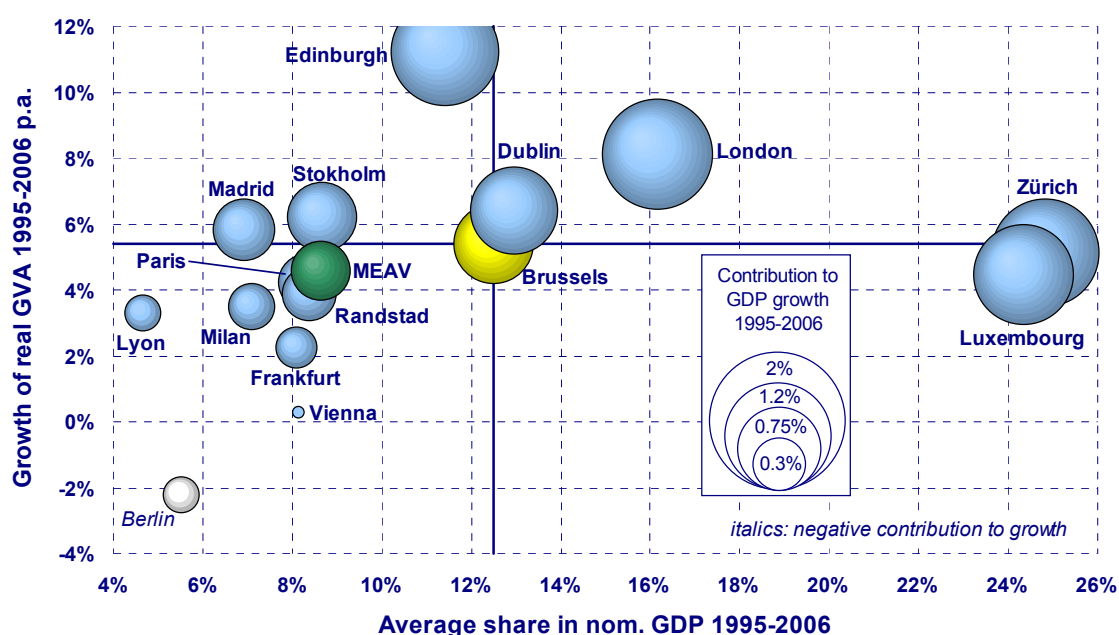
**Figure 3-18 Business services excl. real estate:
Contribution to employment growth 1995-2006**



Note: in % p.a.

Source: BAK Basel Economics

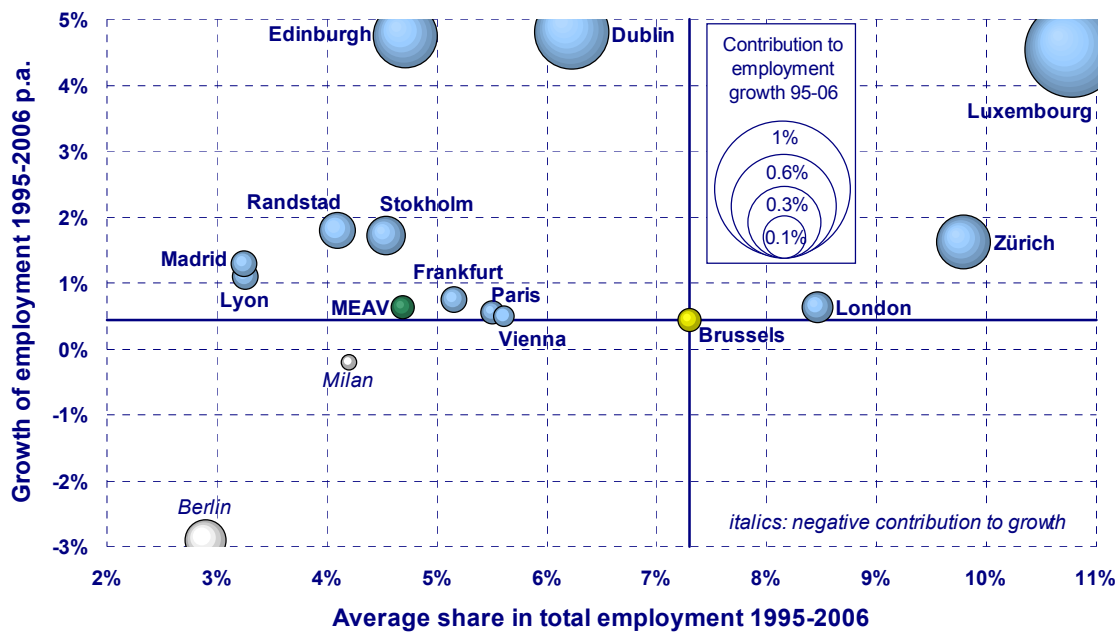
- Even if the growth in employment wasn't very high compared to the benchmark regions, the business services still provided important impulses to the labour market of the BMR. The growth rate added up to 3.7% between 1995 and 2006. This clearly lies above the average growth rate of the aggregate economy (1.1%) and above the growth rate of the urban sector (1.2%) as well.

Figure 3-19 Banking and insurance: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

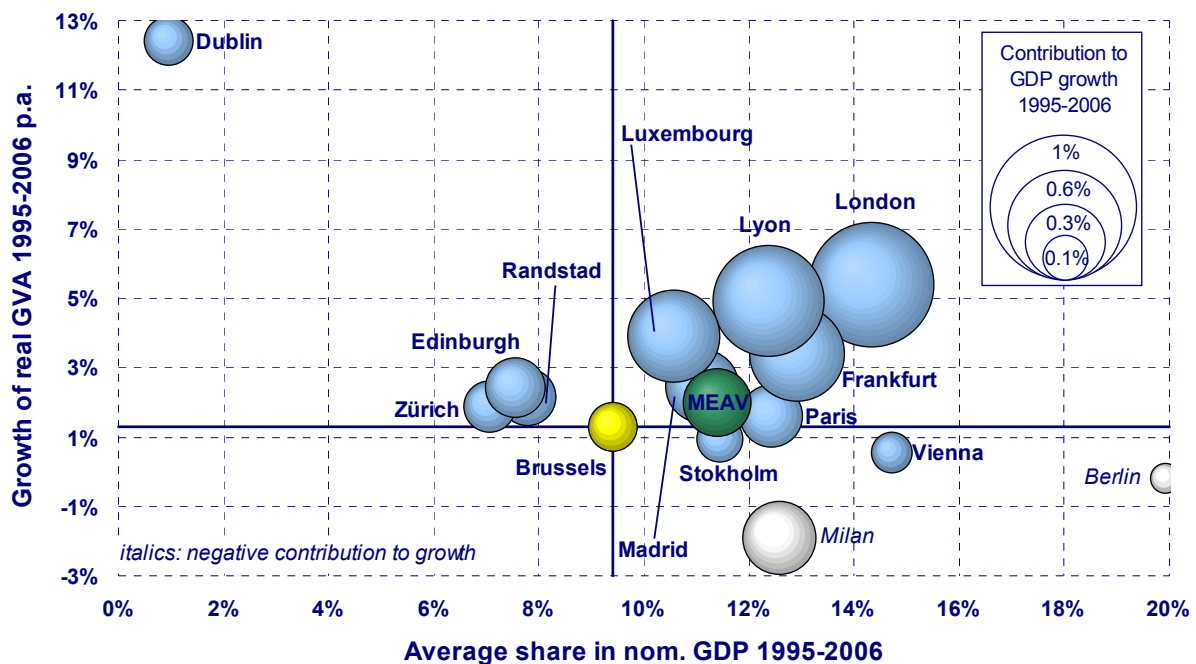
- The bubble chart showing the development and the weight of the financial services (NACE 65-67) points out the importance of this industry for the BMR. Obviously, the financial services in the BMR don't reach the relative importance as in the two well known financial centres Zurich or Luxembourg. But interestingly, the BMR is not located that far behind London and even well in front of the German financial centre Frankfurt.
- Looking at the growth rate, the story is quite good for the BMR as well: The financial services of the BMR are one of the best performing among all the benchmark regions! Between 1995 and 2006 the dynamism of this key industry was superior to that of Zurich, Luxembourg and Frankfurt.
- The combination of high share in GDP and dynamic growth is reflected in the contribution to GDP growth which is 0.7 percentage points and, therefore, surpasses the contribution of the business services. According to the contribution to GDP growth, the financial services are the most important key industry in the BMR.
- This finding reveals that the performance of the financial services is one of the main drivers of the success of the BMR. Therefore, it must be a crucial issue for the relevant actors of the BMR to ensure business conditions that allow a further strengthening of the competitive positioning of the financial services. One very important aspect is the availability of highly qualified manpower which, at the moment, seems to be guaranteed, as the analysis in the next chapter will reveal.

Figure 3-20 Banking and insurance: Contribution to employment growth 1995-2006

Note: in % p.a.

Source: BAK Basel Economics

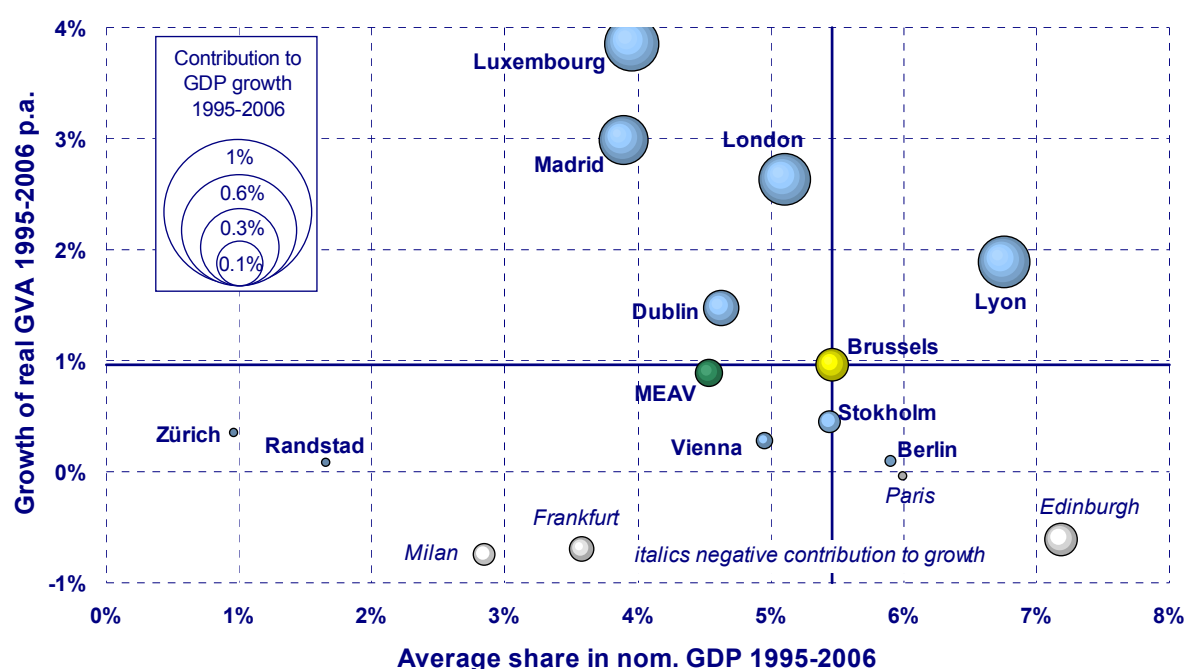
- Fig. 3-20 shows that the importance of the financial services is far smaller for the labour market than it is for the generation of value added (7.3% of the share in total employment compared to 12.5% of the share of GDP).
- While the growth in employment was about the same as in other regions with a specific focus on financial services, this growth in employment was too small to provide significant impulses to the labour market.
- The combination of the dynamic growth in GVA with the negligible growth in employment indicates the substantial productivity growth that has been realized in this key industry.

Figure 3-21 Real estate: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

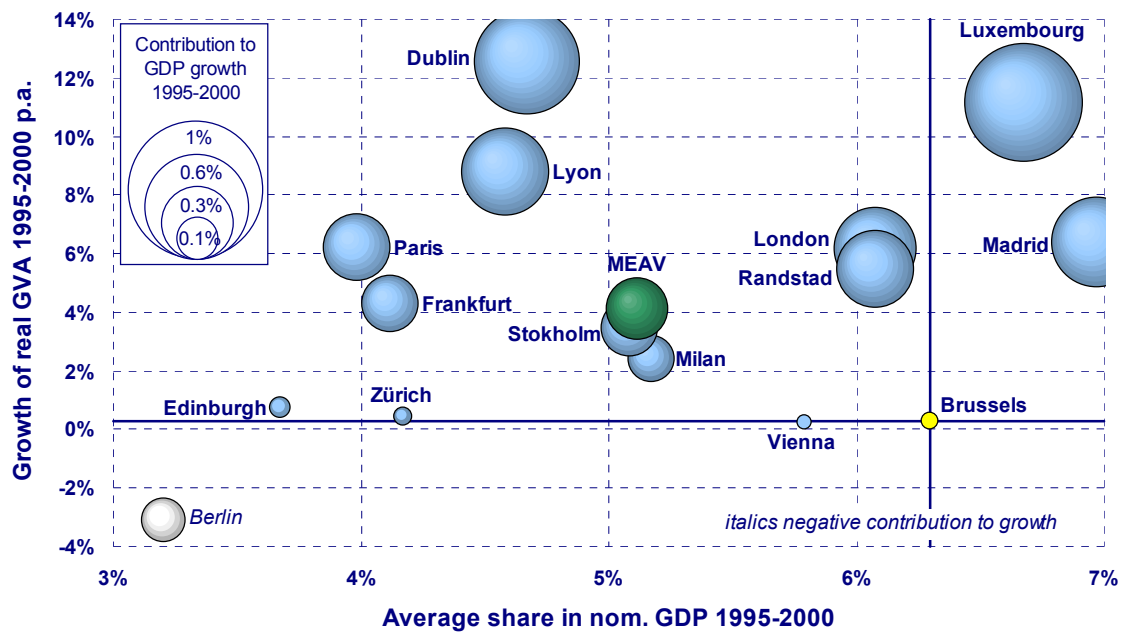
- The third largest of the key industries is real estate (NACE 70). Before going into the analysis of this industry, a few remarks are necessary. This industry does not only include the 'commercial services' side of real estate (real estate brokerage, facility management) and the commercial investment in real estate, but also private renting. As the latter is the most important part with respect to gross value added, societal preferences like home ownership rates and the organisation of private renting markets heavily influence the industries share and development. Furthermore, although there are international standards for deriving the statistics on real estate, some doubts remain if private renting is indeed covered to a comparable extent internationally. When interpreting the results, this should be kept in mind.
- The reason why the contribution to GDP-growth of this industry is just 0.1 percentage point definitely is an outcome of a lack of dynamism. On average, the growth rate in the period under consideration was just 1.3%, clearly below the performance of most of the benchmark regions.
- However, the chart reveals that in most of the benchmark regions real estate cannot be considered as a major engine of growth either. There are just five regions where real estate really is an important contributor to the GDP-growth.

Figure 3-22 Knowledge services: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

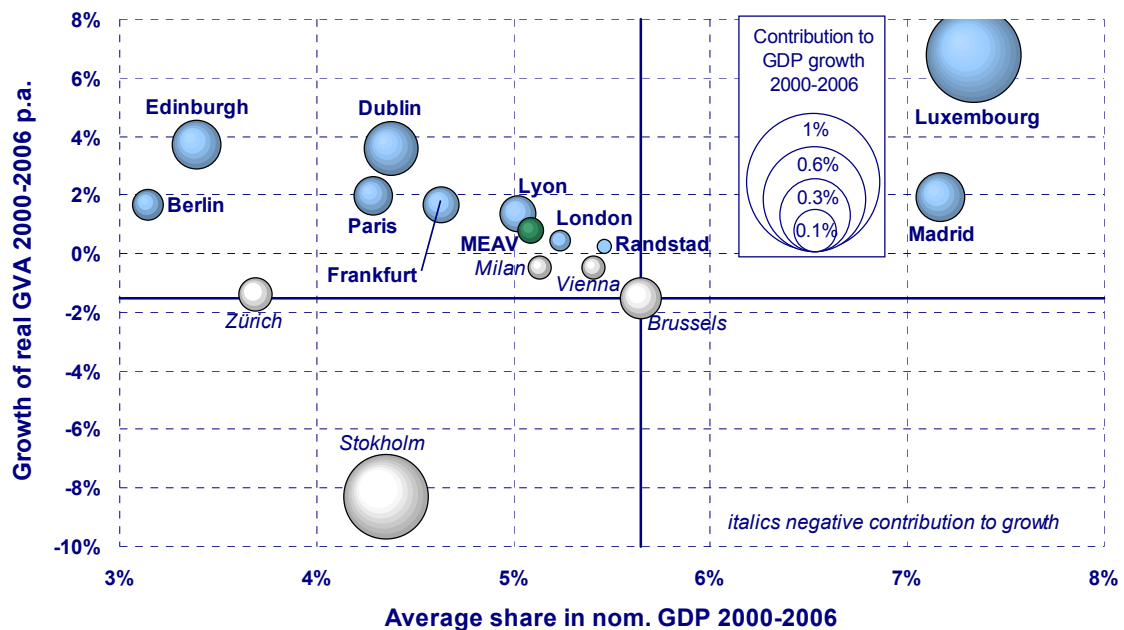
- Knowledge services belong to the more important key industries in the BMR too. This industry consists of the two NACE 2-digit industries education (80) and research and development (73), though in general, education makes up the bigger part by far.
- Again, some care should be taken in the interpretation. To some extent, different public education systems can influence the share of this industry. On the other hand, the importance of this sector can hardly be underestimated. It is not the contribution to actual GDP which is in the focus, but rather, the contribution to long-term growth prospects either through research and development results or through the investment in human capital. Of course, these factors often do not influence the growth prospects of the regions the investment is undertaken – ideas as well as people can move taking their resources to other regions – but a strong knowledge services industry builds a solid foundation to gain the knowledge and human resources necessary for brighter growth prospects if other factors are set right as well.
- The above average share of the knowledge services of GDP indicates the relative importance and strength of this industry in the BMR. This signals that the preconditions to gain the required human resources are favourable in the BMR.
- Even though the direct value added growth impulses coming from the knowledge services are not of major concern, it is worth mentioning that the average growth rate between 1995 and 2006 was about one per cent, leading to a clearly positive contribution to GDP growth – a fact that is not self-evident.

Figure 3-23 Transport: Contribution to real GDP growth 1995-2000

Note: based on USD at 2000 prices and 1997 PPP

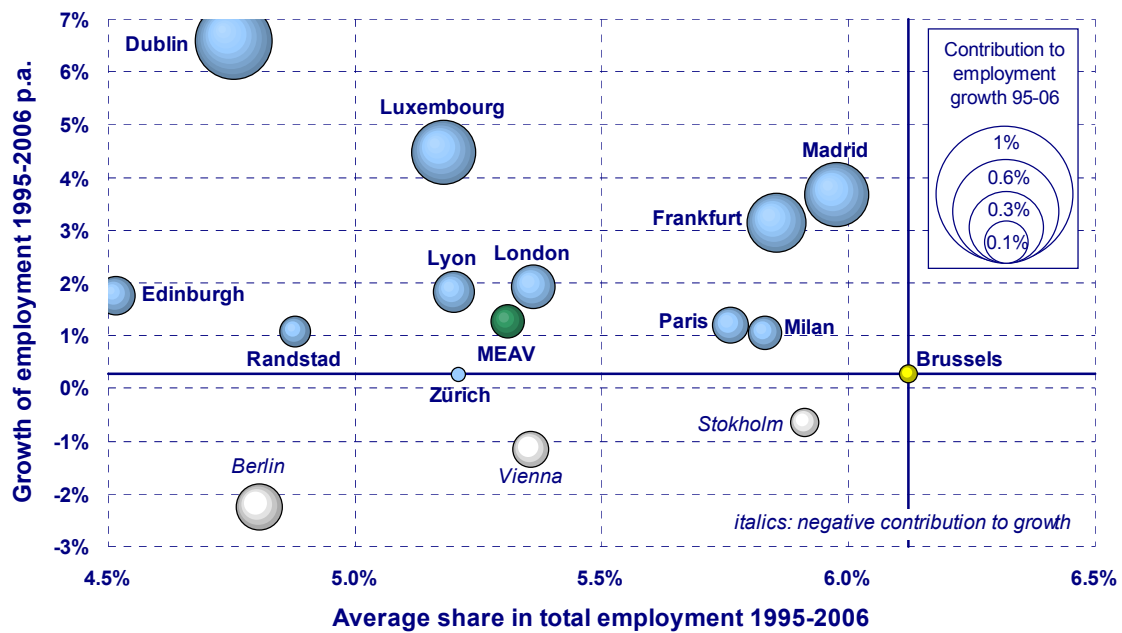
Source: BAK Basel Economics

- The performance of the transport (NACE 6063) of the BMR is analysed for the two sub-periods 1995-2000 and 2000-2005.
- As fig. 3-23 brings out, the positioning of this industry is fairly weak in the first sub-period. Even if the contribution to GDP growth is positive, the growth lag to most of the other city regions is striking.

Figure 3-24 Transport: Contribution to real GDP growth 2000-2006

Note: based on USD at 2000 prices and 1997 PPP
Source: BAK Basel Economics

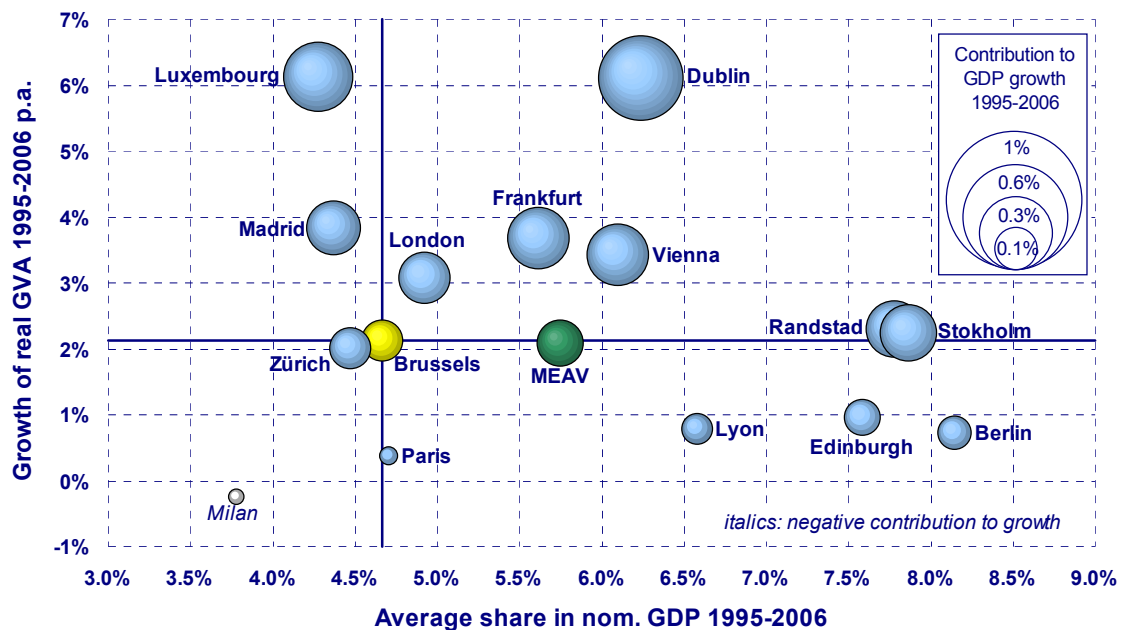
- Fig. 3-24 reveals that the transport in general performed much weaker in the second sub-period, 2000-2006, than between 1995 and 2000.
- This also holds true for the BMR where the growth rate was negative and, therefore, the contribution to GDP growth was negative as well. In total, the transport reduced the GDP growth by 0.1 percentage points between 2000 and 2006.
- Because of the relatively high share of transport in GDP in the BMR (third position of the benchmarking) and because of the good performance realized in most of the other city regions (at least in the earlier sub-period), this key industry could have a significant potential to provide crucial impulses to the economy of the BMR.

Figure 3-25 Transport: Contribution to employment growth 1995-2006

Note: in % p.a.

Source: BAK Basel Economics

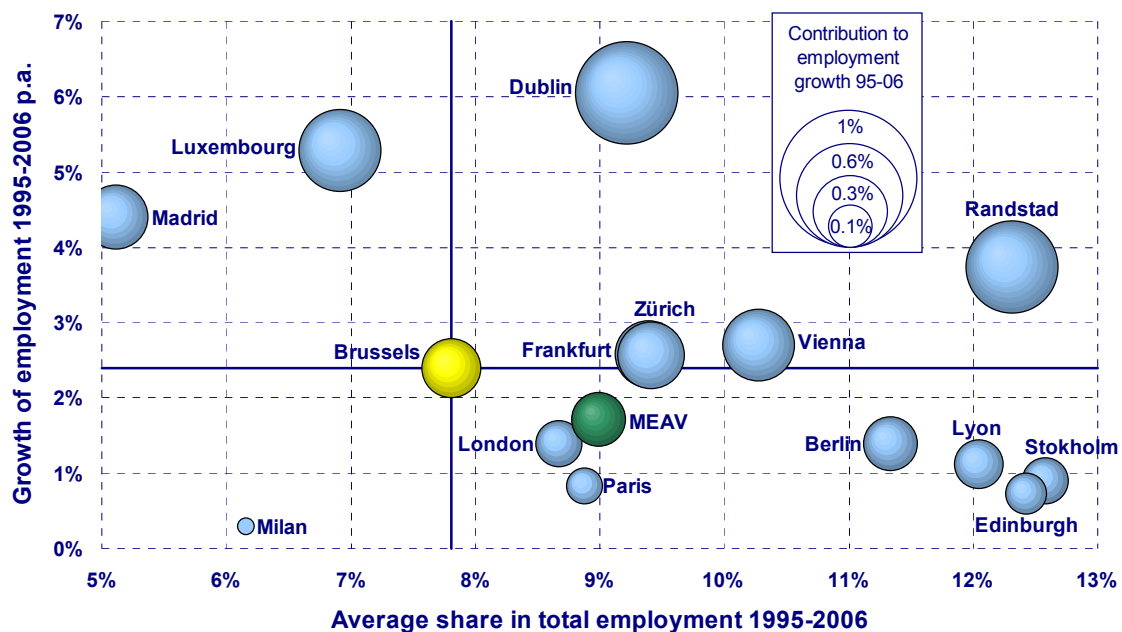
- The transport industry in the BMR has a higher share of total employment than in all the rest of the benchmark regions. However, in most of the other regions, transport contributes more to total employment growth. So, as in the case of value added, the same conclusion can be drawn: this industry clearly has the potential to provide positive impulses to the labour market of the BMR.

Figure 3-26 Health and social services: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- Health and social services is another sector heavily influenced by the organisation of public services in a region and by the statistical difficulties in calculating value added for a non-market service. Therefore, again some care is necessary when drawing conclusions.
- The share of the health and social services (NACE 85) in total GDP in the BMR is positioned more towards the lower end of the regional comparison. In addition, growth performance is mixed.

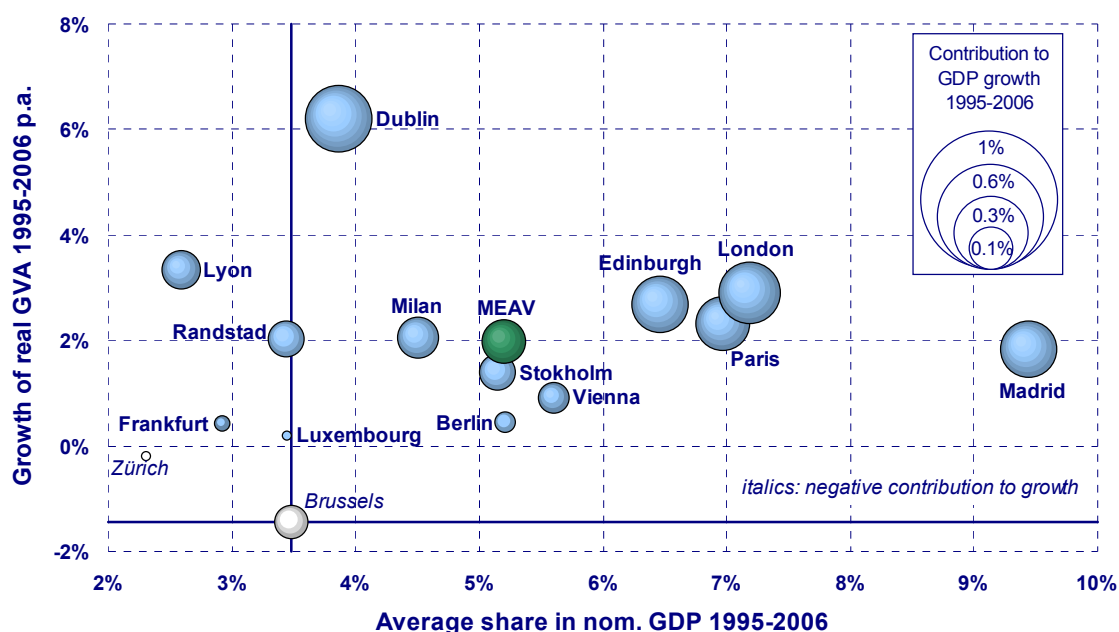
Figure 3-27 Health and social services: Contribution to employment growth 1995-2006

Note: in % p.a.

Source: BAK Basel Economics

- Contrary to value added, the growth rate of employment in the health and social services clearly is above average. Even if this is not particularly good news in terms of productivity growth, the impact on the labour market is fairly positive. The contribution to total employment growth adds up to 0.19 percentage points which is about 18% of total employment growth. Therefore, this key industry can be considered one of the major pillars of the labour market in the BMR.

Figure 3-28 *Hotels, restaurants, entertainment, culture and sport:
Contribution to real GDP growth 1995-2006*

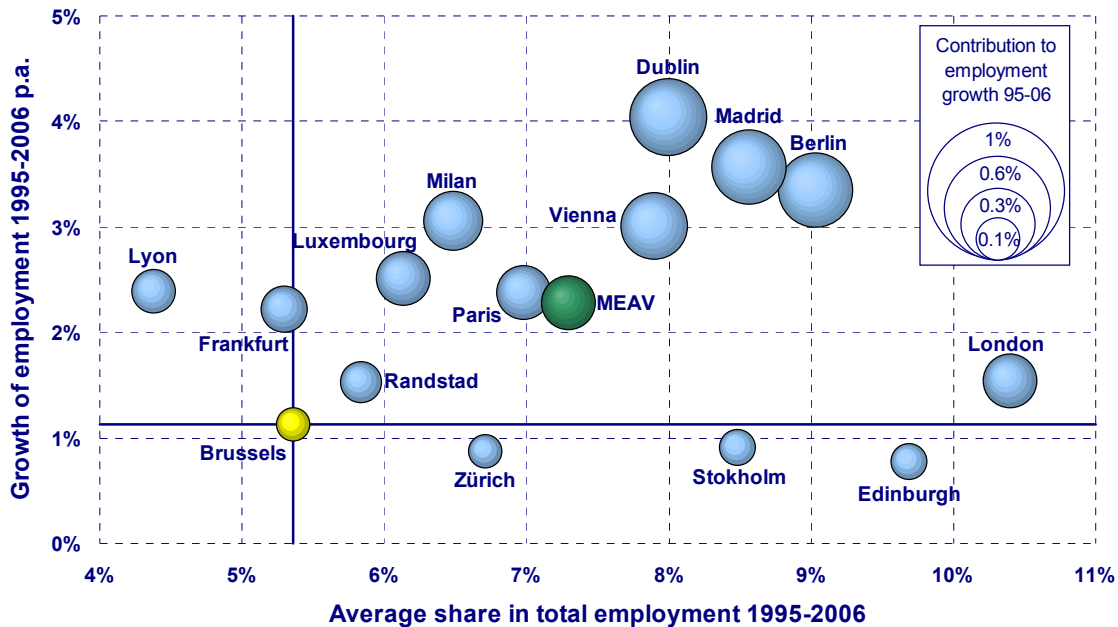


Note: based on USD at 2000 prices and 1997 PPP
Source: BAK Basel Economics

- As the benchmarking brings out, the BMR is – apart from Zurich – the only region with a declining tourism and leisure industry (NACE 55 and 92) in the period under consideration. Fortunately, this key industry makes up such a small share of the nominal GDP that the negative growth contribution only totals -0.05 percentage points.
- The discrepancy between the BMR and cities like London and Paris (representing established tourism magnets) regarding their shares of tourism and leisure in total GDP is obvious. Therefore, the BMR is positioned in the same range as cities where tourism and leisure is not a major economic pillar.
- Further, the benchmarking reveals that there is only a very weak (positive) correlation between the growth rate of the tourism and leisure industry and the attractiveness of the destination (when attractiveness is measured on the basis of the share in total GDP). BMR deviates from the trend line negatively. This could signal that there is potential for tourism and leisure in the BMR to perform better.
- For a closer look at the BMR's tourism industry and its performance, additional indicators such as overnight stays, occupancy rates or prices are helpful. For instance, it's quite interesting to look at the development of overnight stays. Starting with 3.3 million overnight stays in 1995, the tourism industry of the BMR was able to boost the number up to 4.8 million in 2006. This corresponds to a rather impressive yearly growth rate of 3.5 percent.
- Given the fact that the share of the "hotel, restaurants, entertainment, culture and sports" sector in Brussels' GDP is relatively low, there seems to be potential for a strengthening of the tourism sector in the BMR. This is also confirmed by the tourism

intensity, measured by the number of overnight stays per inhabitant, where the BMR is positioned in the average of the benchmark cities, yet clearly behind well-known and established tourism destinations such as Paris or London.

Figure 3-29 *Hotels, restaurants, entertainment, culture and sport:
Contribution to employment growth 1995-2006*



Note: in % p.a.

Source: BAK Basel Economics

- Looking at the development of the employment in the tourism and leisure industry, the judgement remains about the same. The tourism and leisure industry could perform better and possesses significant potential to stimulate the labour market of the BMR.
- Given the information at hand, the – absolute and compared to the benchmark regions – weak performance of hotels, restaurants, entertainment, culture and sports in the BMR combined with the low share is a somewhat disappointing and unexpected result. Although not one of the top destinations, Brussels is well-known and should be able to attract visitors, on business as well as on leisure. The EU institutions should help as well. Indeed, direct tourism indicators seem not all that bad.
- In addition, large parts of the demand to the industry at hand come from local people. Given the wealth and economic success of the region, one would expect a positive impact from local demand as well. Summing up, given the available information, the weak result for the tourism and leisure industry cannot be understood completely.

For a better understanding of the importance, the performance and the competitiveness of the tourism industry in the BMR, a special study would be necessary. This is especially true

because the tourism industry is neither classified nor measured as an economic sector, but disperses and reflects itself in a large number of industries.

In order to carry out comprehensive studies on the tourism industry, BAK Basel Economics has built up a large tourism database and developed the «BAK Tourism Economic Impact Model» as well as the «BAK Competition Model for Destinations»

The «BAK Tourism Economic Impact Model»

Objectives of the «BAK TEI model»: The tourism economic impact model developed by BAK Basel Economics makes it possible to calculate the overall effects of tourism demand in a regional economy. In particular, the value added and employment effects generated by tourists are estimated and analyzed. The «BAK TEI model» is constructed in such a way that it can also be used for simulations. For example, the model lends itself to calculation of the effects of a given increase in the volume of tourism demand. Economic impact models for tourism are based on input-output analyses. The tourism demand, as calculated by multiplying the numbers of tourists by the amount they spend, triggers direct and indirect economic effects.

Questions answered by the «BAK TEI model»

How many tourists does the studied area host?

How much do tourists spend in this area?

What portion of regional GDP is due to tourism?

How many jobs are created?

How much tax revenue is generated?

The «BAK Competition Model for Destinations»

For measuring the competitiveness of tourism destinations, BAK Basel Economics possesses a highly attractive and comprehensive database. Methodologically, the analyses are based on the «BAK Competition Model for Destinations». This model provides an overview and the combined analyses of the three elements that underlay the success of destinations: «offering» (as infrastructure for leisure and business tourism), «demand», and «market/competitors».



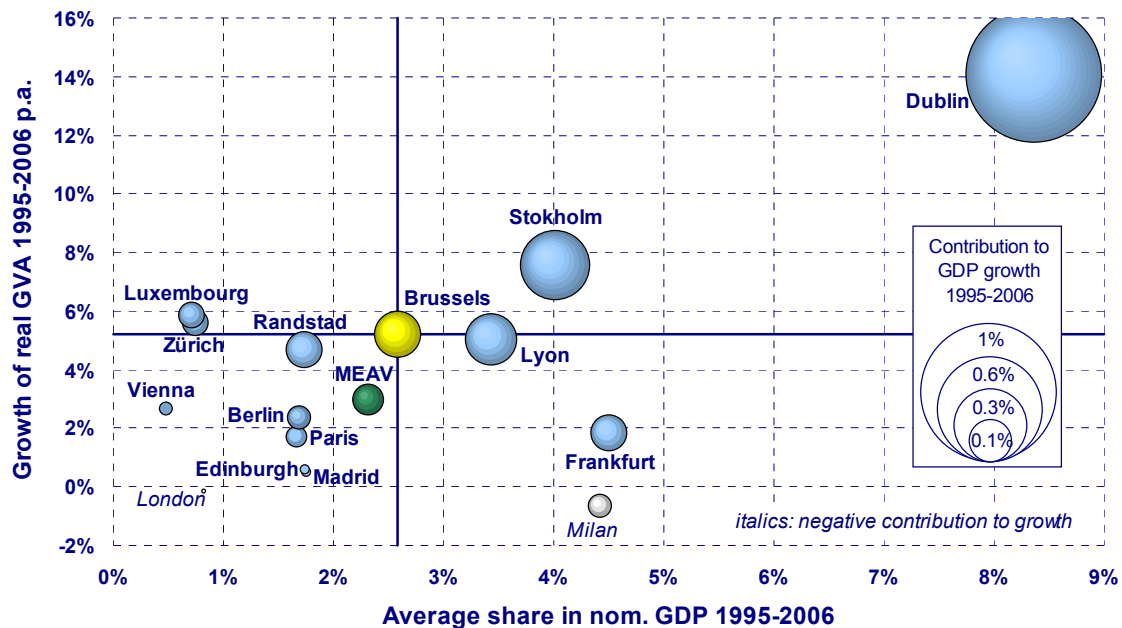
Offering: hotel and restaurant quality, prices, attractiveness for leisure and for business tourism, cultural offerings, etc.

Demand: length of holidays, seasonality of demand, degree of internationalization

Market: competitors, market share, international sales, networks

Success: nights, occupancy rates, prices

**Figure 3-30 Chemicals and chemical products:
Contribution to real GDP growth 1995-2006**



Note: based on USD at 2000 prices and 1997 PPP
Source: BAK Basel Economics

- Because most of the old economic sector in the BMR is constituted by the chemicals and chemical products (NACE 24), the story for this key sector is identical to that of the whole sector. This means that the BMR gets significant impulses from the chemical industry.
- Clearly, although there are significant impulses from the chemical industry, the small share in the economy limits the impact. Even if developing successfully in the future, it cannot be the main driving force for the BMR economy. This is different in some other regions (most of them not included in the benchmarking sample) where the chemical industry is indeed the driving force of the economy (or other parts from the old economy, e.g. the automotive industry). Since these industries rely heavily on clusters (within the industry, but also within the larger research environment), there is some danger that the BMR chemical industry cluster is in the long run too small to survive successfully. From this more general benchmarking analysis, it is not clear in which way it will develop. Will it grow into a successful expanding cluster? Or will it face always tougher competition due to its limited size?
- For a better understanding of the importance, the performance and the competitiveness of the chemical and especially the life sciences industry in the BMR, a special study would be necessary.

The «BAK Life Sciences Model»

Strong growth, above-average productivity, job creation: the life sciences industry has clearly demonstrated its worldwide potential in recent years. In the BMR this can be seen in the impressive growth of the chemical and pharmaceutical industry by more than 5% p.a. between 1995 and 2006. But how successful is the life sciences location BMR compared to other regions in Western Europe and the USA? How compares the industry's performance internationally at present? And how are the most important framework conditions and location factors that affect life sciences performance doing? What is the potential for the Life Sciences Industry in the BMR? And what could be done to improve its competitiveness?

To get answers to these questions BAK would suggest the following for monitoring the development of the life sciences industry in the BMR and to benchmark this against other successful life sciences locations:

Economic performance of life sciences industry:

- Defining the life sciences sector based on detailed industry data (NACE 3-digit)
- Compiling or estimating variables like gross value added, number of people employed, man-hours actually worked, labour productivity per employee and per man-hour worked
- Account for development over time and the current position

Regional framework conditions for the life sciences industry: the life sciences markets:

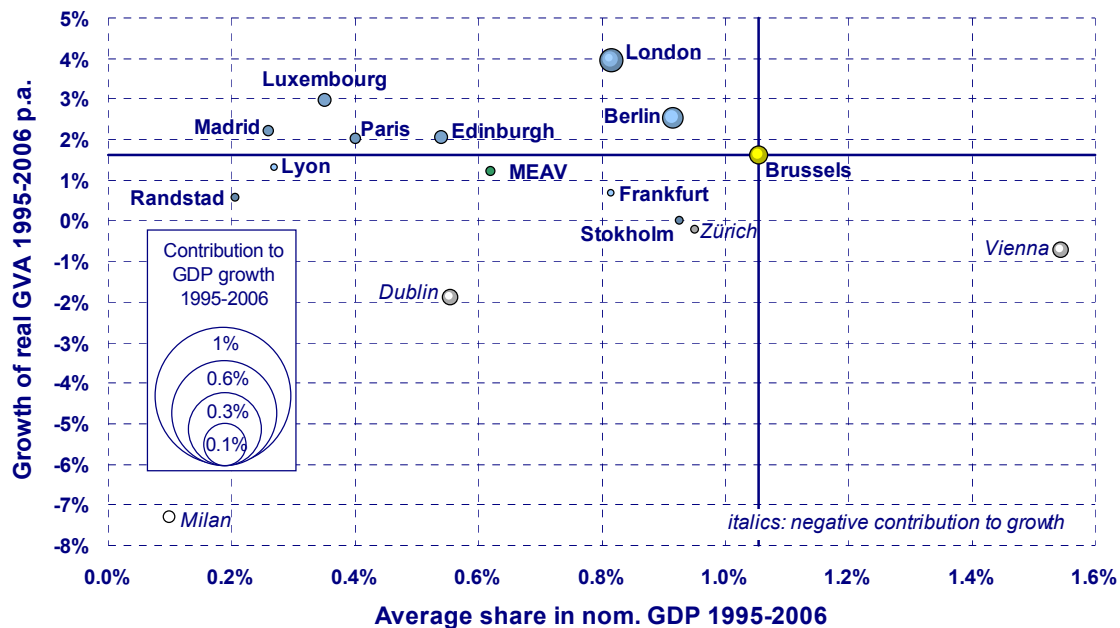
- Healthcare expenditure as percentage of gross domestic product
- Number of discharges, length of stay / bed-days
- Practising physicians per 1000 inhabitants
- Percentage of the population over 65 and over 80 years of age
- Dissemination of new medicines
- Prices for new pharmaceutical products

Quality of location factors most relevant for the life sciences industry's development perspectives:

- Indicators of intercontinental and intra-European/interregional accessibility
- Taxation of companies and highly qualified employees
- Regulation of product and labour markets
- Quality, quantity and dynamism of private and public services on offer in the region
- Availability of international schools
- Cost situation: wage and salary costs in the region, particularly in the life sciences industry
- Acceptance of new technologies, especially "red" genetic engineering
- Potential of new enterprises, administrative barriers to innovation
- Venture capital
- Availability of potential employees in general and with life sciences qualifications
- Research and development expenditure
- Quality of research: Shanghai scores
- Scientific publications in the life sciences field per capita of the population
- Patents
- Indicators of the financing structure of universities

Monitoring, benchmarking and analysing this information in an integrated approach would provide answers necessary for successful lobbying and policy setting for life sciences industry's future in the BMR.

**Figure 3-31 Interest groups and other associations :
Contribution to real GDP growth 1995-2006**

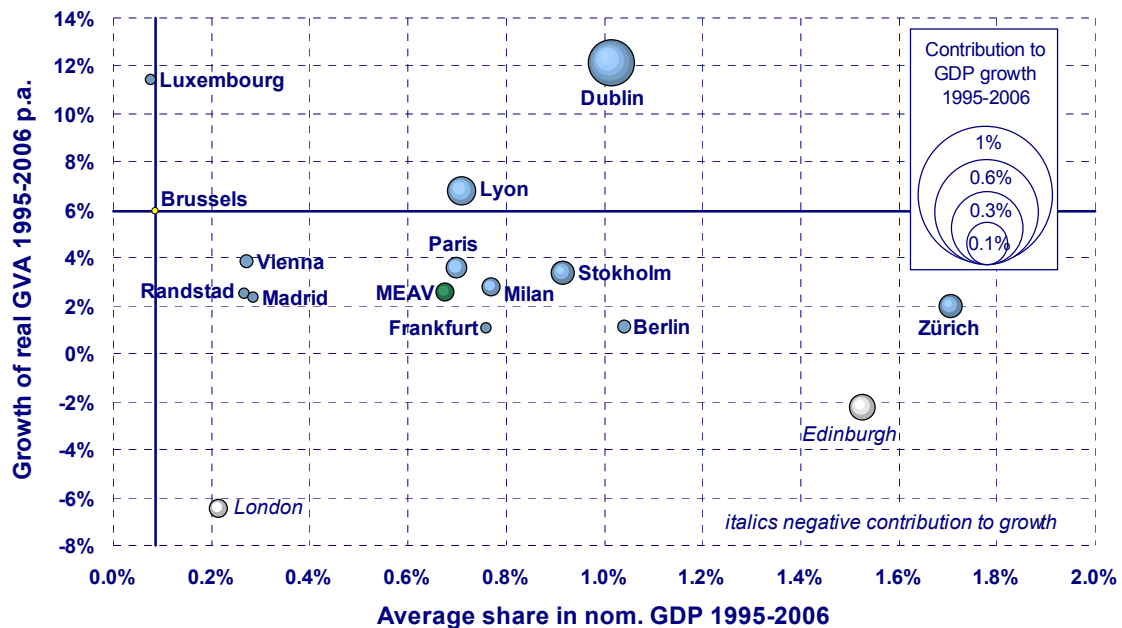


Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- The benchmarking reveals that the industry interest groups and other associations (NACE 91) isn't an important economic pillar in any of the benchmark regions. Nevertheless, interest groups and other associations are significantly more important in the BMR than in all the other city regions except Vienna. Obviously, this is closely related to the EU administration.
- Because this key industry isn't performing particularly well, the contribution to GDP growth is close to zero. But the analysis has to consider the indirect effects of this industry as well. Generally, people working in interest groups and associations are highly qualified and therefore possess a high purchasing power. This, in turn, implies strong drives for consumption and provides significant stimulation to a large set of industries. Thus, the relative importance of this key industry in the BMR can clearly be judged as another precious asset.

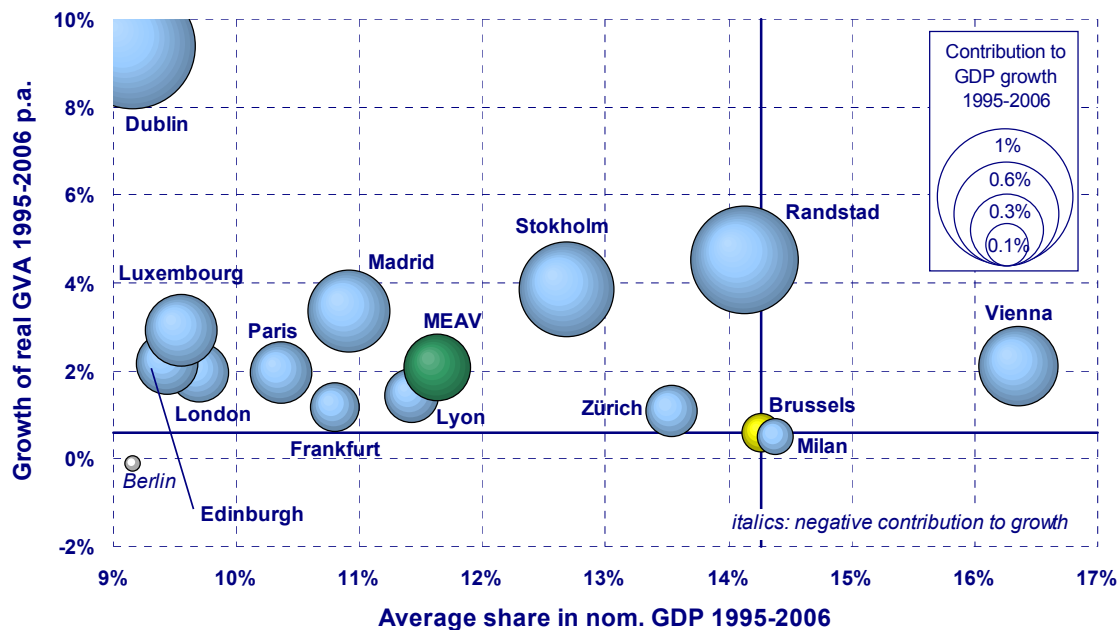
**Figure 3-32 Precision and optical equipment, watches:
Contribution to real GDP growth 1995-2006**



Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- Precision and optical equipment and watches (NACE 33) is not a very weighty industry in any of the regions under consideration. In the BMR the generated value added in this industry is very close to zero and, despite a remarkable growth development, the contribution to GDP growth is negligible as well.

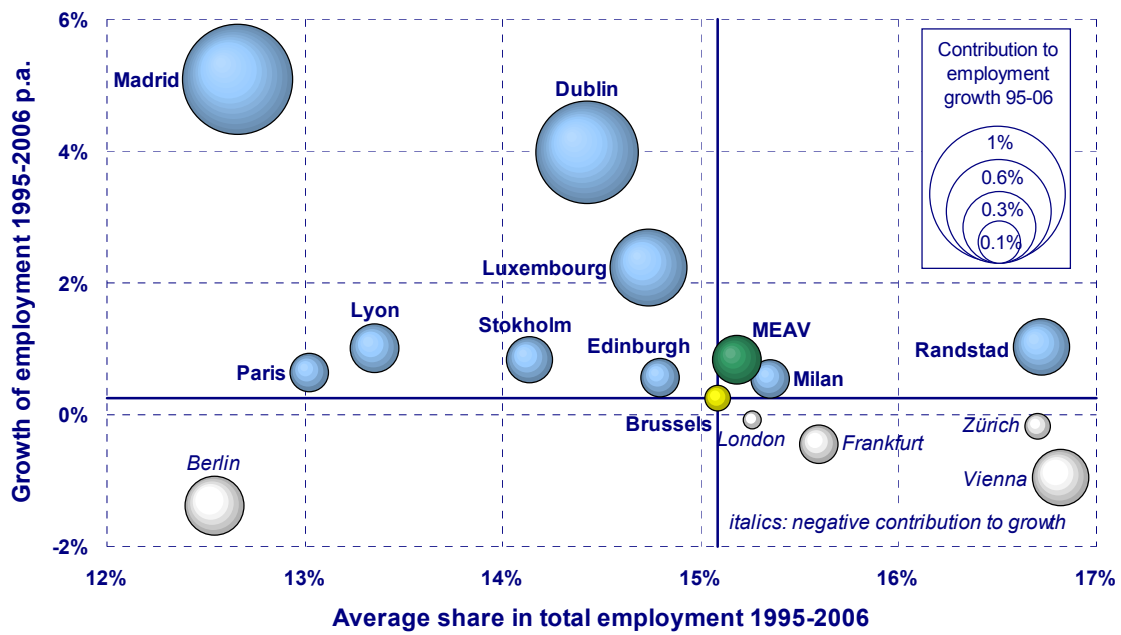
Figure 3-33 Trade and repair: Contribution to real GDP growth 1995-2006

Note: based on USD at 2000 prices and 1997 PPP

Source: BAK Basel Economics

- Even if the trade and repair industry does not belong to the key industries, it is worth having a look at this industry. With a share of more than 14% of the nominal GDP, this industry is even more weighty than the biggest key industry, the business services.
- Fig. 3-33 reveals the weak growth rate of this industry between 1995 and 2006. Since the trade and repair industry is part of the urban sector, this finding brings out one of the major reasons why this sector didn't perform that dynamically in 1995-2006.
- Nevertheless, the BMR's size and growth lag behind the benchmark average indicates the high potential of this sector in order to push the economy of the BMR.

Figure 3-34 Trade and repair: Contribution to employment growth 1995-2006

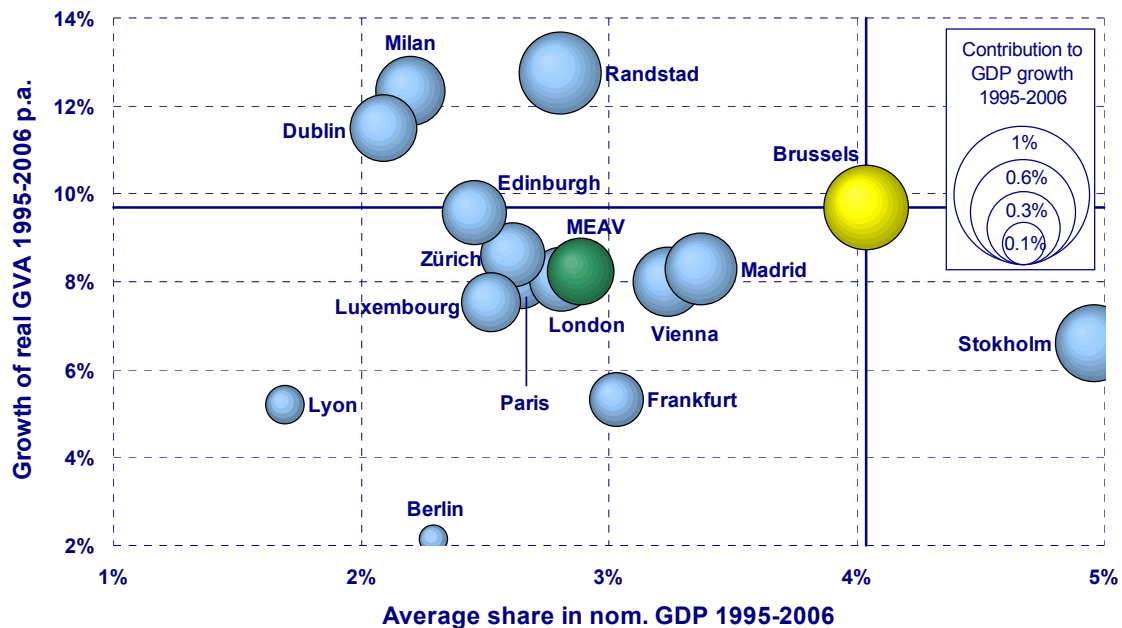


Note: in % p.a.

Source: BAK Basel Economics

- Even though fig. 3-34 points out the positive contribution of the trade and repair industry to total employment growth, this contribution has to be judged as rather weak.
- Because of its size, a stronger development of this sector could provide an enormous stimulus to the labour market of the BMR.

**Figure 3-35 Postal service and telecommunications:
Contribution to real GDP growth 1995-2006**



Note: based on USD at 2000 prices and 1997 PPP
Source: BAK Basel Economics

- Despite of its smaller size, the postal and telecommunication industry is an industry of special interest because of its impressive expansion between 1995 and 2006.
- Looking at the contribution to GDP growth, one can see that the BMR is the leading region of the benchmarking.
- This strong growth rate can at least partly be explained by the early liberalization of the telecommunication sector in Belgium. As a consequence, the market of telecommunication services became very competitive which substantially reduced prices and pushed innovative technologies. This can amongst others be observed in the density of fibre optics which is very high in the BMR.
- Even though the postal and telecommunication industry is rather small, its contribution to GDP growth is just surpassed by two key industries: the financial services and the business services (the growth contribution of education is about the same). This is very remarkable and indicates that this industry is a big asset from which further significant impulses can be expected.

4 The Benchmarking of Location Factors

An international benchmarking exercise must also be extended to cover the quality of a location for living, working and doing business. This chapter looks at the strengths and weaknesses of the BMR as a location for living, working and doing business.

The location factors to be discussed are ordered into four broad topics: Innovation Resources, Regulations, Taxation, and Accessibility.

4.1 Innovation Resources

The highly developed economies of Western Europe rely on permanent innovation to keep the competitive advantage in a globalizing world and to justify high earnings levels. Especially in service intensive urban and metropolitan economies, a highly qualified workforce with a high degree of practical know-how is a key factor for sustained economic growth.

Indicators for human capital available in a region

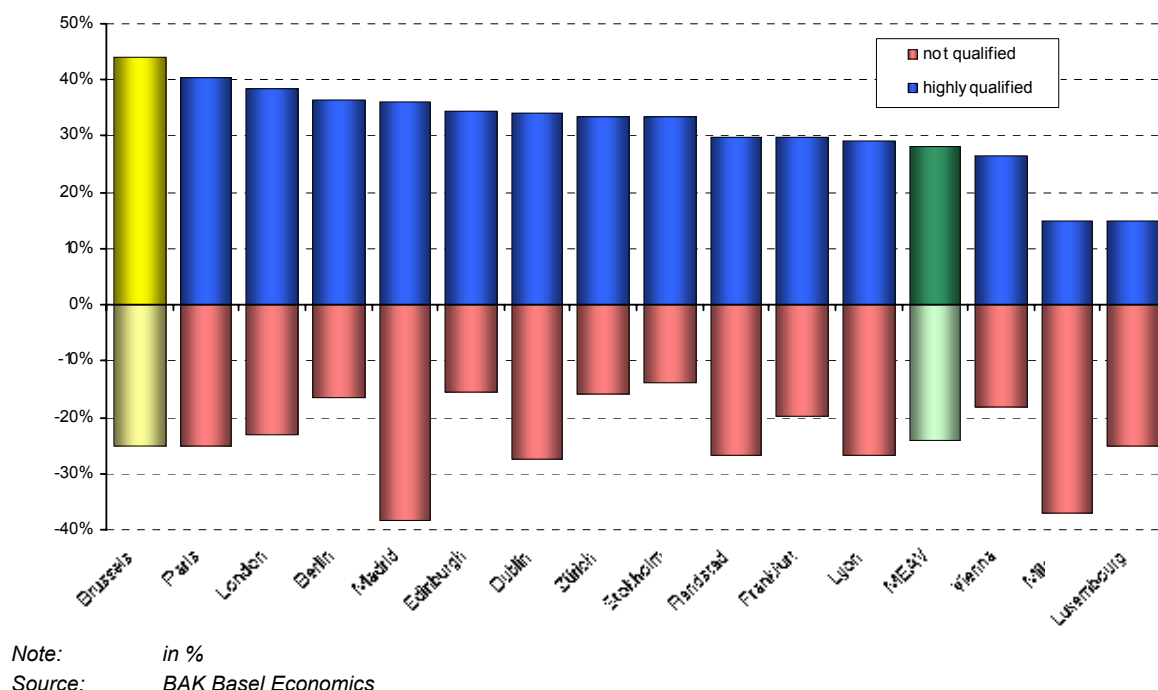
Human capital cannot be measured directly. Instead, indicators have to be used. The highest level of formal education achieved is both the most straightforward indicator and the one for which the most data is available.

The indicators which are used in benchmarking are:

- Share of the labour force with a tertiary degree (highly qualified)
- Share of the labour force without a secondary degree (not qualified)

Of course, these are incomplete measures since they focus on the formal education usually obtained at the beginning of the working life. They do not reflect non-formal education or the influence of work experience and ability and they ignore life-long learning. Furthermore, differences in the education systems between countries might lead to biased results. Still, these are the best indicators available and are widely accepted in international comparisons.

Figure 4-1 *Share of highly qualified and not qualified employment in total employment 2006*



- Fig. 4-1 points out the favourable qualification structure of the employment in the BMR. No other region has a higher share in highly qualified employment than the BMR.
- Concerning the labour force with no qualifications, the picture is a bit less bright. But even though there are only a few regions with a higher share in employment of people not even qualified at the secondary level, the situation in the BMR is far from being as dramatic as the comparison to the Metro Average indicates.
- But it should not be undervalued either. The regions with a higher share of not qualified are typically regions in a catch-up position and/or with strong inward migration. The BMR situation is, to some extent, different. It is a mature economy. Although migration does play a role, the situation is not comparable to Dublin or Madrid with much stronger migration. Furthermore, as seen before, the structure of the economy in the BMR relies heavily on industries typically dependant on highly qualified people. Finally, the high unemployment in the BMR should be noted. On an individual level, unemployment is often related to low qualification profiles.
- For the BMR, high overall qualification of the workforce is a must. This seems to work well on the top level, as the high share of tertiary educated people in the labour force shows. But there is a certain lack in the middle level of qualification, an issue the BMR should be concerned about given its dependency on high value added activities.

Innovation does not only depend on human capital but also on investment in future technologies and procedures. This kind of investment generally is measured by the research and development (R&D) expenditures of an economy. The average amount invested is a measure of the resources available in the innovation process.

Indicators for investments in the innovation process

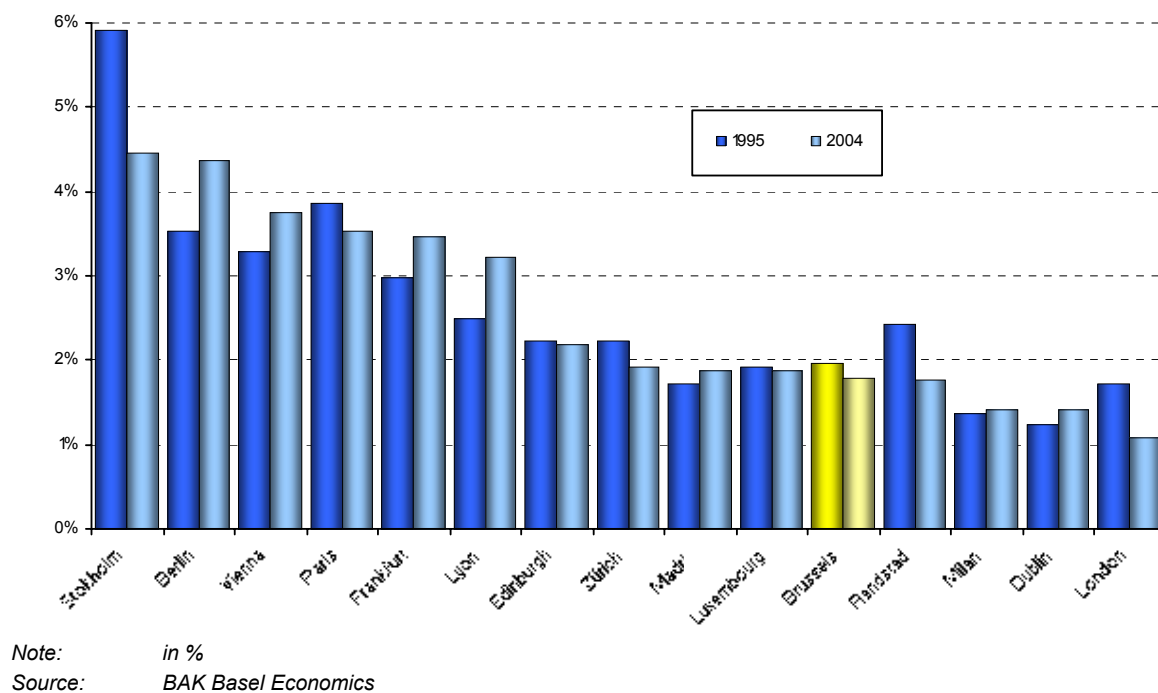
Expenditure on research and development (R&D) measures the investments of firms and the public sector into the innovation process. This figure heavily depends on the size of the regional economy. Therefore, the indicator is calculated as a ratio of GDP of a region.

The indicator which is used in benchmarking is:

- Expenditures in R&D as share of GDP

When using this indicator it has to be kept in mind that industries use R&D expenditures very differently. Of course, industries also vary widely in their innovative capabilities, but this is only partly related to different R&D expenditures. Generally speaking, investment in R&D is much more important for producing industries' ability to stay competitive. In services, innovation often takes place in a different way or the necessary expenditures to achieve innovation are not classified as R&D, rather, for example, as marketing. Therefore, when discussing the differences in the R&D intensity in regional economies, the analysis should always look at differences in the industrial structure.

Figure 4-2 *Share of expenditure on R&D in nominal GDP 1995 and 2004*

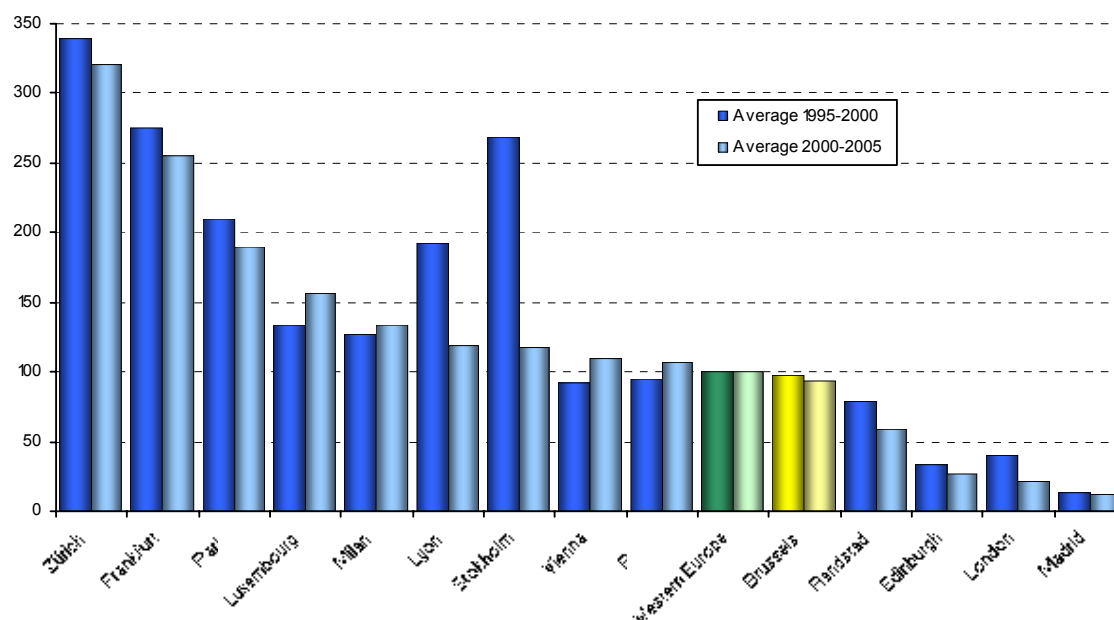


- Fig. 4-2 shows the share of expenditures on R&D in nominal GDP in 1995 and 2004.
- This share is just below 2% in the BMR which is rather low compared to other regions in the benchmarking as well as in relation to the EU Lisbon Agenda goal of 3% of R&D expenditures in GDP. The benchmarking depicts that regions where the urban sector is more important tend to have a lower R&D intensity (London, Luxembourg, Zurich and the BMR).
- This, of course, is an explanation of the rather low R&D intensity in the BMR. Furthermore, fig. 4-2 shows that the R&D intensity in the BMR declined between 1995 and 2004; a phenomenon that can be seen in all of the above mentioned regions.
- Given the above average importance of the urban sector in the BMR, this finding is not particularly bad news. But it also demonstrates the limited impact the high tech producing industries can have on the overall BMR economy. While successful niche strategies are possible, its weight in the overall economy is not large enough to be a main source of economic success.

Because efforts in R&D wouldn't give good returns if their outcomes couldn't be protected, patents can be considered as a link between R&D expenditures and the output of the innovation process. Hence, patents are crucial for R&D activities. In the following, patents are used as an indicator to measure a region's potential to raise its innovative activities and its productivity. Since the number of patents can be of interest both in relative and in absolute measures, we show both.

Furthermore, the number of patents is measured in the year of its registration but isn't counted until it is approved. As there can be several years between the time of the registration and the time of the approval, valid patent data are available with a significant time lag. In order to deal with this restriction we calculate the patent density in relation to the Western European Average.

Figure 4-3 *Patent density (patents/1'000'000 inhabitants)*



Note: Western Europe = 100

Source: Thomson Scientific, BAK Basel Economics

- Generally, the patent density does not show a significant time sensibility.
- The comparison between R&D expenditures and patent density indicates that there is a positive relation between these two indicators. Regions with a higher share of expenditure on R&D in nominal GDP tend to be marked with a higher patent density.
- The BMR fits very well into this general picture: the rather small patent density is in line with the relatively low R&D intensity.

A further resource used in the innovation process is top quality academic research. Although not usually considered innovation by a strict business definition, academic research is often the first step of a longer innovation process that eventually leads to economically relevant innovations. Therefore, a relevant factor in innovation is the research potential embodied in universities located in a region.

Measurement of University quality

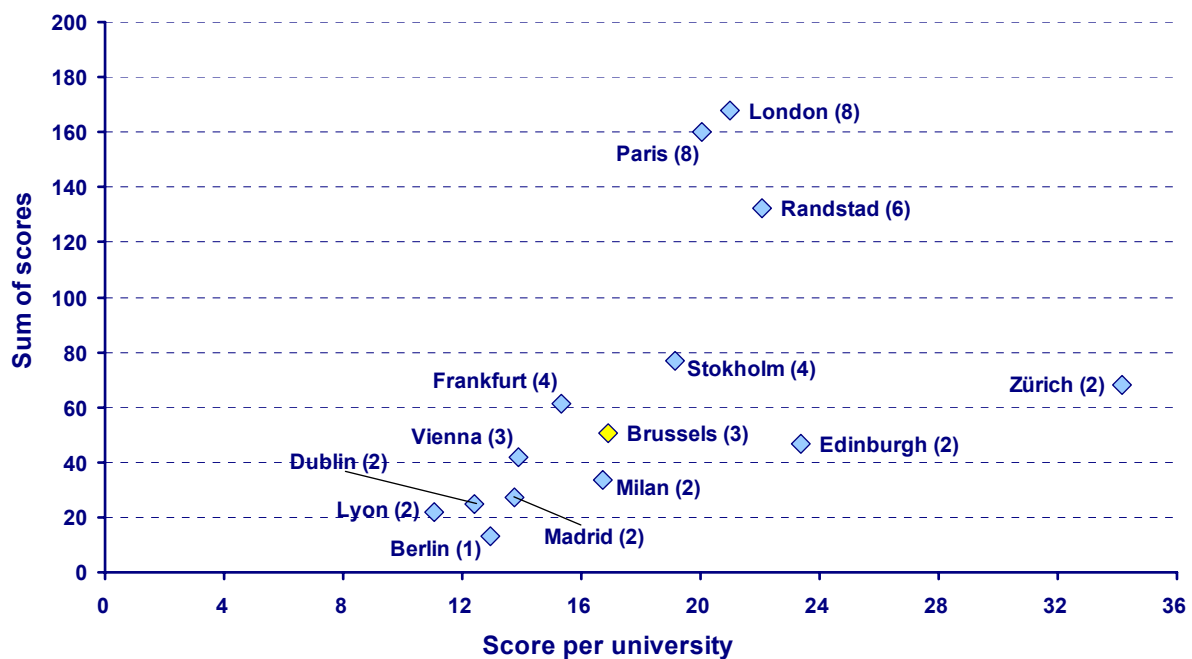
An indicator used to measure the top academic potential of universities is the Shanghai Jiao Tong University's 'Academic Ranking of World Universities' ("Shanghai Index"). This ranking comprises the 500 best universities in the world and considers, among others, sub-indices on publications in journals and the number of Nobel Prize winners.

The indicators used in benchmarking are:

- The total number of scores in the Shanghai Index for all universities located in the region
- The total score from above divided by the number of universities in the region included in the Shanghai Index

The total number of scores reflects the quantity of top research available in the region. As networking effects and economies of scale play an important role, the total number of scores is important in itself. Furthermore, in order to attract the best researchers and students possible, a region must become known as a prominent centre for learning with a critical mass of top universities. Of course, this number depends on the size of the regions as well. To take the different size of the regions in the sample into account, figures per university are used as well.

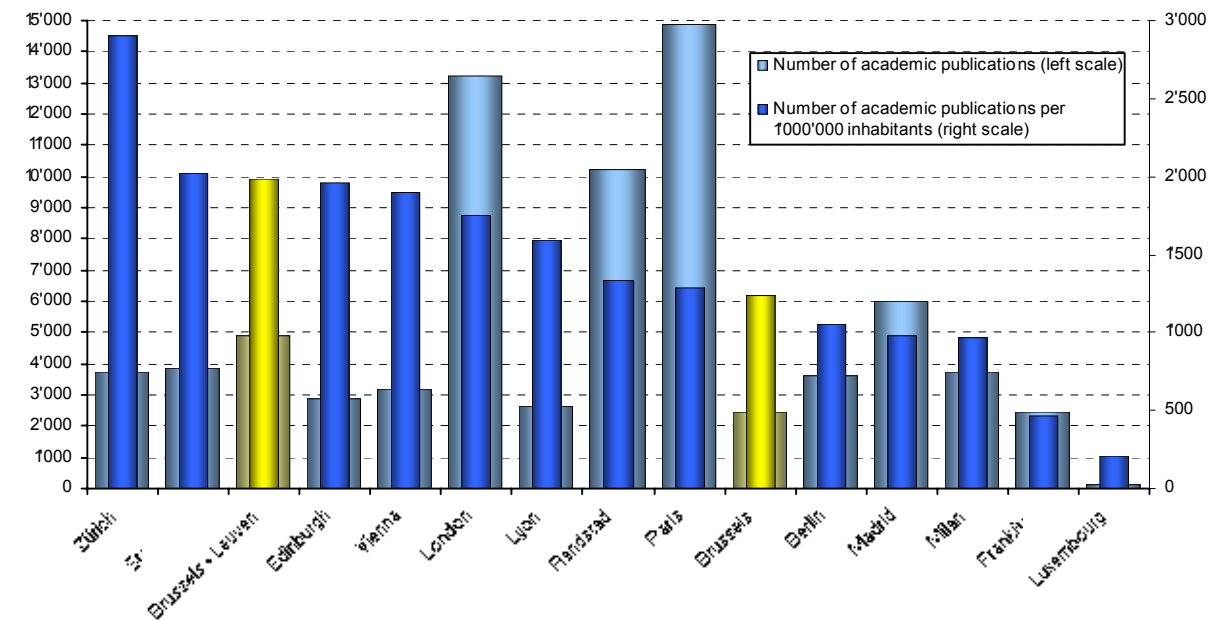
A limitation of this indicator has to be kept in mind. The focus of research of a university is a factor which strongly affects the ranking. The Shanghai Index puts more weight on the natural sciences. A university with a focus on social sciences consequently ranks lower.

Figure 4-4 The research quality of universities 2006

Note: Shanghai index of the 500 best universities of the world, number of universities in brackets
 Source: Shanghai Jiao Tong University, BAK Basel Economics

- The plot shows that, in general, the absolute score rises with the number of universities.
- But there also seems to be no linear connection. Instead, there seems to be a correlation between the number of included universities per region and the score per university in this region, meaning that the mass of high quality universities influences the attractiveness of a region's university sector.
- Just three of the universities of the BMR are included in the Shanghai Index (Université Libre de Bruxelles, Vrije Universiteit Bruxelles and Université Catholique de Louvain), therefore, obviously, the university sector of the BMR does not reach the score of London or Paris.
- Concerning the score per university, the BMR is placed in the middle field of the benchmarking. Given that the benchmark regions are among the best performing ones in Europe, this finding stands for the high qualification of the highly qualified employment in the BMR.
- The combination of a high share of highly qualified employment with a high qualification level is a very precious asset and can be regarded as one of the major reasons for the impressive overall economic performance of the BMR.

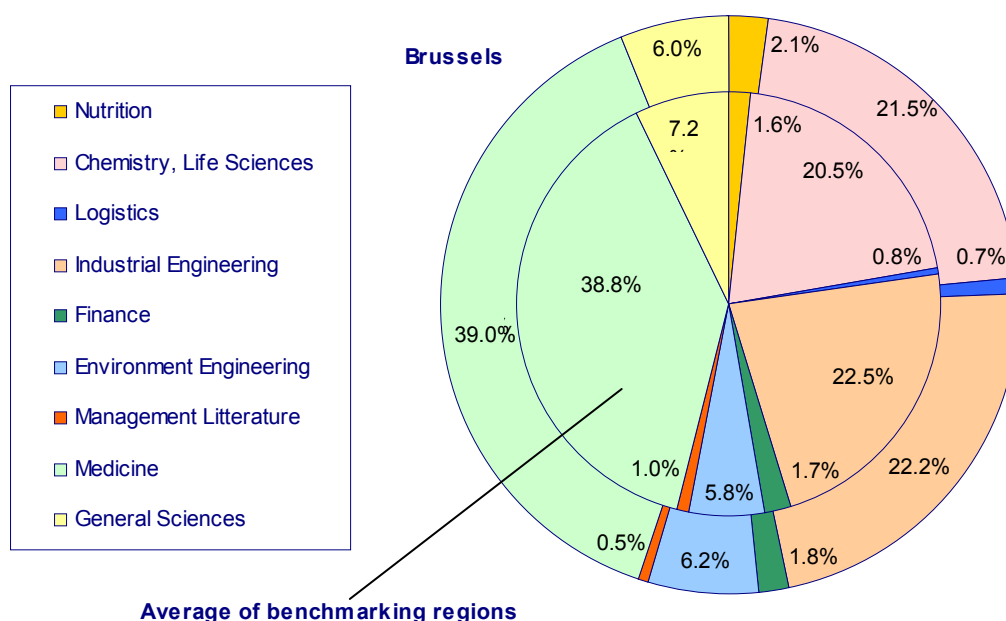
Figure 4-5 *Number of academic publications and number of academic publications per 1'000'000 inhabitants 2006*



Note: in %

Source: Thomson Scientific, BAK Basel Economics

- Besides the university quality, the number of academic publications in a region is a further and more specific indicator to measure the available knowledge potential to realize product and process innovation.
- As the benchmarking shows, the regions with the largest number of top universities obviously are the same as the ones with a large absolute number of academic publications.
- Further, the analysis indicates that there is a positive correlation between the score per university and the relative number of academic publications.
- Fig. 4-5 shows that the BMR places in the mid to lower end of the benchmarking when comparing the relative numbers of publications. When comparing the absolute numbers of publications, the BMR places in the second to last position.
- But the chart also reveals that the story is completely different when the Arrondissement of Leuven with its famous university is added to the BMR. The so-defined Brussels region definitely belongs to the best performing regions which emphasises its strong positioning in a set of some of the most competitive European city regions. And such a definition could be reasonable with respect to academic achievements. While, economically, the Arrondissement of Leuven constitutes an economic region in its own right, academic links to the BMR are strong. Furthermore, academic achievements tend to have large regional spill-over effects which the BMR can profit from.

Figure 4-6 Academic publications per sector 2006

Note: in %

Source: Thomson Scientific, BAK Basel Economics

- Fig. 4-6 shows the share of academic publications per sector of total academic publications for the BMR (outer circle) and the average of the benchmarking regions (inner circle) in 2006.
- This deeper analysis reveals that more than 80% of all the academic publications derive from medicine, chemistry/life sciences and industrial engineering. Though, the publication output of the more services orientated sectors as logistics, management literature, finance, general sciences is much smaller.
- Furthermore, the analysis brings out that the shares of the sectors in the BMR are very much alike to the shares in the average of the benchmarking regions. Therefore considering the sectoral structure of academic publications, no significant advance or deficit can be identified.

4.2 Regulation

The connections between regulation and economic performance are very complex and work through many channels of the economic system. Without going into too much detail, a more liberal system of product markets is expected to lead to a higher level of competition and a more efficient allocation of production resources. This can lead to a higher level of production as well as to dynamic effects on average growth. More flexible labour markets allow cheaper and faster adoption of the labour input when market conditions change; liberal labour markets allow the optimal use of the labour force potential. Again, level effects as well as dynamic effects are expected when labour market regulation moves towards the optimum which, for Europe, would be expected to be below the current level.

Regulation as a location factor

Regulation is a double-edged sword. On the one hand, a certain level of regulation guarantees functioning markets, corrects market failures and compensates for externalities. On the other hand, regulation is costly. Regulations need administration and oversight which consume resources not available elsewhere in the production process. Probably even more serious are the indirect costs. Regulation can lead to unwanted incentives or can hinder additional economic activities. For example, regulating certain product standards can lead to a sheltered market which reduces the incentive for companies to innovate and hinders new competitors from entering the market.

From the above discussion, it is clear that a bell shaped curve would be expected for the overall relationship between the degree of regulation and the economic performance. Economists almost unanimously believe that Europe is on the downward slope of this curve, that is, the general level of regulation in Europe is above the level optimal for economic growth. We therefore expect that, given the sample of regions used in the benchmarking exercise, it is advantageous with respect to economic prospects for a region to have a lower level of regulation.

The following box provides an overview of the regulation indicators used in the benchmarking:

Indicators for Regulation

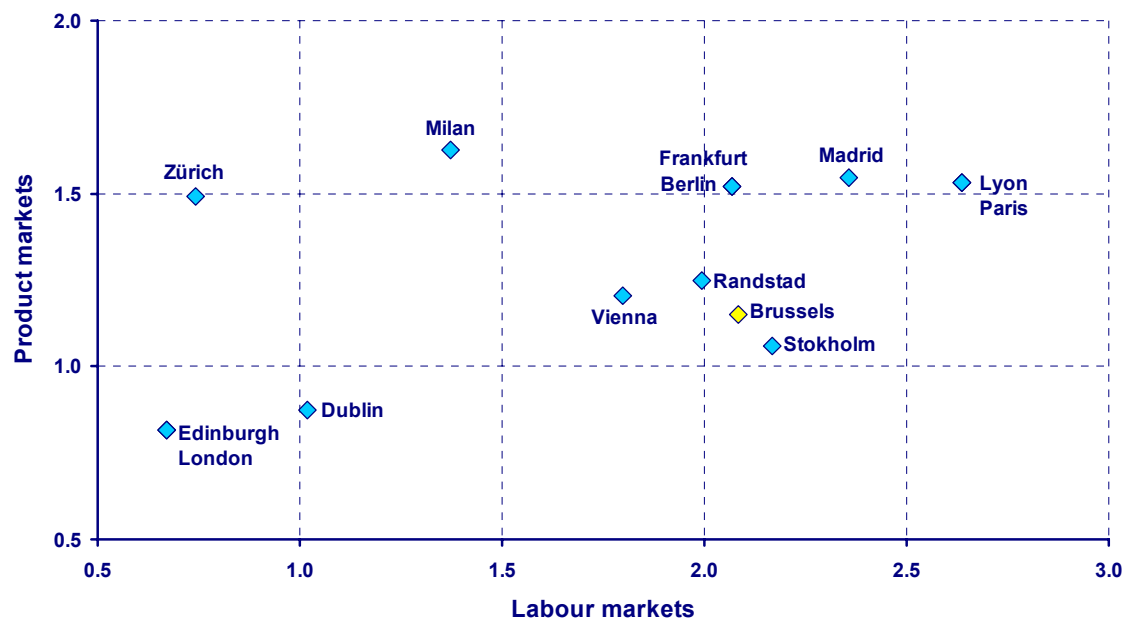
To quantify the level of regulation, the OECD measures several hundred different indicators from all fields of regulation. From these, a meta-analysis yields regulation indices. Other sources following similar approaches are used to complete time series.

The indicators used in benchmarking are:

- Index of product market regulation (0 = very liberal / 6 = very restrictive)
- Index of labour market regulation (0 = very liberal / 6 = very restrictive)

For further information on these indicators see BAK (2007) as well as Conway, Janod and Nicoletti (2005), Nicoletti, Scarpetta and Boylaud (2000) and Gwartney and Lawson (2005).

All these regulation indicators are measured on a national level. This makes sense insofar as most major regulation is determined at the national level. Still, they are important in regional benchmarking to understand a region's position and its options. Without regulation an important part of the picture would be missing. Of course, there are also regulations at the regional level. Last but not least, how local officials handle a given national regulation can be very different between regions. Unfortunately, no internationally comparable data on the regional level is available. Still, the available indicators grasp the most important part of regulation and allow an international comparison of the position of different regions.

Figure 4-7 Regulation of labour markets and product markets 2004

Note: Index (0 = very liberal / 6 = very restrictive)
 Source: OECD, BAK Basel Economics/OECD

- Generally speaking, the labour market is more regulated in continental Europe than in the Anglo-Saxon countries or in Switzerland. This is exactly what you can see in the benchmarking plot: the labour markets in Zurich, London / Edinburgh and Dublin are far less regulated than the labour markets in the other European countries and therefore also in the BMR.
- The story is different for the product markets. While the Anglo-Saxon countries again take the lead, Switzerland falls back and the BMR, although far from reaching the benchmark leaders, belongs to the liberalization leaders in continental Europe.
- Therefore, while further reforms on the product market would be desirable, the pressure for labour market reforms seems to be the more important issue of the two in Belgium.

4.3 Taxation

Tax competition is an issue often brought up in public discussion. Consequently, taxation and international comparisons of tax levels is high on the political agenda. Some countries follow a strategy of lowering taxes to support economic growth. Indeed, some of the new accession EU member states from Eastern/Central Europe have aggressively followed such a strategy.

Taxation as a location factor

There are several ways for tax levels to influence regional economic development. Taxation is a key topic for businesses evaluating the attractiveness of a location. A lower tax burden attracts new companies to a location and provides an incentive for existing companies to stay. Even if no location decision is involved, it increases competitiveness in the market by lowering the tax costs for a company which, in turn, supports company survival or growth.

Such a connection between taxes and economic growth is obvious for direct company taxation. For personal income taxation, this is less straight forward, but for several reasons such a connection would be expected as well. First, company owners and top management have to pay personal income taxes. Their individual preferences might influence their decisions for the company. Second, employees' decisions are influenced as well. Employees focus on net available income which is different from a firm's costs. If employees have some bargaining power and are mobile between regions, the companies will be forced to bear at least part of the difference in the tax burden between competing regions. Otherwise, mobile employees will move to the regions with lower tax levels since their available income is higher there. Therefore, higher income tax levels can result in higher costs for companies. Highly qualified individuals are especially and increasingly internationally mobile. At the same time, these individuals are becoming more important for a knowledge based economy. Therefore, income taxation, especially the burden on highly qualified employees, can work as a cost factor just as much as company taxation does.

The following box provides an overview of the taxation indicators used in the benchmarking:

Indicators for Taxation

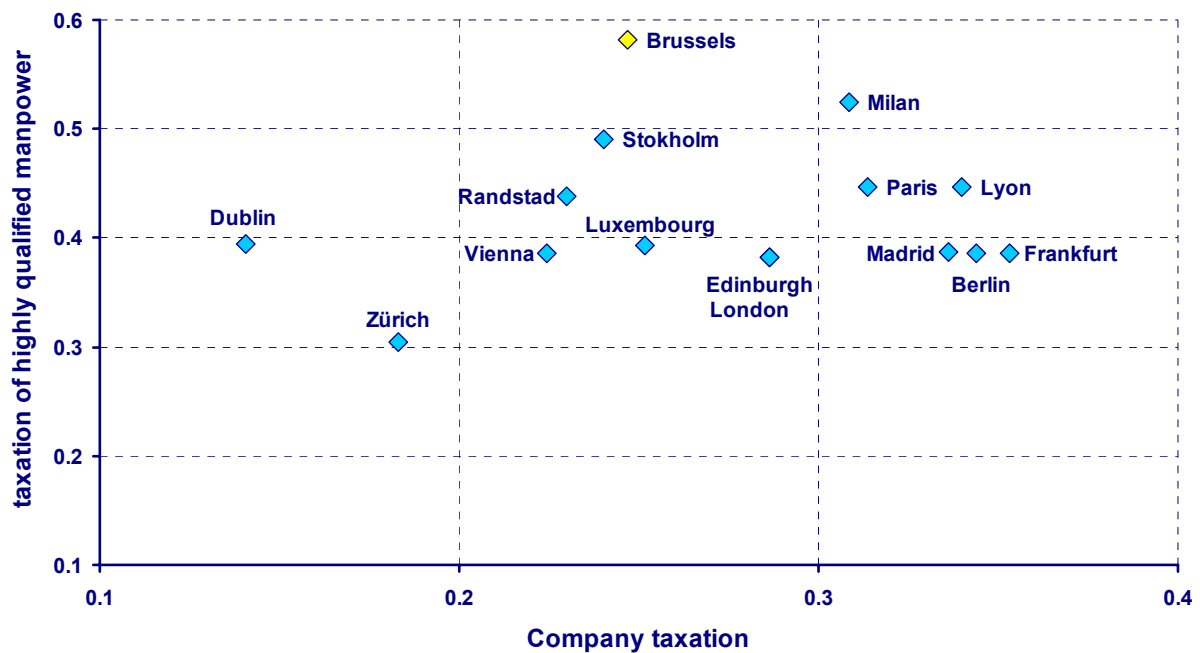
Taxation is a large field of research and many indicators are available. The choice gets much more limited when the data should be internationally comparable, reflect the complete tax system instead of only one particular issue or tax rate, and fit the economic reasoning given above. We have two indicators fulfilling these conditions, one for company taxation and one for the tax burden on highly qualified employees.

The indicators used in benchmarking are:

- Company tax burden (in percentage-points of profits). It measures the Effective Average Tax Rate including all kinds of direct company taxes for a typical profitable investment.
- Tax burden on highly qualified manpower (in percentage-points of gross income). It measures the Average Tax Rate for a highly qualified employee (available income after taxes: 100'000 EURO; single). Taxes include the expected tax burden on pensions and social security contributions if mandatory and appropriate.

For further information on these indicators, see BAK (2007) as well as Elschner and Schwager (2003) and Elschner and Overesch (2004).

As in the case of regulation, taxation is an issue defined on the national level to a large extent. But again, it is important to regions' prospects for growth. Therefore, it should be included in an international benchmarking. Furthermore, depending on the national setting, there are possibilities for regions to increase or decrease the tax burden, in many countries at least to some extent, in some countries to a large extent (e.g. Switzerland, USA). The indicators used take regional differences into account if appropriate.

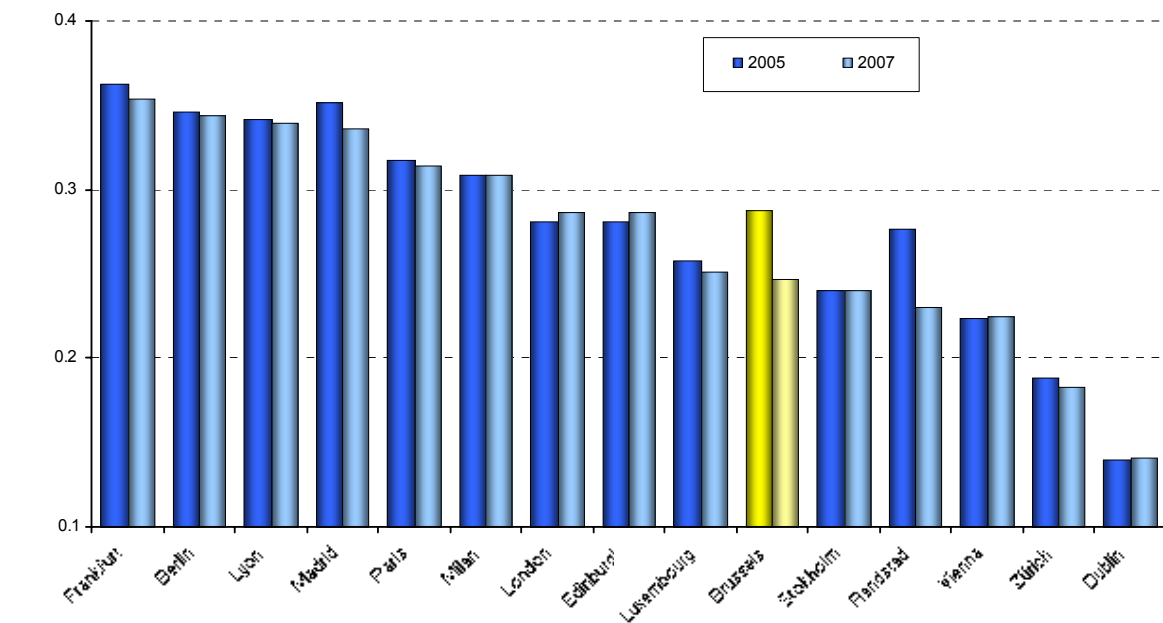
Figure 4-8 **Company taxation and taxation of highly qualified* manpower 2007**

Note: Effective average tax rate, *disposable income of EUR 100'000/single person

Source: ZEW, BAK Basel Economics

- The benchmarking of the taxation structure reveals an unfortunate position for the BMR. While placed in the middle regarding company tax burdens, the BMR is the region with the highest tax burden for highly qualified manpower.
- Of course, other issues are important for the attractiveness of a region for highly qualified manpower. But an above average tax burden makes it necessary for one of two things to happen: either other factors of the quality of living have to be significantly better than in competing regions, or companies have to compensate their highly qualified employees with higher wages which in return increases labour costs and lowers the competitiveness of the companies.

Figure 4-9 *Company taxation 2005 and 2007*



Note: Effective average tax rate
Source: ZEW, BAK Basel Economics

- Fig. 4-9 depicts, that the good positioning of the BMR in the ranking of the company taxation is due in part to a substantial reduction of the tax burden in the most recent period.
- As a consequence, the BMR shifted from the group with a moderate tax burden to the group with a rather low tax burden.
- Even if this lower burden is certain to provide positive impulses to the BMR's economy, one has to ask if the leverage wouldn't be even higher if similar tax reductions were implemented for the highly qualified manpower.

4.4 Accessibility

The accessibility of a region is driven by two factors: geography and infrastructure. While the geographic position cannot be changed, improving connectivity is a key policy aim.

Accessibility as a location factor

A region's accessibility is a key factor in a globalised economy. Today, all regions in Western Europe are accessible, but the degree and efficiency of accessibility vary. Without good accessibility, a region cannot profit from the international division of labour to the same extent as other regions and is less attractive for companies.

The following box provides an overview of the accessibility indicators used in the benchmarking:

Indicators for Accessibility

Accessibility is not one clear concept; rather many different things can be subsumed within the topic accessibility. Here a concept of outbound accessibility is followed, taking into account travel times and frequencies to reach other regions. The indicator reflects the complete potential, therefore including all other regions without any time limitation. But it weights the destinations regarding the travel time (with a non-linear function) and the GDP of the destination.

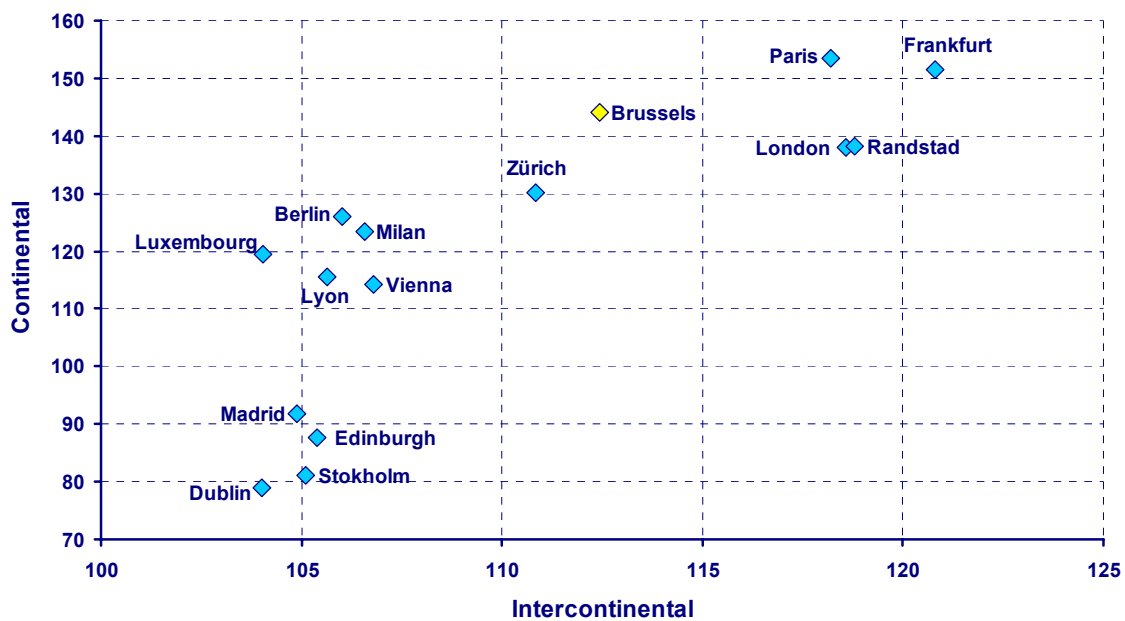
The indicators used in benchmarking are:

- Global accessibility (index, sample average 2002=100)
It reflects the outbound accessibility from a region to locations in the rest of the world outside Europe.
- Continental accessibility (index, sample average 2002=100)
It reflects the outbound accessibility from a region to all other regions in Europe.

For further information on these indicators see BAK (2005).

These two indicators cover what are usually considered the most important aspects of accessibility that influence a company's location decision. It does not cover accessibility within the region, e.g. regional road networks and the quality of public transport. This will especially influence the location decisions of companies within the region, but it is also a factor of attractiveness for the region. For example, long commuting times will make a region less attractive for employees which, in turn, might make it difficult or more costly for a company to recruit the necessary labour.

Figure 4-10 Global and continental accessibility 2006



Note: Index, Average US/European Accessibility 2002 = 100

Source: IVT, BAK Basel Economics

- Both, global and European accessibility are very well developed in the BMR.
- For European accessibility, the geographic position within Europe plays an important role. With its position within the economic heart of Europe, the BMR is in a favourable position. But it has also used its opportunities well, as the very good position shows.
- For global accessibility, there are four major hubs in Europe: London, Paris, Frankfurt and Amsterdam. This is clearly to see in the benchmarking. For other regions in Europe to improve global accessibility, it is often best to improve accessibility to these hubs. Again, the BMR is very successful in doing so.
- As this good position decisively increases the attractiveness of the BMR for highly qualified manpower which is an important precondition for further growth in the most important key industry, the financial services, this finding reveals an important asset of the BMR.
- Not only is the attractiveness for highly qualified persons improved, but the BMR also gets more attractive as a business location especially for high value added services which have customers both within the region and outside of it.
- Good accessibility is certainly an asset the BMR can build on.

5 Summary and Conclusions

How successful are cities in their function as nodes in the worldwide economic network? Are they competitive in the long run? What kind of factors play a crucial role and how can those factors be influenced and improved? To foster economic growth and to maintain regional prosperity, it is important for cities to become aware of the special role they play in the global economy and to know their deficits and strengths very well. The International Regional Benchmarking provided by BAK Basel Economics can help the Brussels Metropolitan Region evaluate its position in international competition, assess its strength and weaknesses, and shape its future strategic development and policy.

When analysing a region and defining strategic options it is essential to choose the right definition of a region! The region should include an area where economic actors cooperate closely; workforce flows and new ideas pass the innovation chain. For Brussels, Brussels Capital Region is not appropriate. Instead, this benchmarking analysis is based on the Brussels Metropolitan Region consisting of the Brussels Capital Region, Brabant Walloon and Halle-Vilvoorde, which reflect well the functional urban region of Brussels.

In the benchmarking analysis, a comparison of the Brussels Metropolitan Region with 14 other metropolitan regions in Europe, the Brussels Metropolitan Region turns out a rich and very productive region. GDP per capita is amongst the highest, only beaten by Luxembourg. As its very good position regarding productivity proves, this is not a biased result, e.g. one due to commuting patterns or the like.

Turning to the growth since 1995, the Brussels Metropolitan Region is not in as good a position with respect to levels. But it is also not lagging behind: The Brussels Metropolitan Region is positioned in the middle of the benchmarking sample which is, notably, a sample of rather successful regions. Given the already high level of economic activity the Brussels Metropolitan Region can be satisfied with this result. If anything is to be mentioned critically, then it is the fact that employment is not keeping track with economic growth, especially since the year 2000. Although the differences are not large, the Brussels Metropolitan Region is not using the available labour input as well as other regions. As this is not due to labour shortages – unemployment is substantial and the population did grow at an increased rate in recent years – and has worsened in recent years, it should be watched carefully in the future.

The benchmarking analysis provides a fundamental understanding of the position of the Brussels Metropolitan Region. To gain a better insight it is helpful to look also into individual sectors and industries. The examination of the economic structure reveals a striking importance of typical urban services (nearly 60% of economy). While the importance of this sector is more pronounced in the Brussels Metropolitan Region, its growth in the last decade was at the low end compared with the benchmarking regions. Among the urban services in the Brussels Metropolitan Region, Financial Services are the star. Their growth contribution was quite high in the last decade due to an above average share as well as good growth performance. The Brussels Metropolitan Region can keep pace with the specific financial centres in Europe. Striking are the productivity gains in this sector in the Brussels Metropolitan Region compared to other regions. The Financial Services in Brussels gain international competitiveness.

Less promising is the performance of the Commercial Services, the other big part of company-related services typically provided in metropolitan regions. Although the sector's development in the Brussels Metropolitan Region is quite dynamic, it cannot keep up with international competitors.

Another area with less favourable performance in the Brussels Metropolitan Region is consumer-related services like Trade, Tourism & Leisure and Transportation, although the latter one is not only consumer-related. In all these industries growth is lower than in most benchmarking regions, at the same time their share in the Brussels Metropolitan Region is higher than average. As all these consumer-related services as well as parts of the Commercial Services are labour intensive, the below average performance of the sectors can explain the weaker performance of the Brussels Metropolitan Region with respect to employment.

Other positive impulses for the Brussels Metropolitan Region originate from the knowledge services and two industries which at the moment have to be considered as niches: Telecommunication and the Chemical Industry. The weight of these two industries in the economy is too small to contribute substantially to overall growth. Still, their impressive growth performance has provided important impulses to the economy of the Brussels Metropolitan Region in the last decade.

To understand the economic performance even better and to assess the future prospects, the benchmarking analysis continues to take important location factors into account. As the Brussels Metropolitan Region is a hub for high value added services like Financial Services and Commercial Services, there exists a large demand for highly qualified labour. Indeed, the qualification level of the labour force is quite good. Especially the share of tertiary educated persons is amongst the highest in the benchmarking. In contrast, the share of the not even secondary qualified is amongst the higher ones as well. This probably adds to the difficulties with job creation, as the medium qualification level is not large.

For the future, to remain successful, the Brussels Metropolitan Region has to improve the qualification level, especially at the middle level, but at the same time stay attractive for the highly qualified. Here, the perspectives seem mixed at present. The strong development of the Knowledge Sector including education could be a hint of movement in the right direction. With respect to highest qualification levels, there are more doubts about sustainability. The University quality is mixed.

Innovation is another important issue. As the analysis reveals, a certain deficit with respect to innovation activities seems to exist in the Brussels Metropolitan Region. In order to remain competitive, further impulses for the whole innovation process are indispensable.

Furthermore, the tax burden on highly qualified employees is amongst the heaviest in Europe. Although tax levels are not the only issue, high taxes must be compensated by other factors in order for a region to remain attractive to highly qualified persons who can choose the place of living and working in the international war for talents. Either the regions offer a higher quality of life to compensate for the loss of available income, or the companies in the region have to pay higher wages, reducing their international competitiveness. Although no quantitative indicators are available for the quality of life in the Brussels Metropolitan Region and the benchmarking regions, the benchmarking provides some hints. The below average

performance of trade and the bad development of the Tourism and Leisure sector do not point to an increasing quality of life.

While there are some sceptics with respect to the ability of the Brussels Metropolitan Region to attract highly qualified people in a sufficient and sustainable way, the conditions for companies seem better. The tax burdens for companies are at the lower end, accessibility of the Brussels Metropolitan Region is very good and regulation levels of product markets are on the favourable side.

Summing up, the Brussels Metropolitan Region is a rich and successful region. Some of this success, in the last decade, is due to a favourable industry structure. Individual industries show some success stories, especially the Financial Services. But for the more important industries the results are less promising, as for example the weak performance of Commercial Services, Trade, Transport and Tourism show. For the future, given the importance of highly value added services which rely to a large extent on highly qualified labour, the Brussels Metropolitan Region should actively engage in the war for talents. At present, conditions are mixed at best. Furthermore, the attractiveness of the region for residents and visitors, and the quality of life seem to be an issue. Improvements here would also help in the war for talents. Although more research would be needed before drawing strategic conclusions, the Brussels Metropolitan Region should be aware of this potential impediment to future growth.

6 References

BAK (2007):

«International Benchmarking Report 2007», Basel: BAK Basel Economics.

BAK (2005):

«IBC Modul Erreichbarkeit, Schlussbericht Phase II – Globale und kontinentale Erreichbarkeit: Resultate der Modellerweiterung», Basel: BAK Basel Economics.

Conway, P., V. Janod and G. Nicoletti (2005):

«Product Market Regulation in OECD Countries: 1998-2003», OECD Economics Department Working Paper No. 419.

Elschner, C. and M. Overesch (2004):

«Der IBC Taxation Index 2003 - Eine geographische Erweiterung», ZEW report on behalf of the IBC BAK International Benchmark Club, BAK Basel Economics.

Elschner, C. and R. Schwager (2003):

«The Effective Tax Burden on Highly Qualified Employees - An International Comparison», ZEW report on behalf of the IBC BAK International Benchmark Club, BAK Basel Economics.

Felsenstein, D., Schamp, E. W. and A. Shachar (eds.) (2002):

«Emerging Nodes in the Global Economy: Frankfurt and Tel Aviv compared», Dordrecht: Kluwer.

Gwartney, J. and R. Lawson (2004):

«Economic Freedom of the world, 2004 Annual Report», The Fraser Institute.

Nicoletti, G., S. Scarpetta and O. Boylaud (2000):

«Summary indicators of product market regulation with an extension to employment protection legislation», OECD Economics Department Working Paper No. 226.

7 Appendix

7.1 Detailed definition of the benchmark regions

Notation	Exact definition
Brussels Metropolitan Region	Aggregate of Brussels Capital Region (Nuts 1), Brabant Walloon(Nuts 2) and Halle-Vilvoorde (Nuts 3)
Berlin	Bundesland Berlin (Nuts 1)
Dublin	Greater Dublin Area, aggregate of Dublin (Nuts 3) and Mid-East Ireland (Nuts 3)
Edinburgh	Aggregate of Nuts 3: City of Edinburgh, Clackmannanshire and Fife, East Lothian and Midlothian, West Lothian, Scottish Borders and Falkirk
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)
London	Greater London (Nuts 1)
Luxembourg	State of Luxembourg
Lyon	Département Rhône (Nuts 3)
Madrid	Comunidad de Madrid
Milan	Provincia Milano (Nuts 3)
Paris	Région Ile de France (Nuts 2)
Randstad	Aggregate of Nuts2: Utrecht, Noord-Holland, Zuid-Holland)
Stockholm	Stockholm (Nuts 2)
Vienna	Bundesland Wien (Nuts 2)
Zürich	Kanton Zürich (Nuts 2)

7.2 The principle of the driver sectors

Dividing business sectors into “sector aggregates” often puts economic structures into sharper perspective than an excessively detailed presentation. This explains why we decided to divide the 60 or so individual business sectors into five sector aggregates.

The Drivers of Economic Growth:

In analysing an economy, it often provides helpful insights to analyse specific industries or sectors separately. But dividing the economy into too many different industries can also be confusing and might hide the actual structures of interest under a bulk of information (currently, the international benchmarking database from BAK Basel Economics regularly provides data for 46 different industries, in some cases even more detailed). Therefore, BAK applies a concept to collect the individual industries into ‘sector aggregates’ with common properties (Sources of growth or influence like demand from certain markets, technology or political influences, close connections between the industries ...).

One common property of the industries in a sector 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:**

The industries in the New Economy Sector are characterised by very 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.

It basically subsumes the IT (hardware, software, services); telecommunication; microelectronics.

(2) **Old Economy:**

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, involve 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.

(3) **Urban Sector:**

The Urban Sector includes all the services for persons and companies which are typically concentrated in an urban setting. Within a geographical unit, they are most concentrated in the centre (e.g. for France in Paris, for a metro area in the city centre, within a rural setting in the village centre).

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

The Urban Sector consists of services that meet needs of individuals and companies such as commerce, hotels and restaurants, personal services, real estate, transport, 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 strong competition from the developing world.

Productivity level and productivity growth are below average.

The Traditional Sector includes especially production of consumption and intermediate goods as well as construction.

(5) **Political Sector:**

The Political Sector summarises all industries which are potentially strongly influenced by politics. That does not necessarily mean that politics directly determines this industry in all regions, but it is a political question how much the industry is based on private rather than public decisions. The answers to these questions can differ between regions 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.

New Economy Sector

This aggregate consists of the following sectors:

NACE	Description of Divisions
30	Manufacture of office equipment, data processing hardware and installations
31,32	Manufacture of electricity generation and distribution equipment, equipment for radio/television broadcasting and telecommunications
64	Postal service and telecommunications
72	IT services

This aggregate, which uses the new tools of information and communication technology, was the main motor behind the worldwide economic boom toward the end of the nineties. The subsectors of the New Economy Sector have been characterized in recent years by above-average growth rates and a comparatively high level of real hourly productivity. In our classification, the New Economy Sector includes business sectors such as telecommunications equipment, IT services and computer manufacturing.

Old Economy Sector

This aggregate consists of the following sectors:

NACE	Description of Divisions
24	Manufacture of chemicals and chemical products
33 excl. 33.5	Manufacture of medical equipment, precision instruments, optical equipment
33.5	Manufacture of watches and clocks
34,35	Manufacture of vehicles

The structurally strong Old Economy includes the traditional industries, most of which are marked by very value-added-intensive production and therefore an exceptionally high productivity level. Even at traditional industrial locations, the sector has managed to keep pace with today's worldwide innovation competition. In particular it includes industries like the chemical-pharmaceutical industry, transportation, the automotive industry, medical engineering, and the production of precision instruments and optical equipment.

Traditional Sector

This aggregate consists of the following sectors:

NACE	Description of Divisions
15,16	Manufacture of foods, beverages, tobacco products
17	Manufacture of textiles
18	Manufacture of garments and furs
19	Manufacture of leather goods and shoes
20	Processing of wood (not including furniture manufacture)
21	Paper- and boardmaking
22	Printing and publishing, reproduction of recorded media
23	Manufacture of coke and refined petroleum products, processing of nuclear fuels
25	Manufacture of rubber and plastics products
26	Manufacture of other products from non-metallic minerals
27,28	Smelting and processing of metals, fabrication of metal products
29	Manufacture of machinery and equipment
36,37	Manufacturing not elsewhere classified
45	Construction

This aggregate is made up of those industries that cannot be assigned to the structurally strong Old Economy. For example, it includes food production, beverages and tobacco products, textiles and garments, woodworking, papermaking, etc. Many of these industries, so important in years gone by, have in recent years ceased to serve as drivers of growth in Western Europe and North America and have undergone a steadily increasing shift to emerging market and developing countries. However, it is not necessarily a disadvantage for regions in Western Europe to remain heavily engaged in this sector. Specialization in the upper segments of the traditional sector, for instance, can certainly generate growth potential.

Urban Sector

This aggregate consists of the following sectors:

NACE	Description of Divisions
50	Sale, maintenance and repair of automobiles, filling stations
51	Wholesale trade and commission trade
52	Retail trade, repair of consumer durables
55	Hotels and restaurants
60-63	Transport
65	Banking
66	Insurance
67	Activities related to banking and insurance
70	Real estate
71	Leasing of movables without operating personnel
74	Provision of services to companies
91	Interest groups and other associations
92	Entertainment, culture and sport
93	Personal services
95	Private households

This aggregate includes, on the one hand, segments such as financial services and corporate services. Because provision of these services normally requires close physical proximity to customers, it is not surprising that the companies specializing in them tend to be concentrated in large metropolitan areas. On the other hand, the Urban Sector includes services that meet everyday needs: commerce, hotels and restaurants, personal services, real estate, rental and leasing, and transport. Increasingly, these service segments also tend to be concentrated in large cities and conurbations. This trend is given growing impetus by demographic factors. For example, the shares of single households and childless families – i.e. population groups that usually choose to live in cities – are growing as percentages of the general population in countries of the west. Most of these service segments can expect to keep on exhibiting high growth potential, because they serve that part of the population with a steadily rising share of total disposable income.

Political Sector

This aggregate consists of the following sectors:

NACE	Description of Divisions
01-05	PRIMARY SECTOR
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
73	Research and development
75	Public administration, national defense, compulsory social insurance
80	Education
85	Health and social services
90	Sewage treatment, refuse disposal, other waste disposal activities

This aggregate includes, for example, healthcare, education, power companies and water companies. It is, and always has been, heavily influenced by governments. As a result of the low competitive pressure, Political Sector activities have shown below-average productivity in past years. A strong focus on the segments of the Political Sector therefore has disadvantages for the competitiveness of regions. But impulses can nonetheless be expected from this sector's segments where regions make an effort to put competition-oriented framework conditions in place.

7.3 Data Sources

The data used in this report originate from the „International Benchmarking Database“ of BAK Basel Economics. For a precise description of the methodology, please see BAK (2007).

Some data have been taken over or derived from other databases:

- Thomson Scientific Ltd. (TS), London, UK; © Copyright Thomson Scientific 2006
- Shanghai Jiao Tong University (SJTU)
- Organisation for Economic Cooperation and Development, Paris (OECD)
- Zentrum für Europäische Wirtschaftsforschung an der Universität Mannheim (ZEW)
- Institut für Verkehrsplanung und Transportsysteme an der ETH Zürich (IVT)
- EUROSTAT und verschiedene nationale Statistische Ämter