Brussels Studies

La revue scientifique électronique pour les recherches
sur Bruxelles / Het elektronisch wetenschappelijk
tijdschrift voor onderzoek over Brussel / The e-journal
for academic research on Brussels

Collection générale | 2007

Economic Structure and Growth in the Brussels Metropolitan Area

Specialisation or Diversity?

Structure économique et croissance dans l'aire métropolitaine bruxelloise.

Spécialisation ou diversité ?

Economische structuur en groei in het Brussels grootstedelijk gebied.

Specialisatie of diversiteit?

Didier Baudewyns

Translator: Gabrielle Leyden

Electronic version

URL: <http://journals.openedition.org/brussels/357>

DOI: 10.4000/brussels.357

ISSN: 2031-0293

Publisher

Université Saint-Louis Bruxelles

Electronic reference

Didier Baudewyns, « Economic Structure and Growth in the Brussels Metropolitan Area », *Brussels Studies* [Online], General collection, no 3, Online since 01 February 2007, connection on 27 February 2020. URL : <http://journals.openedition.org/brussels/357> ; DOI : 10.4000/brussels.357

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Didier Baudewyns is a research fellow in Brussels Free University's Department of Applied Economics (DULBEA-ULB). He has published a host of research reports and articles on regional and urban economics and housing, including a recent article on economic structure and local growth in Belgium, "Structure économique et croissance locale : étude économétrique des arrondissements belges, 1991-1997", in 2005 (La Revue d'Economie Régionale et Urbaine, Issue 5).

*To contact the author:
dbaudewy@ulb.ac.be
+32 (0)2/6504923
+32 (0)485/725844*

DIDIER BAUDEWYNS

[] Economic Structure and Growth in the Brussels Metropolitan Area Specialisation or Diversity?

Translated from French by Gabrielle Leyden

Abstract. *The article opens with a study of developments in the Brussels Metropolitan economy over the past twenty years in terms of economic growth and local specialisation in production. It then reviews recent empirical studies of the link between local economic structure (in terms of production specialisation, sectoral diversity, and competition) and local economic growth in Belgium and the rest of Europe. The author deduces therefrom the recommendation that no sectoral policy should be implemented if it is detrimental to the diversity of the Brussels Region's economic fabric. This analysis is based in particular on a new indicator of total local diversity computed from sectoral employment data by Belgian statistical district for 1996-2003.*

▣ Introduction

The Brussels-Capital Region (BCR) is faced with a problem of massive unemployment affecting its less skilled residents in particular. Vandermotten *et al.* (2004) have advanced the idea of implementing sectoral policies to foster activities that employ less skilled workers. Without wishing to challenge the merits of such measures, especially the unquestionable one of grappling directly with Brussels' social ills (and which could thereby bolster the city's economic development by increasing the city's attractiveness¹), in this article I shall strive to focus on other indirect consequences that such sectoral policies might have on long-term economic growth. Indeed, the local sectoral economic structure of a city or region does indeed affect economic growth, as many recent regional and urban economic studies have shown (see below). Now, an across-the-board (rather than targeted) redynamising of employment by growth also has its advantages, especially that of combating the phenomenon of "dequalification", that is to say, situations in which workers apply for

The asterisks () in the text refer to the glossary and indicators' definitions at the end of the text.*

¹ See Vandermotten *et al.* (2004), p. 51.

positions at a lower level of qualification, thereby competing with and even taking unskilled workers' places (Deville, 2005).

In this article I shall try to answer the following questions: How has the Brussels Metropolitan Area's economy developed over the past twenty years? How has production specialisation changed? Is there a cause-and-effect relationship between local economic structure and local growth in Belgium in general and the Brussels Metropolitan Area in particular? If there is, what is it? What regional sectoral policy recommendations follow logically therefrom?

Before answering these questions, let me run through some key figures regarding the Brussels Metropolitan Area (BMA) in the following section. For clarification, I define the BMA as the combination of BCR (161 km² forming its core), Walloon Brabant Province (WB – 1,091 km²) to the south, and Flemish Brabant Province (FB – 2,106 km²), which forms the rest of its peripheral ring:

$$\begin{aligned} \text{BMA} &= \text{BCR} + \text{WB} + \text{FB} \\ \text{Periphery} &= \text{WB} + \text{FB} \end{aligned}$$

This reconstitution of the former Brabant Province for our analytical needs is governed by the availability of economic statistics.

■ I. A few key figures concerning the BMA's economy

Let us paint a quick portrait of the study area's economy. The BMA has a population of about 2.3 million and employs close to 30 percent of Belgium's salaried workers, *i.e.*, 1 million wage and salary earners in 64,500 establishments². Fifty-nine percent of the metropolitan area's salaried employment is concentrated in the core area (BCR)³, which is to say scarcely 5 percent of the BMA's territory. The density of jobs in the core area is thus about twelve times the mean for the total area. If we add the self-employed, we get a working-age population in work in the BMA of some 1,16 million, of which three-quarters live in the BMA itself⁴. The rest consists of commuters ("daily migrants") who live in Belgium's other provinces. Half of the 350,000 people in work who commute into the BCR each day live in the region's outer ring (WB+FB).

² Source: National Social Security Office (ONSS-RSZ), decentralised statistics on 31 December 2003 (job positions).

³ Source: *Ibid* and own computations.

⁴ Source: Own computations from *Indicateurs statistiques de la RBC* (2005), MRBC, Institut Bruxellois de Statistique et d'Analyse, p. 104.

With close to €84 billion of value added (VA) produced in 2004, the BMA accounts for one-third of the Belgian economy⁵. Eighty-five percent of the metropolitan VA, at current prices, is produced in the tertiary sector, which accounts for 38 percent of the services produced in Belgium. This far exceeds the BMA's weight in the national total VA and already indicates the BMA's economic *over-specialisation* in services⁶.

The BMA's per capita GDP stands at some €34,000, or one and a half times the average for the former EU-15. However, income is unequally distributed over the residential area. So, the mean taxable income reported per tax declaration in the BCR was close to €23,800, or 23 percent below the mean reported taxable income in the periphery, in 2003. This was also 8 percent below the mean taxable income in Flanders, but 3 percent above the mean taxable income in Wallonia. Unemployment is also very high in the BCR, *i.e.*, 15.7 percent of working-age residents (active residents in employment plus ILO unemployed) in 2004, whereas the unemployment rates in WB and FB for the same year were 7.7 and 5 percent, respectively⁷. The weighted mean unemployment rate for the entire BMA in 2004 was thus 10.6 percent, or about two percentage points above the national average⁸.

■ II. Brussels metropolitan economic growth

The mean rate of economic growth (VA in volume) in the BMA has been 2.16 percent a year over the past fifteen years, or slightly better than the performance of Belgium as a whole (1.94 percent per annum since 1988 – see Table 1). What is more, if we analyse the situation for the three major sectors of activity (primary, secondary, and tertiary) (Table 1), we see the same positive differential of about 0.2 percentage point of growth for the secondary (industry, including power generation and construction) and tertiary (services) sectors alike. In fact, over the past ten years or so the tertiary sector has grown faster in the BMA than in the rest of Belgium (growth of 2.6 percent per annum between 1995 and 2004, compared with 2.1% per annum for the entire country over the same period – see Table 1).

⁵ Source: National Accounts Institute (INR-ICN, 2006). As a reminder, gross value added is the difference between production and intermediate consumption (raw materials, semi-finished products, and energy).

⁶ Production trends in terms of volume (value added at constant prices) rather than value will be analysed in the next section.

⁷ Source of unemployment rates: Eurostat, 2006. The unemployed as defined by the International Labor Office (ILO) includes all individuals 15 years of age and older who were jobless, available for work, and seeking a job during the reference period (source: INS/NIS, 2006, http://statbel.fgov.be/figures/d31_fr.asp).

⁸ Source: Own computation from Eurostat figures, 2006.

Table 1. Value added, employment, and apparent productivity of labour by major activity sector (primary, second, and tertiary)

SECTOR	VA 2003	TOTAL EMPLOYMENT 2003	PRODUCTIVITY OF LABOUR 2003	RELATIVE SHARES VA		ANNUAL MEAN GROWTH 1988-2004	
	Million EUR 2000	NAI	Thousand EUR 2000	% TOTAL 04	% TOTAL 88	1995- 2004	1988- 2004
BRUSSELS-CAPITAL REGION (BCR)							
PRIMARY	15	467	32	0%	0%	- 6.0%	-2.6%
SECONDARY	5375	64295	84	13%	17%	1.5%	0.6%
TERTIARY	39766	594647	67	87%	83%	2.3%	1.7%
TOTAL	45157	659409	68	100%	100%	2.2%	1.5%
PERIPHERY (WB+FB)							
PRIMARY	283	9200	31	1%	2%	- 2.2%	0.7%
SECONDARY	6485	85164	76	22%	24%	1.8%	3.2%
TERTIARY	25117	422598	59	77%	74%	3.0%	3.3%
TOTAL	31885	516962	62	100%	100%	2.7%	3.2%
BRUSSELS METROPOLITAN AREA (BCR+WB+FB)							
PRIMARY	299	9667	31	1%	1%	- 2.4%	0.5%
SECONDARY	11860	149459	79	17%	20%	1.7%	1.9%
TERTIARY	64883	1017245	64	83%	79%	2.6%	2.3%
TOTAL	77042	1176371	65	100%	100%	2.4%	2.2%
Belgium							
PRIMARY	2587	86106	30	1%	2%	0.6%	1.3%
SECONDARY	59893	885476	68	27%	31%	1.7%	1.7%
TERTIARY	170664	3173465	54	72%	67%	2.1%	2.1%
TOTAL	233144	4145047	56	100%	100%	2.0%	1.9%

Source:

Own computations based on data from the National Accounts Institute (ICN/BNB, 2000* and 2007).

* Comptes régionaux : Croissance économique des régions, provinces et arrondissements – Période 1975-1997 (Regional accounts: Economic growth in the regions, provinces, and arrondissements, 1975-1997). ICN/BNB, Brussels, 2000.

Inside the BMA, developments in the central area (BCR) have been markedly less favourable, for economic growth there has been a mere 1.5 percent per annum since 1988. Still, the BCR narrowed the gap considerably at the end of the period and even outstripped the national average growth rate, as the following figures show: mean annual growth rate of 2.2 percent in the BCR between 1995 and 2004, compared with 2.7 in the periphery and 2% for Belgium as a whole over the same period (see Table 1).

The tertiary sector's growth, given this sector's weight in the metropolitan economy, is obviously what determines to a great extent the total economic growth figures in and around Brussels (see, however, the section on industry's multiplier effects farther on). The growth in the production of services has been particularly strong in the periphery for some fifteen years, *i.e.*, 3.3 percent per annum in WB+FB between 1988 and 2004, which was close to twice the rate of growth in services in the BCR (Table 1). In Brussels' periphery, the share of industry in the broad sense is greater and has fallen only slightly in volume over the past fifteen years or so (22 percent in 2003), although it is below the Belgian average (27 percent in 2003, Table 1).

The stronger growth in the production of goods and services on the edge of Brussels reflects above all the continuing "exurbanisation" of manufacturing (a more than twenty-year-old trend) and the urban sprawl of services rather than more efficient production in the firms located in Walloon and Flemish Brabant Provinces.

Let us start therefore by examining the relocation of industrial activities in the area. The number of manufacturing plants in the BCR fell 39 percent between 1985 and 2004, whilst it increased 1 percent in the peripheral area over the same time. This is a clear indication of this branch of economic activity's relative decentralisation⁹. Moreover, the construction sector grew faster in Walloon and Flemish Brabant Provinces, primarily because of the massive urban flight from the city¹⁰, for several thousand Brussels dwellers have been leaving downtown Brussels each year for the past thirty years for more spacious and cheaper (per square metre) housing on the city's outskirts¹¹. For the same reasons of urban sprawl of human activities, services have naturally diffused into the metropolitan periphery. Witness: Employment in the tertiary sector rose 21 percent in the BCR between 1985 and 2004 but 80 percent in the WB+FB over the same period. In other words, the entire Brussels metropolitan economy, being subject to centrifugal forces, has continued to become more decentralised for the past score of years.

⁹ The number of establishments in the manufacturing sector even rose 24 percent in Walloon Brabant to total 651 on 31 December 2003 (source: ONSS-RSZ).

¹⁰ In the periphery, the number of establishments and work sites in the construction sector rose 13 percent (from 2,553 in 1985 to 2,882 at the end of 2003), whereas, over the same period, the number of construction establishments in the core region (BCR) remained stable at around 1,500 (a 1 percent drop between 1985 and 2003).

¹¹ From 2000 to 2003, the mean net migratory balance between the BCR and the periphery (WB+FB) was negative for the BCR and of the order of 6,700 people per year in absolute figures (computed from the statistical indicators in *Indicateurs statistiques de la RBC*, 2005, p. 27).

Whilst the intra-metropolitan relocation of activities is very clear, might not the economic growth in the periphery be due, at least in part, to more efficient production than in downtown Brussels? This seems not to be the case. First of all, the enterprises ringing the city seem neither more nor less efficient today than their sisters or rivals in the BCR. As we can see in Table I, the value added per worker – an imperfect measure of labour productivity that is also called the apparent productivity of labour – is slightly higher in the BCR than on its periphery, in both industry (a relative difference of 10%) and the services (a relative difference of 12.5%). Next, we cannot explain the stronger growth in the periphery by gains in the production facilities' efficiency, either, at least not in the initial analysis. Indeed, we may express the growth in value added as follows:

$$(1) \quad \Delta VA = \Delta \text{employment} + \Delta \text{apparent productivity of labour}$$

where Δ is the operator of the year-on-year change. This bookkeeping identity offers a simply way to break down economic growth and express it as the sum of the growth in employment and apparent productivity of labour. It does not explain the sources of productivity gains (which can result from process or organisational innovation, for example). Still, applying this accounting truth to the BMA data yields some interesting information about the different trends in the central and peripheral zones (see Table 2).

Table 2. Apparent productivity of labour

Source:
Own computations based on ICN-INR and ONSS-RSZ data, op. cit., Table 1.

	MEAN ANNUAL GROWTH, 1985-2004 ¹²		
	VA	EMPLOI	PRODUCTIVITÉ
BCR	1.6%	0.6%	1.0%
PERIPHERY (FB+WB)	3.1%	2.2%	0.9%
TOTAL BMA	2.2%	1.3%	0.9%
Belgium	2.1%	1.3%	0.8%

We see that the apparent productivity of labour in the BMA has risen at the rate of 0.9 percent per annum since 1985, or slightly faster than in Belgium as whole (0.8 percent per annum). Most important, the observed gap in economic growth (VA) between the periphery and BCR (annual differential of 1.5 percent = 3.1 percent - 1.6 percent!) does indeed seem to be due to the decentralisation of jobs (differential of 2.2 percent - 0.5 percent = 1.7 percent per annum in favour of the periphery), that is to say, of production facilities, rather than more efficient production on the outskirts, since the annual growth in the apparent productivity of labour in the two areas, at 0.9% at 1%, is almost identical.

¹² For 2004, these figures are estimated from the salaried employment on 31/12/2003.

III. Spatial and sectoral specialisation in Brussels

III.1. The BMA's relative de-industrialisation

The apparent de-industrialisation of Belgium's economy, especially that of its cities, that is depicted in Table 1 must be put in perspective. First of all, industry continues to have major multiplier effects on the rest of the economy, especially as regards market services (Cornille and Robert, 2005), in an economic system in which industrial firms subcontract various tasks that they used to handle themselves (*e.g.*, marketing, hiring, logistics, and so on). In a division of the Belgian economy into six major branches of activity (Cornille and Robert, 2005, p. 34), construction has the highest multiplier effect on production, namely, about 2. This means that for each euro produced in this sector, another euro is produced in the rest of the economy by indirect effects along the entire national production chain.

Second, the reduction in the relative weight of industry in our economic system does not at all mean that the production of tangible goods has fallen in recent years. One speaks of de-industrialisation in the strict sense only if the volume of manufacturing output falls. Now this has not been seen for the country as a whole since 1970 (see Bogaert *et al.*, 2004, pp. 3ff). The rise in the production volume concomitant with a drop in employment was made possible by productivity gains that, along with innovation and heightened specialisation in high value added products, have been one of the Belgian manufacturing sector's responses to the increased competition with which it has had to cope over the past twenty years, given that it is very open to international trade¹³.

Almost the same can be said for the BMA, the main difference being that the pace of its relative de-industrialisation rose considerably over the past two decades. So, the area's mean annual growth of manufacturing output has been 1 percent since 1985, compared with overall economic growth of 2.2 percent per annum¹⁴. In contrast, the de-industrialisation of the BCR has been absolute, with production falling 1 percent per annum since 1985,

¹³ The apparent productivity of labour in Belgium's manufacturing industry has risen 3 percent per annum since 1985 (own estimate based on INR-ICN, *op. cit.*, and ONSS-RSZ, *op. cit.*, Table 1). Despite all these efforts, Belgian industry has been losing global market shares structurally since 1985 (see Bogaert *et al.*, 2004, p. 9).

¹⁴ Source: INR-ICN (2000), *op. cit.*, Table 1, INR-ICN (2006) and own computations. To be able to compare the SEC 79 figures with those of the SEC 95, I redefined the manufacturing industry as follows: all of the manufacturing sectors aside from *coke plants, refineries, and nuclear industries* (NACE 23 division) but including the *mining industries* (ores and minerals).

reflecting the aforementioned exodus of industry from the city. This restructuring of the metropolitan economy has given rise to a relatively greater decline in employment in manufacturing compared with the rest of Belgium over the past roughly twenty years¹⁵. As a result of this employment side adjustment of the economic system, the rise in the apparent productivity of labour in the BMA's manufacturing sector has kept pace with the national average (approx. 3% per annum).

It should be pointed out that the BMA's manufacturing job losses have been largely offset, on the macro-economic level, by the creation of new jobs in the service sector, so that the total number of wage and salary earners in the BMA actually rose by some 215,000 units between 1985 and 2004 (a 26 percent rise comparable to the 24 percent rise for the Belgian economy as a whole)¹⁶.

The economy's relative de-industrialisation is due above all to its "tertiarisation" (Bogaert *et al.*, 2004), which is by its very nature more marked in metropolitan areas, where market and non-market services develop more efficiently through the economies of agglomeration, *e.g.*, economies of scale in education, transport, sports facilities, recreational and cultural facilities, health care, and so on.

III.2 Specialisation in the BCR compared with Belgium

Table 1 suggests that the BMA has become more specialised in high value added branches in both the secondary and tertiary sectors. This is clearly what happened in the BCR, where the manufacturing industry has shrunk (in terms of both number of jobs and number of establishments) roughly 40% since 1985. Only about 1,700 manufacturing production units, generally with a high technological content or relatively high value added per worker, remained in the BCR in 2004 and employment in these activities is particularly high in printing and publishing, transport equipment, agrifood, the chemicals and plastics industry, electrical machinery, and the garment industry. Using the figures published by Agoria (technological industry federation), I calculated that high tech, excluding information and communication technology (ICT) services, accounts for 42 percent of manufacturing jobs in the BRC, compared with an estimated range of 34 to

¹⁵ Employment fell, in terms of the net balance (destruction minus new job creation), by 42,000 units in the BMA between 1985 and 2004 (including the net destruction of 28,000 jobs in the BCR). Today, just under 95,000 salaried jobs remain in the Brussels area's manufacturing industry, of which slightly more than 38,000 are in the BCR.

¹⁶ The BCR's share in this net job creation was about one-third (70,000 new jobs between 1985 and 2004, or a 13% increase over this ten-year period).

40 percent in Wallonia and 34 to 44 percent in Flanders¹⁷. The relatively high ratio in the BCR is explained partly by the drastic decline in activity in other traditional manufacturing sectors (examples: heavy chemical industry, tobacco, clothing, machines, and metal engineering).

Moreover, statistical analyses of salaried employment on 31 December 2003, using the ONSS-RSV's 35 branch classification, show that the BCR and Antwerp clearly dominate in Belgium's tertiary sector: So, seven of the nine largest local sectors, *i.e.*, on the statistical district level, in Belgium belong to the tertiary sector and are located in the BCR¹⁸.

The domination of Belgium's two major cities in the service sector is explained by Brussels' multiple statuses as domestic capital, European capital, and international diplomatic centre, in the case of Brussels, but also by their economic histories and the geography of transport¹⁹. This can probably be taken to be an illustration of the lock-in effect put forward by Krugman (1991), to wit, once regions such as Brussels and Antwerp become specialised in certain activities, the respective productivity gains that build up tend to lock them into the same specialisations for a very long period of time, even centuries. This gives them comparative advantages but can also have negative consequences on local growth, for example (see below).

III.3. Relative specialisation in the centre and periphery

Now let us look at the development of specialisation within the BMA. To do this, we can analyse private-sector employment trends by major activity sector in 52 *communes* (municipalities) in and around Brussels (the 19 "boroughs" of the BCR plus the 33 municipalities making up the first peripheral ring) between 1991 and 2002. Our database covers some 562,000 private-sector jobs in 2001, 362,000 of them in the core area (or

¹⁷ Source: Own computations using employment data provided by Agoria and ONSS-RSZ, 2006. Agoria Bruxelles differentiates clearly between "ICT services" and other production activities, contracting, and maintenance. These distinctions are not as clear in the statistical publications of Agoria Wallonie and Agoria Vlaanderen. This explains the establishment of fairly broad ranges.

¹⁸ The number of jobs at the start of 2004 ranged from 47,000 in transport, warehousing, and communications to 85,000 in real estate, rentals, and corporate services and 106,000 in public administration. The other two major local sectors in Belgium are situated in Antwerp (some 54,000 jobs in trade and repairs and 50,000 in real estate, rentals, and corporate services).

¹⁹ The BCR is "overspecialised", compared with the national mean, in public administration and various very high added value sectors, such as real estate and corporate services, financial activities, and transport and communications. These three branches of market services account for a third of salaried jobs in the BCR and boast an apparent productivity of labour in excess of 90,000 euros per employee.

62% of total employment in the BCR)²⁰. It is interesting to study spatial changes in the private sector's specialisations because the private sector accounted for 80 percent of the 200,000 jobs created (net balance) between 1985 and 2002 and the public sector (civil service and education) is less mobile geographically.

First of all, we see a relative decentralisation of private sector jobs in all sectors. Indeed, in the sectors in which employment in the BCR rose (real estate, financial activities, and the hospitality industry, *i.e.*, hotels, restaurants, and cafés), it rose faster in the periphery, and in the sectors where it remained stable or fell in the BCR, in the periphery it either rose (retailing, other services) or declined less (industry and construction)²¹. Overall, all sectors combined, private sector employment rose 2 percent in the BCR and 50 percent in the periphery between 1991 and 2001.

Now let us compare the sectoral specialisations in the core versus the periphery in 2001 with their distribution in 1991. The relative sectoral specialisation index is defined as a given sector's share in total employment in the BCR divided by its share in total employment in the 52 *communes* of the BMA (Graph 1). The values greater than 1 show that the BCR has increased its "over-specialisation" in banking and insurance, individual and group services in the private sector (combined under the heading "other services"), and the hospitality industry (linked with the expansion of tourism in Brussels)²². The BCR remains "over-specialised" in research and development, but this sector has relocated to the periphery: Its size in the 33 peripheral *communes* tripled in ten years (to total 362 private sector jobs in 2001), whereas the increase in the BCR was only 17 percent (to total 793 jobs in 2001)²³.

²⁰ See Baudewyns *et al.* (2006) for a detailed description of the database. The 3,800 private sector jobs in agriculture and the production and distribution of electricity, gas, and water were not included due to these sectors' relative geographic immobility.

²¹ For a detailed breakdown of the trends in figures, sector by sector, the reader is referred to Baudewyns *et al.* (2006).

²² The fact that employment in the hospitality industry rose faster in the periphery than in the BCR does not contradict the observed bolstering of the BCR's relative over-specialisation in this area, for the relative weight of the hospitality industry in the 19 boroughs simply rose faster than its relative weight in the periphery. The same holds true for retailing.

²³ If we include government jobs, the BCR is slightly over-specialised in R&D compared with the national average (own computation), but the index has declined sharply over the past fifteen or so years because of more rapid rises in the numbers of R&D jobs in Wallonia (up 51 percent between 1995 and 2004!) and Flanders (up 45 percent between 1995 and 2004) compared with a mere 20 percent rise in the BCR over the same period. This corroborates the mitigated finding of the Regional Development Plan (2001) regarding the unfavourable trend in this sector compared with other European cities. See Finding 4 of the 2001 RDP published by Brussels' regional government (in French): <http://www.prd.irisnet.be/Fr/constat/constat04.htm>.

Graph 1. Relative sectoral specialisations BCR/Periphery, 1991-2001.

Source:
Own computations using decentralised statistics (ONSS-RSZ), private sector.

IV. Link between sectoral specialisations and local growth

Many recent econometric studies show that the structure of local production is not without influence on economic growth (Glaeser *et al.*, 1992; Henderson *et al.*, 1995; Combes, 2000; De Lucio *et al.*, 2002, Cingano and Schivardi, 2004; Baudewyns, 2005; Greunz, 2005). Before looking at the main empirical findings, let us make a rapid review of the theories that link local economic structure, agglomeration, and local growth²⁴.

On the consumers' side, their preference for a great variety of goods and services is one of the important reasons for their urban concentration. On the producers' side, the forces of agglomeration and urban economic growth can be placed in three major categories, to wit: (1) the interaction between transport costs and economies of scale in the production of goods and services²⁵, (2) local *communication externalities** — or the effects of "knowledge spillovers", and (3) market and strategic interactions. The models that are based on these factors bring local economic structure variables (specialisation, sectoral diversity, and competition) into play in one way or the other. The city's size itself can also play a role, since the effects

²⁴ I have given here just the pith of these theories. Diligent readers are referred to Fujita and Thisse (1997) for a review of the literature on geographic economic models.

²⁵ See Krugman's "new" economic geography (1991).

of knowledge spillovers, for example, will obviously not be seen unless the employment area has already reached a certain critical size.

When it comes to communication externalities, the proponents of models along the lines of the Marshall-Arrow-Romer (MAR) model believe that local sectoral specialisation encourages innovation through the sharing of knowledge and exchanging of ideas between people working in the same industry. In addition, given the problem of businesses' incomplete appropriation of research and development efforts (imitation instead of mastery), in the presence of local knowledge spillover effects, the MAR theory postulates that local monopolies would be favourable for innovation. The American economist M.E. Porter (1990), for his part, proposes a local clusters theory of innovation that also promotes local sectoral specialisation but, unlike the MAR models, he advances that local competition between businesses, rather than monopolies, is one of the driving forces of innovation²⁶. Jacobs (1969) is also in favour of a competitive environment and believes that local sectoral diversity promotes innovation through exchanges of ideas between people from different areas of activity. In this connection, the literature on innovation systems has stressed the danger of regional technological lock-in and the advantages of diversity in the broad sense, that is to say, of production structures as well as of institutions²⁷. Whether the communication externalities are inter- or intrasectoral, ideas do indeed seem basically to be exchanged locally, as several studies have shown (see Wallsten, 2001, for example).

In spatial strategic interaction models, price competition fosters spatial isolation, whereas the race for market share and the local markets' sizes would tend more to push businesses to concentrate because of consumers' preference for a large variety of goods and services. Moreover, large cities that are diversified from a production standpoint offer the right conditions for a better match of supply and demand on the labour and intermediate goods and services market.

Empirical findings

When it comes to the tertiary sector, Combes (2000), in his article on the growth of employment in the 341 French activity zones, and Baudewyns (2005), who studied the growth of VA in the 43 Belgian districts, get roughly the same results in their overall regressions for services: Local sectoral diversity does indeed have a significant positive effect on the tertiary sector's economic growth, whereas specialisation and, to a lesser extent, the degree of local competition are detrimental to it and urban density appears

²⁶ See, for example, Greunz (2005, p. 615) for the link between innovation and competition.

²⁷ See Johnson (1992).

to have no overall effect on the growth of service activities. It should be pointed out that in Combes (2000) and Baudewyns (2005), who worked by constructing indicators, sectoral specialisation is not necessarily linked negatively to sectoral diversity, for the concept used is that of *the diversity with which all sectors must cope** (see the indicator's definition in the annex)²⁸. The indicator *relative local sectoral specialisation**, for its part, is a given sector's share in total local employment over the sector's weight in the national scheme of things (see the exact formula in the annex).

When it comes to the manufacturing industry, the findings are markedly more contrasting in the European literature. Most of the articles find no significant effect of either local diversity or competition on local growth of VA (Baudewyns, 2005) or industrial productivity (De Lucio *et al.*, 2002; Cingano and Schivardi, 2004). Depending on the methodology and country studied, sectoral specialisation is either unfavourable (Combes, 2000; De Lucio *et al.*, 2002) or favourable (Cingano et Schivardi, 2004) for local growth in the manufacturing industry. The study by Greunz (2005) differs from the studies mentioned above because its aim is not to explain the growth of VA or productivity, but rather the activity of local innovation — determined by patent applications filed with the European Patent Office —, which is one of the major determinants of long-term economic growth. In his models for sixteen manufacturing sectors estimated from the data on 153 NUTS II regions for the former 15-member European Union, Greunz finds that the diversity of a production system does indeed have a large positive impact on innovation in urban areas, in line with Jacobs's theory (intersectoral fertilisation of ideas in cities). Local specialisation (MAR externalities) also has a positive effect, but a markedly smaller one.

▣ V. Brussels regional policy stakes

Let us now come back to production specialisation and economic growth in the Brussels Region. The economic structure indicators that I calculated in another article (Baudewyns, 2005) show that the BCR had the following three characteristics at the start of the period (1991):

① over-specialisation in services.

²⁸ So, the 1991 ONSS-RSZ data used by Baudewyns (2005) show that Mechelen was *over-specialised* in the secondary sector — industrial VA accounted for 38 percent of the total local VA whereas the corresponding share of the secondary sector in the national VA was 31 percent — but all industrial sectors had to cope locally with a very great variety of other activities. The sectoral diversity indicator for Mechelen was 1.075 (after standardisation against the national mean) in 1991 and the third highest among the 43 Belgian districts. This example shows well that the specialisation and sectoral diversity indicators are not necessarily inversely related locally and both can be very high in some employment areas.

- ② relatively low sectoral diversity compared with the national average.
- ③ strong competition between businesses²⁹.

The studies reviewed in the preceding section suggest that this structure is unfavourable for economic growth in the BCR, where, let's remember, services account for close to 90% of the economy. The estimates that I made in the aforementioned article suggest, moreover, that the local economic structure at the start of the period explains a significant part of the BCR's lag in economic growth compared with the national average between 1993 and 1997. This is what is shown in Table 3, where the tertiary sector's annual local growth differential has been broken down into a part that is explained by the local economic structure in 1991 ("Total Local Structure" column) and a part that is not.

Districts	Annual growth	Observed differential	Diversity	Specialisation	Competition	Total Local Structure	Total differential explained	Unexplained residual
Flemish	2.6%	0.43%	-0.06%	0.10%	0.12%	0.16%	0.37%	0.05%
Walloon	1.8%	-0.35%	-0.23%	-0.05%	0.09%	-0.18%	-0.08%	-0.28%
BMA	2.4%	0.24%	-0.27%	-0.26%	-0.32%	-0.85%	0.23%	0.01%
BCR	1.7%	-0.44%	-0.30%	-0.33%	-0.46%	-1.09%	0.23%	-0.67%

Table 3.
Decomposition of local growth differential with the Belgian average — services, 1993-1997 (annual percentage points).

Breakdown of growth from the overall equation for services estimated by Baudewyns (2005, p. 646): $\ln Y_{j,BEL} = 0.004 - 0.062 \ln SPEC_{i,j} - 0.034 \ln DIV_{i,j} - 0.014 \ln COMP_{i,j} + 0.049 BXLHV$, where $Y_{j,BEL}$ is the surplus growth (compared with the Belgian mean) in services in the statistical district j ; $i = TERTIARY$; $SPEC_{i,j}$ and $DIV_{i,j}$ are defined in the text; $COMP_{i,j}$ is an indicator of local competition in the tertiary sector (see Baudewyns, 2005, p. 642). These explanatory variables were measured in 1991.

This table suggests that this econometric model adjusts the data for the Flemish districts and BMA well (small and practically no residuals, respectively) but overestimates mean economic growth in Wallonia³⁰. An important part of the growth in the BMA (and BCR) observed between 1993

²⁹ The value of the competition indicator as constructed by Baudewyns (2005, p. 642) is affected strongly and positively in the BCR by the region's confined area. It is the second highest in Belgium after Mouscron (a small outlying locality squeezed between regional and national borders).

³⁰ For the Walloon and Flemish districts I have broken down the regional growth rates and the local structure indicators are means weighted by the districts' shares in regional employment.

and 1997 may be explained by variables other than sectoral structure variables. Nevertheless, the characteristics of the BCR's economic fabric did indeed contribute to the BCR's poorer performance. This is valid for the BMA as a whole and contrasts singularly with Flanders, where close to 40 percent of the surplus growth³¹ of VA observed in the tertiary sector (0.43 percent above the national average) would indeed appear to be explained by the region's better economic fabric at the start of the period (see Table 3).

Now let us study recent developments in the sectoral diversity in Brussels compared with the other regions of Belgium, as this variable appears to have the greatest positive impact on service activities, according to the growth equation in Table 3 (see also the probable virtuous effects on industrial innovation mentioned by Greunz, 2005). I measured the *total local sectoral diversity** for each of the Belgian districts by taking the inverse of a Herfindahl concentration index (Combes, 2000; Baudewyns, 2005) computed over all thirty-five economic activity sectors in the ONSS-RSZ's latest classification. Graph 2 shows the changes in the indicator calculated in this way for the Flemish and Walloon districts (regional means), the BCR, the periphery (WB+FB), and Belgium as a whole since 1996.

Graph 2. Sectoral diversity indicator, Belgian statistical districts, 1996-2003.

Source:
Own computations (see text)

This graph shows four major trends. First, over the years the Belgian districts have become less and less diversified when it comes to their production systems. This is not good news, according to our econometric

³¹ $0.16\% / 0.43\% = 37\%$.

analyses of local growth, especially for the districts that are specialised in the tertiary sector (see Section 4). Statistical analysis shows that the strong surge in employment in five service sectors³², which today account for half of employment in Belgium, and the concomitant plummeting of employment in certain manufacturing sectors³³ are what explains this phenomenon. Second, sectoral variety is markedly higher in the Flemish districts than in Brussels and Wallonia. Third, the periphery's sectoral diversity indicator, which was between those of the BCR and Flanders at the outset, in 1996, rapidly fell to the level seen for the core area and even dipped below the latter in 2003. This is due to the strong increases in the relative shares of a few corporate and household service sectors (real estate, corporate services, healthcare, social assistance, trade, and repairs) in total employment in the periphery in connection with the continuing urban sprawl of human activities. This means that the periphery no longer has a substantial comparative advantage over the Brussels Region *per se* when it comes to sectoral diversity.

Fourth and last, the mean sectoral diversity has fallen much more rapidly in Flanders since 2001 than in Wallonia and Brussels. This can be explained by the faster pace of job losses in a few manufacturing sectors that are (or were) relatively important in Flanders³⁴, while at the same time employment in the health sector, real estate and corporate services, trade and repairs, and education rose faster in Flanders than in the rest of Belgium. This increased the imbalance in the distribution of employment amongst the various activity sectors in Flanders. In a nutshell, the difference in sectoral diversity between Flanders and the rest of Belgium has gradually narrowed in recent years. This could help to reduce the growth differential between Flanders and the BCR in the medium term. Table 3 effectively suggests that if the BCR's sectoral diversity were very close to that seen in Flanders, its annual growth shortfall in the tertiary sector compared with the national average could be roughly halved, which is no mean feat.

▣ VI. Conclusions

One of the causes of the massive unemployment in the BCR was the absence, until 1998, of strong local economic growth. This lack of growth

³² Between 1996 and 2003, the following rises in employment were seen in Belgium: 37% in health and social services, 28% in real estate and corporate services, 22% in public administration, 17% in community and individual services, and 15% in trade and repairs.

³³ For example, employment fell 53% in the garment and fur industries, 43% in footwear and leather goods, 29% in textiles, 28% in the tobacco industry, and 29% in the extraction of non-energy products.

³⁴ Textiles and clothing, electrical and electronic machinery, the chemicals industry, and transport equipment.

was due to a great extent, even completely, to urban sprawl and the concomitant spreading-out of human activity. This relative and gradual decentralisation of the region's economy increased not only the mean geographic distance, but also the mean cultural and linguistic distances³⁵ between Brussels-dwelling jobseekers and potential employers. Recently, Vandermotten *et al.* (2004) have proposed to deal with the huge reserved of low-skilled, out-of-work labour in the Brussels Region by supporting the development of sectors that employ unskilled or low-skilled staff.

On another front, Belgian and European econometric analyses have shown that sectoral diversity, in contrast to specialisation, does indeed encourage urban economic growth. This suggests the existence of intersectoral knowledge spillover effects, but also the presence of market forces and strategic interactions that are conducive to the agglomeration of service activities. It thereby follows that one must be careful in targeting specific sectors for regional aid. To put it simply, any policy aimed at encouraging the creation of low-skill jobs in the BCR or any other economic activity aid policy, regardless of the objective, must not be detrimental to the region's sectoral diversity, which, on the contrary, must be stimulated, according to our local growth analyses.

So, we have seen that giving a positive shock to Brussels employment, for example in the wake of sectoral policies such as those proposed by Vandermotten *et al.* (2004), in tourism, building, and some other social action and community and individual service sectors requiring less skilled workers, would improve the local sectoral diversity indicator. In contrast, boosting employment in Brussels' retail and wholesale trade exogenously would degrade the regional production system's diversity. That would be potentially harmful for long-term economic growth, if all other variables remain constant.

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³⁵ It should be borne in mind that the Brussels periphery is populated mainly by Dutch speakers whereas the majority of the 19 boroughs' residents are French speaking.

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■ Glossary — Definitions of indicators

* *Communication externalities*

By *externality* economists mean an increase in or loss of well-being that is not the subject of a transaction (non-market effect) and results directly from the interaction of economic players. For example, air pollution from a chemicals plant is a negative externality for the neighbourhood. *Communication externalities*, in contrast, are positive externalities that bolster the accumulation of knowledge and result from communication between various economic players.

* *Sectoral diversity with which a sector must cope*

In Combes (2000) and Baudewyns (2005), the diversity indicator is defined for any sector i in an employment area (or district) j to be the inverse of a Herfindahl concentration index computed over the shares that each sector has in area j 's total employment, excluding the sector i under consideration:

$$DIV_{i,j} = \frac{1}{\sum_{\substack{i'=1 \\ i' \neq i}}^S \left(\frac{emp_{i',j}}{emp_j - emp_{i,j}} \right)^2}$$

where $emp_{i,j}$ and emp_j are employment in sector i and total employment in zone j , respectively, and S is the total number of activity sectors in the economy. This indicator's value is normalised by the same indicator computed at the national level, for the local "growth surplus" (i.e. the difference between the local growth rate and the national growth rate) of local growth is what is explained. In Baudewyns (2005), the index used is the mean for the sectors making up the secondary and tertiary sectors, respectively, because the data are aggregated for these two macroeconomic sectors.

* *Relative local sectoral specialisation*

For any sector (or branch) of activity i , the relative local specialisation indicator is:

$$SPEC_{i,j} = \frac{VA_{i,j} / VA_j}{VA_i / VA}$$

where $VA_{i,j}$ and VA_j are the value added of sector i and the total value added in employment area j , respectively, and are the corresponding amounts on the national level. In Combes (2000), the indicator is computed from sectoral employment data.

* *Total local sectoral diversity*

Formally, the indicator for each district j was constructed from data on the ONSS-RSZ's 35 activity sectors (salaried employment by district, 1996-2003):

$$DIV_j = \frac{1}{\sum_{i=1}^{35} \left(\frac{emp_{i,j}}{emp_j} \right)^2}$$

where $emp_{i,j}$ and emp_j are defined above.

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