

# The European Metropolises and Their Regions: from Economic Landscapes to Metropolitan Networks



**Maciej Smętkowski**  
and **Grzegorz Gorzelak, Marek Kozak, Agnieszka Olechnicka,**  
**Adam Płoszaj, Katarzyna Wojnar**



EUROPEAN UNION  
Part-financed by the European Regional Development Fund  
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Wydawnictwo Naukowe SCHOLAR

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## FOREWORD

This publication summarises selected findings from the project entitled Future Orientation of Cities (FOCI), which was completed as part of the ESPON 2007-2013 Programme, and looked at the relationships between European metropolises and their surrounding regions. The research on the linkages between cities and their hinterlands was inspired by the European Spatial Development Perspective – ESDP (1999) which, amongst its proposed activities, highlighted the need to develop a partnership between cities and rural areas. This stance informed a number of research projects such as PLUREL, funded as part of the 6th Framework Programme, or EDORA within the ESPON 2007-2013 programme. Nonetheless, the studies discussed in this publication basically leave aside the dichotomous division into cities and rural areas analysed in the aforementioned projects, and instead focus on the division into metropolitan areas and their regional surroundings, which seems to more accurately address the economic realities of the present day.

This dimension of differences between metropolitan regions was investigated in earlier studies conducted by the Centre for European Regional and Local Studies (EUROREG) at the University of Warsaw by the team of Grzegorz Gorzelak and Maciej Smętkowski. The results of these studies were published in a book entitled *The metropolis and its region: New relationships in the information economy* [in Polish] and in a number of papers, including those in the journal *European Planning Studies*. It should be pointed out, however, that the empirical analyses underpinning those studies were based on three metropolitan regions situated in Poland. The papers submitted in this publication cover the majority of metropolitan macroregions across Europe, and analyse five of them in depth (Barcelona, Glasgow, Stockholm, Toulouse and Warsaw) due to their distinctive characteristics in terms of the relationships that occur between these cities and their surroundings.

The fundamental research hypothesis assumed that the disparities in the development level between metropolises and their regions will increase owing to a relative weakening of their mutual ties as a result of a dynamic development of linkages existing within the global network of big cities.

In an attempt to indirectly verify this, we set out to evaluate – using multivariate quantitative methods – the growth dynamics of metropolises and their regions while simultaneously taking account of the differences in their economic structures, labour market situations as well as ongoing demographic changes. The relationships between the metropolis and the region were directly analysed via in-depth case studies, including questionnaire surveys of both enterprises and the local authorities, as well as interviews with major regional development actors. As a result, a typology of European metropolitan macroregions has been developed, with some conclusions relating to their scale and the underlying factors, as well as potential scenarios on how metropolitan systems in Europe may evolve in the future.

We would like to emphasise that this book encapsulates only a small part of the research done as part of the ESPON FOCI project. The remaining analyses which address such issues as the competitiveness of cities (including their economic, transport and research linkages), the coherence of cities (including ongoing segregation processes), and the sustainability of urban development, particularly in the context of urban sprawl, can be found in the final project report available on the website: [www.espon.eu](http://www.espon.eu).

Warsaw, March 2011.

## INTRODUCTION

In the contemporary economy, the role of knowledge and information is constantly growing. The competitiveness of enterprises and territorial systems depends on the creation of new knowledge, access to information and information processing – in other words – on innovation in the broad sense. The question of competitiveness should be viewed in the global context because openness to information and capital flows and the internationalisation of labour markets, epitomised by transnational corporations and their operation, is becoming a characteristic feature of the contemporary economy (Cf. Gorzelak, Jałowiecki 2000).

The development of a global information economy has been accompanied by a dynamic growth of huge cities with international functions – the metropolises. Metropolises are becoming the key nodes of the global economy, bringing together both management and control functions (Sassen 1991, Lo, Yeing 1998, Castells 1998, Taylor 2007). A multi-nodal, global system of cities is in the making, marked by robust internal ties. It is made up of cities which have been able to create a desirable environment for innovation – due to a combination of economic, technological, institutional and social factors – to foster the development of the information sector. It should be noted that the information sector not only comprises higher-order services (Taylor 2007), but also knowledge-intensive industries (Krätke 2007).

The concentration of functions related to generating and processing information, handling capital flows and ensuring attractive location criteria for the headquarters of huge transnational corporations in selected metropolitan centres, coupled with the emergence of global and continental systems of cities, can have serious consequences for regional and local systems. Metropolisation processes are leading to changes in the cities' internal structure and to a transformation of the relationships between cities and their surrounding regions. The spreading of metropolises onto regional hinterland areas can lead to the development of a metropolitan area in which ties with the metropolis are both strong and wide-ranging. At the same time, economic ties between the city and its metropolitan area and the surrounding region are weakening (as linkages within the global

or continental city network become stronger). This latter aspect of the metropolisation process is much less researched, unlike the concentration processes of central functions in cities and the consolidation process of the global network of cities. Many authors have put forward the hypothesis that the regional hinterland is no longer needed by metropolises as it does not offer the resources that are necessary for metropolitan development (cf. e.g. Castells 1998, Jałowiecki 2000, Kunzmann 1998, Sassen 1991). It is therefore undergoing a relative marginalisation, while the differences in the development level between the metropolis and its regional surroundings are increasing.

In light of the new development paradigm outlined above, and the recent hypotheses published in world literature on the subject, an evolutionary model of the metropolises' global and regional relationships could be proposed, which takes into account the type of resources and scale of linkages (Gorzelak, Smętkowski 2008). To offer a general picture, the relationships between the city and the surrounding region in the industrial economy were relatively strong, with the region providing simple resources: unskilled labour in the form of daily shuttle migration, food products, raw materials for production and construction enterprises located in the agglomeration. In return, the agglomeration would provide its hinterland with earnings from work, processed products (shopping in the city) and higher-level services. In the industrial civilisation, the relationships between the city and the global economy were, as a rule, limited to an exchange of industrial goods. In the information economy, the links between the metropolis and the region have become relatively weaker. The role of the hinterland has become limited to the provision of an unskilled and skilled workforce in the form of weekly shuttle or permanent migration, as well as environmental resources – potable water, recreational space, building plots, etc. The resources which were, formerly supplied to the city from the region now come from different sources (e.g. food) or have lost their significance (e.g. raw materials). For the metropolis of the information economy, now turned into a node concentrating global information and capital flows (including human capital), the concentration of such flows (frequently of a non-material nature) has become more important than the material exchange of goods or attracting workers for mass production (factors which played a key role in the development of the urban-industrial agglomeration).

The above hypothesis on changing relationships between metropolises and regions is well-grounded in the literature on the subject. According to K. Dziwoński (1971), urban agglomerations form a separate subsystem at an advanced development stage of the settlement system, where their inter-linkages are more vigorous than those in the regional



subsystem: 'huge urban complexes are not central places but represent specialised urban settlement units with individual locations.' This issue is also tackled in the works of A. Pred (1973, 1975, 1976), a proponent of the thesis that contacts between large urban agglomerations increase as economic development and urbanisation processes continue. Among more recent works on linkages within the global network of cities the study by A. Esparza, A.J. Kremenec (1994), with Chicago as its case study, is particularly interesting. On the basis of this, a complex picture showing the ties of a huge city emerges, which could be summarised as follows: flows of services occur in a two-level structure. The first such level is made up of global cities for which the factor of distance does not play any considerable role, while the second relates to the national system of cities and shows the existence of a hierarchical structure in which distance adversely affects mutual interaction. On the other hand, the spatial range of demand for services perceptibly differs from the supply of services. Most enterprises purchase their services from suppliers operating from the city's metropolitan region. This can be seen as proof of the significance of central functions, thanks to which the region is largely self-sufficient.

Other studies conducted on a few European cases also reveal a difference between metropolises based to some extent on their position in the network of large cities (Simmie 2003; Simmie et al. 2002a, 2002b). This is especially important in the case of capital cities that are far more globally connected (i.e. London, Paris, Amsterdam) than other regional cities (i.e. Stuttgart, Milan). In general, the higher the position of the city, the smaller the significance of the ties with regional surroundings for development processes of the metropolis. From a study of the linkages of selected Polish metropolises (Gorzelać, Smętkowski 2008), an overall picture emerges, which is probably characteristic for all post-socialistic countries. As a rule, the regional surroundings do not play any important part in the metropolitan development processes, and do not constitute any significant supplies or sales markets. Furthermore, the regional surroundings have a greater significance for metropolis in the provision of simple resources: low-processed goods, low-skilled workforce, services which do not require skilled staff as well as generally accessible information about innovations rather than processed resources. The development of the metropolis is largely based on local human resources, which are subject to certain deconcentration occurring as part of the suburbanisation process. The metropolis also attracts workers, including highly skilled professionals, and this causes the backwashing of human capital from its regional surroundings.

Another research project (Hall, Pain 2007) was devoted to access interplay between globalisation and polycentricity in eight mega-city regions situated in North-Western Europe, based on advance producer service

evidence. This study (Cf. Hoyler et al. 2008) revealed a concentration of highly advanced functions in prime cities that was supported by a dispersion of associated functions in wider mega-city regions (Zürich – Northern Switzerland). This was similar to inter-urban linkages in South-East England, but without the sectoral specialisation that took place, for instance, in the case of Randstad Holland. However, in some other cases (i.e. Dublin, Paris) advanced producer services remain highly concentrated and interlocked within metropolitan areas.

To sum up, some differences between these cases might be observed depending on city size and function as well as the economic potential of the regional hinterland. One should also have in mind that city-region relations are very complex and depend strongly on the regional context. This calls for further comprehensive and dynamic research focused on different types of regions.

Consequently, the research hypothesis that has been formulated for verification in empirical studies assumes that the difference in the level of development between the metropolis (the city with its metropolitan area) and its regional hinterland (macroregion) will increase as a result of metropolisation processes. Furthermore, the following research questions addressing the mechanism of this phenomenon have been raised:

- What is the impact of linkages between the metropolis and the region on the competitiveness of these territorial systems?
- What factors affect the relationships between the metropolis and the region?
- What factors determine the diffusion of metropolitan development and what is the spatial range of the backwashing of development resources in metropolitan macroregions?

In the first section, the book provides a review of classical and contemporary urban and regional development theories, placing special emphasis on the implications for city-region linkages. Next, a typology of such relationships is discussed, including their current situation and recent changes. This is followed by an attempt to define the zones of influence of a large city, including the regional hinterland. In the empirical section, which takes into account the above mentioned definitions, a simplified delimitation of metropolitan macroregions in Europe is proposed. First, using a selected sample of these macroregions, the degree of intraregional disparities in terms of economic development and convergence processes is analysed. Then, other dimensions of intraregional disparities are identified (demographics, economic structure, labour market) and a typology of macroregions is created; this is used to offer general conclusions concerning convergence processes for individual groups of regions. The subsequent chapter discusses the reasons for the observable intraregional disparities

in the level of development and factors which foster macroregional divergence. Finally, the last chapter, based on specially selected case studies (intended to portray extreme typological examples), is an attempt to supplement these quantitative analyses with other aspects, associated e.g. with the quality of human capital, level of innovation as well as mutual relationships between backwashing and spreading processes. These case study analyses should allow us to answer the question as to what should be done to strengthen the positive effects of the metropolisation process and weaken its negative aspects for the regional hinterland.



## **PART 1**

### **CITY-REGION RELATIONSHIPS – DIFFERENT THEORETICAL CONCEPTS**



## **CHAPTER 1**

### **CITY-REGION RELATIONSHIPS IN LIGHT OF SELECTED THEORETICAL APPROACHES**

In many classic and contemporary theories and concepts dealing with urban and regional development, we find aspects discussing – explicitly or implicitly – the relationships between the city and the surrounding region (Tab. 1). In the classical references, this issue is frequently limited to analysing mutual ties between cities and rural areas, or those within a hierarchical city system. In reality, processes accompanying the development of an information economy can lead to obliteration of the dichotomy between urban and rural areas. The new ease with which city lifestyles are popularised, and the increasing role of network linkages between cities from different hierarchical levels contribute to this process, which in turn calls for a new look at the phenomenon, particularly in highly developed countries. New concepts which have emerged from the theory of polarised growth and the network theory can be viewed as expressions of this new perspective.

Among classic models of spatial interactions, we have Ullman's triad (Ullman 1957) and a group of gravity potential models. The former is used to analyse the following three components: complementarity, intervening opportunity and transferability, all of which determine the ties existing between regions. Complementarity means that individual regions have access to different resources. Their surplus or deficit leads, respectively, to the creation of supply and demand, which in turn triggers an exchange of goods between regions. An intervening opportunity means both being able to use supplies from various regions and to sell goods to them. This component is strongly associated with transferability, which refers to the impact of distance on the strength of linkages. Gravity potential models, meanwhile, mainly focus their analysis on distance and its reductional impact on the intensity of relationships. Interactions between two cities or regions are in direct proportion to their potential and in inverse proportion to the distance between them. The decreasing role of distance as a factor that determines linkages between cities and regions,

Table 1. City-region relations derived from selected theories

| Theory / theories            | Types of relations between city and region   | The role of region in city development   | The role of city in regional development  |
|------------------------------|--|--|---|
| Spatial interaction theories | Complementarity<br>Intervening opportunities<br>Transferability                                  | Provides resources and serves as a market for goods and services   | Provides resources and serves as a market for goods and services                  |
| Urbanisation theories        | Evolution of regional settlement systems as result of agglomeration or deconcentration processes | Area of origin or destination for migration depending on current tendencies  | Area of origin or destination for migration depending on current tendencies       |
| Economic base theory         | Basic and non-basic local activities of city   | There is no distinction between regional hinterland and other export markets   | Not applicable. Region is one of possible markets for goods and services.         |
| Central place theory         | Goods and services provided by city for the region   | The importance of city depends not only on local, but also regional demand. The city is central place for its hinterland | Region depends on city  |
| Growth pole theories         | Positive spread effects and negative backwashing effects   | Region provides simple resources and labour  | Capital investments, diffusion of innovations, but backwashing of human resources |
| Network theories             | Network linkages are hierarchical and do not depend on distance between nodes                    | Region does not play important role in city development unless there are nodes of regional network                       | City as a centre of nodal region  |

Source: Smętkowski (2007).



which can be observed today, leads to a greater role of complementarity and intervening opportunity in the spatial interaction model, while in the gravity potential model the role of distance depends on a given spatial scale. Spatial interaction theories, being general in nature, fail to highlight in detail the linkages between the city and the region. This means that exchange of goods between the metropolis and the region is dependent on the differences in their economic structure, their mutual attractiveness as sales and supply markets, and the role of distance in such an exchange.

In the light of the urbanisation theory, individual stages of urbanisation processes and the attendant changes in the distribution of population in cities and their surrounding areas represent important phenomena for city-region relationships. The starting point here is the definition of urbanisation, which is considered to be a cultural and civilisational process that is epitomised in the development of cities, their increasing number and surface area, the growing concentration of population in cities and their direct vicinity, the popularisation of sources of sustenance other than agriculture, the acceptance of, and absorption of 'city culture': city standards, customs, etc., which leads to an increase in city population (Castells 1982). As part of this theory, the question of distinguishing individual stages of the urbanisation process is frequently tackled. For this purpose, measures such as changes in the population of a city and its adjoining areas (treated collectively as a city region) are most frequently used (Tab. 2). The main thrust of these theories is that the process of the city's spatial development involves subsequent stages of concentration and deconcentration of the population, which, however, as a rule take place on a constantly increasing spatial scale. As a consequence of such cycles, and depending on whether concentration or deconcentration processes prevail, the city and its region represent, mutually, either a source or a target area for the migration of the population, which in turn affects both the spatial extent of the city and the forms of possible uses of the city space. In this context, Jałowiecki's definition of metropolisation (1999, p. 29) should be evoked: 'metropolisation is the final stage of urbanisation, consisting in the transformation of urban space and change of the relations between the central city and its direct environment, and in a non-discrete way of using urban space. It is manifested by a weakening or severing of the city's economic ties with its regional hinterland and replacing them with contacts with other continental or global metropolises.'

The economic base theory has not evolved into a uniform theoretical system. According to this theory, urban development depends on two factors: basic and non-basic activities. While the former refer to functions provided for the local economy, the latter, also referred to as city-forming functions, are provided for the external world. The latter type of functions

can include exchange between the city and the region or its further external environment. From this perspective, the region surrounding the city is only one of many potential markets for the supply or sales of goods and services.

Table 2. Stages of functional development of an urban region

| Stage of urbanisation process | Type of process                | Population changes |           |             |
|-------------------------------|--------------------------------|--------------------|-----------|-------------|
|                               |                                | Core               | Periphery | City-region |
| 1. Urbanisation               | 1.1. Absolute centralisation   | ++                 | -         | +           |
|                               | 1.2. Relative centralisation   | ++                 | +         | +++         |
| 2. Suburbanisation            | 2.1. Relative decentralisation | +                  | ++        | +++         |
|                               | 2.2. Absolute decentralisation | -                  | ++        | +           |
| 3. Deurbanisation             | 3.1. Absolute decentralisation | --                 | +         | -           |
|                               | 3.2. Relative decentralisation | --                 | -         | ---         |
| 4. Reurbanisation             | 4.1. Relative decentralisation | -                  | --        | ---         |
|                               | 4.2. Absolute centralisation   | +                  | --        | -           |

++ large increase; + small increase; - small decrease; -- large decrease; the last column is a sum

Source: R. Drewett et al. (1992).

Meanwhile, the central place theory (Christaller 1933), which in some aspects could be regarded as a specific example of the economic base theory (cf. Preston, Mitchell 1990, p. 90) is the first of the theories discussed here which directly deals with the mutual relationships between the city and the region. According to this theory, the city is a centre that offers central goods to its regional hinterland. Such goods can include administrative, cultural, healthcare, trade and financial functions, as well as the labour market, transportation or telecommunication services. It should also be pointed out that the range of individual goods can vary. This concept also implies that the role of the city, that is its regional nodality, results from the degree of centrality for the regional hinterland. On the other hand, the region is not self-sufficient and is dependent on the city as its functional centre. Meanwhile, in the light of the economic landscape theory which is an elaboration of the central place theory as developed by A. Lösch (1944), we can expect a differentiation in the density of the population distribution and business activity, characterised by an alternate occurrence of sectors with many and few urban centres.

At the same time, when the city is treated as the centre and its hinterland – as the periphery (especially on a macroregional scale), the relationships between them can be highlighted using a group of theories widely referred to as polarised growth theories. The theories of growth poles, initiated by F. Perroux (1950), underline the role of motor units,

from which specific centrifugal forces emanate and towards which specific centripetal forces are directed. For instance, A.O. Hirschman (1958) distinguished positive *trickling-down effects* and negative *polarisation effects*. Beneficial trickling-down effects result from the complementarity of activities undertaken between two poles (a developed one and an underdeveloped one), from purchases and investments coming in from the developed pole to the underdeveloped one, and from the absorption of hidden unemployment in the underdeveloped pole. Polarisation effects are generated by the existence of a competitive advantage in the developed pole and the draining of qualified personnel from the underdeveloped region. Meanwhile, G. Myrdal (1957) distinguishes centrifugal progressive *spread effects* and centripetal regressive *backwash effects*. The growth pole theory has found applications in different areas, and distinguishes various types of polarisation: technological, income-related, psychological and geographical.

When we analyse the impact of such effects on the hierarchical settlement system, we can expect that they will result in a transformation of the traditional structure of a central place. This process is anticipated to involve such elements as the taking over of functions typical of lower-order centres by the central agglomeration and the formation of a so-called 'metropolis shadow. At the same time, as S. Sassen (2000) observed, contemporary development trends are leading to the emergence of new forms of centrality, which are expressed in the expansion of the centre beyond the traditional business centre, to include other nodes situated within the metropolitan area of a large city.

To sum up, this concept can be directly transposed to the interdependency between the metropolis (centre, growth pole) and the region (periphery), in which positive centrifugal spread effects following the development of the growth pole can be observed (mainly in the form of capital and innovations) as well as negative centripetal backwash effects, whereby the periphery (region) is stripped of simple resources and labour, particularly highly-skilled personnel.

Similarly to the theory of polarised growth, there is no comprehensive network theory (e.g. Glückler 2007). The main tenet underpinning this group of theoretical approaches to the settlement system is that hierarchical relations between cities as shown in the central place theory give way to a new generation of systems – city networks. Such networks develop when two or more cities that have been independent before but have complementary functions try to cooperate, and on the whole manage to merge their economies, a process which is enhanced by fast and reliable transport corridors and telecommunication infrastructure (Batten 1995). American researchers (Fishman 1990) tend to depart from the terminology

related to the central city and suburbanisation processes and introduce 'new cities' instead – urban regions which are characterised by the absence of a distinct centre/central node and boundaries, and which are developing along the transport corridors connecting urban centres. As a result of the acceleration of such linkages, the relationships between cities lose their hierarchical character and become horizontal network ties.

Table 3. Selected differences between territorial and network organisation of space

| <b>Territorial organisation</b>                          | <b>Network organisation</b>                                    |
|--|--|
| Centre, periphery  | Nodes, tendency to decentralise mutual linkages                |
| Size-dependent   | No dependency on size  |
| Boundaries   | Connections  |
| Coherence, continuity                                    | Dispersion, separation   |
| One-directional flows                                    | Two-directional flows  |
| Closedness, outward impermeability                       | Territorial openness   |
| Constancy, inelasticity                                  | Short-livedness, flexibility                                   |
| Proximity, location ties – transport costs               | Insensitivity to distance, omnipresence – costs of information |
| Territorial hierarchy, vertical links, dominance of size | Horizontal links, cooperation and competition                  |

Source: based on B. Jałowiecki (1999).

The key differences between territorial and network organisation can be summarised as follows (Camagni 1994, Batten 1995, Minar 1997, Jałowiecki 1999) (Tab. 3). Firstly, there is an observable departure from the distinct spatial delineation of the centre and the periphery, and the dependence of linkages on the size of the city centre and its economic significance; instead, we have decentralised linkages concentrated in network nodes, which occur between urban centres of varying sizes. Open, continuous areas which are separated from one another by distinctly marked boundaries, between which one-directional flows used to take place, are losing significance, whereas the significance of horizontal ties between dispersed locations is growing. The constancy and inelasticity of mutual relationships in internally closed regions (which are strongly dependent on distance) is superseded by short-lived, flexible relationships between open systems lying far from one another. In consequence, the hierarchy, vertical linkages and the dominance of size are replaced by the network, horizontal linkages, cooperation and competition.

As P. Korcelli observed (2000), the increased significance of non-hierarchical interaction networks within a system of cities leads to the fragmentation of traditional urban systems. As a result, the ties between the city and the region become dependent on the existence of the network's nodes in the proximity of the city. Nevertheless, due to the building of strong ties with other large nodes of the network, the role of the region in urban development is waning. Meanwhile, the city is the main node of the network which consolidates the surrounding region. In this particular approach, small and medium-sized cities are of special significance as potential nodes of such a network (cf. ESPON 2006; INTERREG 2005).

Table 4. Distribution of business activity depending on: a) spatially dependent transactions costs, and b) externalities

| <b>Spatially dependent transaction costs</b> | <b>Uniformly low</b>             | <b>Heterogeneous</b>  | <b>Uniformly high</b>             |
|--|----------------------------------|---|-----------------------------------|
| <b>Externalities</b>                         |                                  |   |                                   |
| Low  | 1. Spatial entropy               | 2. Random dispersal combined with emerging Loscherian-Weberian landscapes | 3. Loscherian-Weberian landscapes |
| High   | 4. Small interconnected clusters | 5. Super-clusters   | 6. Small disconnected clusters    |

Source: Scott (1998, p. 87).

The rise of new theories drawing on the network approach does not mean that they can absolutely explain the spatial relationships in any regional or settlement system. There is little doubt that we can still find many examples of territorially organised settlement systems, as well as systems where territorial and network organisations are intermingled. For example, A. Scott (1998) offers an interesting typology of the spatial location of business activity in the contemporary economy based on such dual spatial organisation (Tab. 4). This typology takes into account both distance-dependent transaction costs and externalities, which can result from the adopted method of information exchange and information flow, as well as factors of a socio-cultural nature. On this basis, six model situations can be distinguished, including, on the one hand, low and high externalities and on the other hand – uniformly low, heterogeneous and uniformly high spatially dependent transaction costs. According to Scott, the model of heterogeneous transaction costs and high externalities is currently the most popular; it involves a differentiation of transaction costs

(which, for example, are barely visible in the case of foreign currency exchange, and are relatively high if there is a need for direct, personal contacts) and high external effects related to the post-Fordist system of the organisation of production. With a sufficiently high vertical disintegration of enterprises, clusters will emerge in order to reduce transactions costs. On the other hand, low costs of some transactions enable enterprises to have access to resources and sale markets on a global scale. In consequence, this may foster the speedy development of the local systems in which those enterprises operate. And this, in turn, leads to the emergence of a large number of such local-global super-clusters, otherwise known as metropolises. These observations are also supported by selected empirical studies (i.e. Gordon, McCann 2005).

## **CHAPTER 2**

### **TYPES OF RELATIONSHIPS BETWEEN THE CITY AND THE REGION**

The basic assumption underlying our line of argumentation is that the relationships between the city and its surroundings are expressed by two categories of flows: periodic–variable flows (e.g. commuting to work), and constant–permanent flows (e.g. internal migrations). Permanent flows are constituents of transformations in a given spatial system, while another constituent of transformations includes internal changes in a given system, such as population increases or changes in the number of enterprises.

It should be emphasised that developing a consistent typology of mutual relationships between the metropolis and its region involves many challenges owing to the multitude of dimensions in which such linkages can be analysed. Among these, two major dimensions can be distinguished:

- The sectoral dimension (which *inter alia* includes the enterprise sector, the household sector and the public sector);
- The material dimension (which includes flows of goods, information, population as well as financial flows).

To the above, two more universal dimensions should be added: the time dimension (which takes into account changes of flows in time, as well as their durability) and the spatial dimension (which takes into account the different spatial ranges of the linkages, as well as linkages between different regions).

The social and economic components which make up the metropolis–region system can be divided into the following: the enterprise sector, the household sector and the public sector, plus capital flows and trade exchange with the external environment. In traditional input-output analysis, intersectoral flows within one region, including (Hoover 1980, pp. 224–227) material flows of goods and services between individual sectors, are associated with cash flows going in the opposite direction (Fig. 1). The main object of analysis is the enterprise sector where inter-branch exchange takes place. Sales outside the enterprise sector represent the final demand, which comprises consumer goods purchases made by

households, demand in the public sector, investments and sales outside the region, which we have termed ‘exports’ for the purposes of this study. Meanwhile, purchases outside the enterprise sector represent basic supply which includes workforce, capital resources and purchases outside the region, which we here have called ‘imports’.

As regards the placement of individual systemic components in the region-external environment model: in this approach, only the enterprise sector is confined to the region; the public sector, and capital flows go beyond the region’s boundaries. In addition, this can also apply to the household sector, depending on how the boundaries of a given region are delimited (dotted line in the diagram).

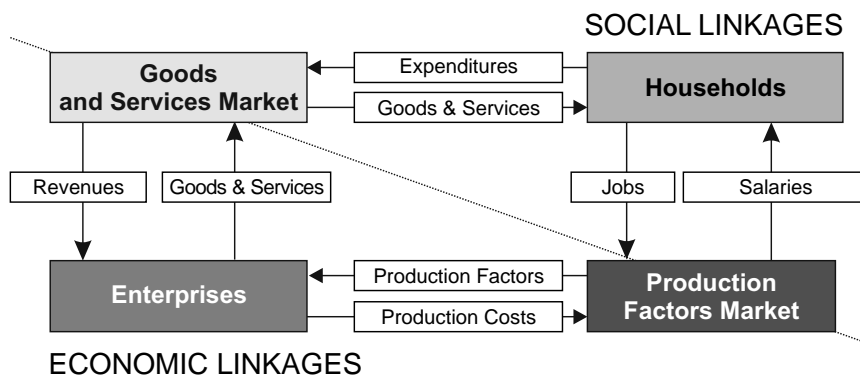


Figure 1. Social and economic linkages between enterprise sector and household sector

Source: prepared by the author.

The above model can be made even more specific for two sectors which are of greatest interest to us, viz. the enterprise sector and the household sector. The linkages that we refer to as economic will occur between the enterprise sector and the production factors market (with purchases of production factors corresponding to the production costs of a given enterprise), and between the enterprise sector and the market for goods and services (with sales of goods and services corresponding to the revenues of a given enterprise). Meanwhile, the linkages that we refer to as social ones will occur between the household sector and the factors of production market (remuneration for work), and between the household sector and the market for goods and services (purchases of goods and services). This directly implies that a given phenomenon (such as commuting to work) may simultaneously be a manifestation of economic linkages or of social linkages, depending on whether we look at it from the perspective of the enterprise sector, or that of the household sector.



Inclusion of the spatial dimension into the classification described above produces a result shown in Tab. 5 and Fig. 2. Individual, hypothetical relationships taking into account various types of flows (in the definition of which, classifications of ties between urban and rural areas discussed in SPESP (2000, pp. 38-41) and ESPON 1.1.2. (2004, pp. 86-90) have been used), have been ascribed to a spatial (city, region) and sectoral (enterprises, households, public sector) matrix.

Table 5. Types of intersectoral relationships in the city-region system

| <b>City \ Region</b> | <b>Enterprises</b>     | <b>Households</b>                     | <b>Public sector</b>       |
|----------------------|------------------------|---------------------------------------|----------------------------|
| <b>Enterprises</b>   | Relocation<br>Exchange | Work<br>Consumption                   | Purchases<br>Services      |
| <b>Households</b>    | Work<br>Consumption    | Permanent<br>migration<br>Consumption | Work<br>Services           |
| <b>Public sector</b> | Purchases<br>Services  | Work<br>Services                      | Cooperation<br>Competition |

Source: prepared by the author.

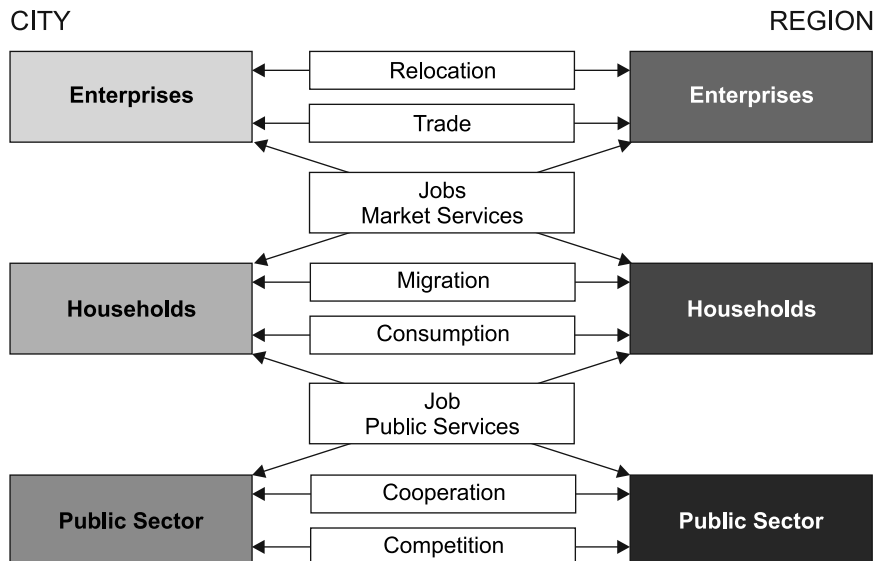


Figure 2. Key types of intersectoral linkages in the city-region system

Source: prepared by the author.

## 2.1. ENTERPRISE-ENTERPRISE RELATIONSHIPS

In recent years, there has been an observable tendency for a regional deconcentration of business activity (particularly industry-related). Studies conducted in the United Kingdom by D. Keeble and P. Tyler (1995) showed that employment in production enterprises located in rural areas grew faster than in cities. Among the reasons for deconcentration in industry, the authors named such factors as: attractive living and working conditions, new sales markets and lower operating costs in rural areas. In the metropolitan areas of large cities (e.g. Copenhagen – Winther, Hansen 2006), this is mainly related to soft location criteria associated with quality environment and living conditions, whereas business operations in these areas mainly aim to provide services to the local residents and local enterprises. Shifts between urban and rural areas take place mainly due to changes which occur *in situ*, and only to a lesser extent are they connected with relocation of business activity and the establishment of new enterprises (Healey, Ilbery 1985). It should also be emphasised that relocation connected with the influx of inward capital, given all types of attendant multiplier effects, can have a significant impact on the development of local systems, which in many cases can be greater than the stimulation of – frequently limited – local resources (Smętkowski 2000).

The exchange of goods and services is undoubtedly among the major types of relationships existing between metropolitan and regional enterprises. Owing to differences in the economic structure and in the accessibility of various resources in the city-region system, mutual complementarities can occur, arising from differences in supply and demand. As a rule, metropolitan enterprises produce goods with a higher added value component, which can then be sold to regional enterprises (e.g. Gorzelak, Smętkowski 2008). In many cases, metropolitan enterprises also act as intermediaries in the trade exchange between the metropolitan region and the external environment. In addition, certain types of services offered by enterprises operating from a metropolis, such as banking, insurance, consulting, advertising, public relations, etc., can be offered to regional enterprises. Meanwhile, as distance from the city centre grows and real property prices fall (reduced land rent), the role of traditional labour-intensive sectors of business activity, which produce goods with lower added value, increases. Here, agriculture is an interesting example as one of the key activities pursued in rural areas situated in metropolitan regions, especially when we consider the areas occupied for farming purposes. Modern, market-oriented farming can have multifaceted links with city centres. Firstly, rural areas can perform a feeding function vis-à-vis the metropolis by providing foodstuffs for its residents. Nonetheless, as huge shopping centres operating as part of

global retail networks appeared, the role of local farming was significantly curbed. The traditional model of land use proposed by J.H. Thünen (1826) has been replaced by a more sophisticated model of mutual dependencies. Although rural areas remain food suppliers, the interdependency expressed by the distance between the place of production and the place of sale has been largely constrained. Moreover, areas under intensive agriculture are losing their rural character and are turning into zones of quasi-industrial farming production, with all the negative consequences of the process, mainly environmental pollution (e.g. Tacoli 1998, p. 159). Another type of linkage is the supply of minerals (needed in the power and construction sectors) to metropolitan enterprises, which may be mined in rural areas, including those situated in a metropolitan region.

## **2.2. ENTERPRISE-HOUSEHOLD RELATIONSHIPS**

This type of linkage is considered to be the cardinal component of all relationships between the city and its surroundings, and can be quite varied in character. Firstly, city residents who have moved out of the city to a place within the boundaries of the metropolitan area or even beyond, still work in the city. This largely depends on the spatial and housing policy addressing rural areas around the city. Secondly, residents of the surrounding region account for a considerable part of the city's labour market. As regards movement in the opposite direction, such linkages are few and far between, as a rule being associated with the deconcentration of economic activity (which is usually contained within the boundaries of the metropolitan region) and commuting of highly qualified specialists to regional enterprises. Both the strength and the scale of such linkages depends on the spatial accessibility of areas surrounding the city: the higher the accessibility the stronger and wider the linkages. Such relationships largely determine the boundaries of the functional urban region (metropolitan area), although they can also reach beyond it. At the same time, the metropolitan area acquires an increasingly polycentric character, demonstrated in multi-directional flows between individual centres (Aguilera 2005; Hall, Pain 2006).

Certain types of services undoubtedly have a natural tendency to concentrate in places which are referred to as central – as claimed by the central place theory. Cities which supply the surrounding areas with services can be regarded as such central places. Such centrally-provided services can include finance (banks, insurance companies), education (higher education institutions and – to a lesser extent – secondary schools, training centres), R&D (research institutes, universities, laboratories), healthcare (hospitals, outpatient centres), retail trade (shopping centres)

and culture (cinemas, theatres, libraries, culture centres), etc. Owing to a lesser value of the lower threshold (minimum supply), some of these services can be located in smaller city centres (lower-order central places), rural areas or – due to good accessibility of a given location and lower operating costs – outside the metropolitan centre. According to the central place theory, the system of central places tends to increase the level of hierarchisation. Many types of services require a heavy demand and a high turnover. For this reason, when certain areas (rural areas and smaller cities) become depopulated, they become less attractive for the providers of such services.

The development potential of small and medium-sized cities in the vicinity of big metropolises is a significant issue. Naturally, some of them use the proximity of a large city to their advantage, for example due to an inflow of both residents and capital. This is especially the case when such cities can offer easily accessible, cheap land for investments, a situation most frequently encountered in development corridors connecting metropolises. In consequence, some of these cities become incorporated by the polycentric metropolitan area. Conversely, further located small and medium sized cities have a lesser potential for growth. Instead, they can compete by offering better living conditions, and attracting the location of residential estates and certain types of business activity. For instance, surveys of medium-sized cities (with 20,000-100,000 population) lying in the vicinity of large urban centres in Germany (Adam 2006) indicated that they tend to preserve their functions and serve as commuting centres, although they depopulate at a faster rate than larger cities.

Meanwhile, rural areas surrounding the city play an important role in satisfying those needs of the residents which are connected with recreation and leisure. Some rural areas situated near big metropolises are transformed into aggressively developed recreational areas (golf courses, amusement parks, etc.). In areas lying still further away, collective and individual recreation amenities are developed, such as hotels, pensions and so-called 'second homes'. This process can lead to the transformation of rural areas into areas of intensive consumption. On the other hand, spatial policies pursued by the authorities often aim to counteract negative aspects of suburbanisation and attempt to preserve open, undeveloped areas. In such territories, there are restrictions concerning planning permissions and less intensive recreation and leisure functions are encouraged.

### **2.3. HOUSEHOLD-HOUSEHOLD RELATIONSHIPS**

Relationships between households in the metropolis and those in the region are mainly associated with permanent migrations. Very frequently,

the metropolis is viewed as an attractive place for working and living by the region's inhabitants. This results in an outflow of such people, mainly those who are best educated, to the regional centre (Gorzelak, Smętkowski 2008). On the other hand, examples of some inverse processes could be found, such as an efflux of residents from the metropolitan centre, usually confined within the boundaries of the metropolitan area in the case of the working age population, and also beyond it – in the case of post-working age residents who frequently use their 'second homes' for this purpose.

In the present day, the relationships between the metropolis and its region associated with consumption in the household sector are of a minor significance. They can include journeys made by the region's inhabitants to the metropolis, for example with a view to selling their agricultural produce in marketplaces. They might also be connected with agri-tourism sought by metropolitan residents in locations within the metropolitan region.

#### **2.4. PUBLIC SECTOR-ENTERPRISE RELATIONSHIPS**

When providing services and delivering investment projects, public authorities may opt to use the enterprise sector. However, it is difficult to narrow down the extent of the flow of services offered by enterprises to public authorities by metropolitan and regional enterprises. Undoubtedly, in most cases, the majority of orders are delivered by local companies which often act as subcontractors of the executed investment projects (cf. e.g. Smętkowski, 2004). For this reason, the attendant public expenditure is not regarded as a significant component of linkages between the metropolis and the region.

Public authorities can also provide various services to enterprises, mainly through the indirect development of business environment institutions. In most cases, such activity is aimed to support local enterprises and does not play any important part in the relationships between the metropolis and the region.

#### **2.5. PUBLIC SECTOR-HOUSEHOLD RELATIONSHIPS**

Relationships associated with commuting to work in the public sector are similar to those which occur in the enterprise sector. However, their role is smaller, also because of the diminishing role of public ownership in the economy.

We might also mention services for the residents of the metropolis and the region which are provided by the public sector in the same way as they are offered by the enterprise sector. Examples include public higher

education, high culture or specialised healthcare institutions, which are normally located in the metropolis, offering such services for the inhabitants of the metropolitan region. As regards the opposite direction, we can indicate tourist information centres, museums, etc., which operate in the metropolitan region and service tourist traffic largely composed of metropolitan residents. The typical linkages are similar to those discussed in the case of enterprise-household relationships in the category of *consumption*.

## **2.6. PUBLIC SECTOR-PUBLIC SECTOR RELATIONSHIPS**

Both the scope and extent of cooperation between local authorities can vary, starting from the development of transport infrastructure and public communication, through environmental protection to spatial development. Structurally speaking, various facilities belonging to the transport, telecommunication and power infrastructure are located in areas surrounding the city, which connect the metropolis via a network with other metropolitan centres. This leads to the development of infrastructure corridors, which in turn can trigger fragmentation of rural areas. As people need to commute to work, public authorities must ensure the accessibility of public means of transport of adequate quality. Moreover, dumping sites for various types of waste are located in rural areas, ranging from relatively non-toxic municipal waste to highly toxic industrial waste. In addition, air and water pollutants can migrate easily, which necessitates cooperation in the sphere of environmental protection between different administrative units. Moreover, the aforementioned processes related to changes in the distribution of population and enterprises call for joint spatial policy actions. As the example of such projects as Randstad Holland show us, such actions can be highly effective (Geurs, van Wee 2006). We can also observe processes of consolidating power structures in areas surrounding the city, as a result of which various organisations are set up to manage and administer those areas (regions, metropolitan areas, metropolitan unions); they are able to launch effective activities aimed to embrace the opportunities and counteract threats posed by globalisation (e.g. Scott, Agnew, Soja, Storper 2000, Stephens, Wikstrom 2000).

In addition to collaboration, local systems are engaged in competition in two basic aspects. The first aspect refers to competing for investments. Public authorities can use a whole array of direct and indirect instruments in order to persuade potential investors to locate their investment in their area. Secondly, they can compete for inflow of residents. To be effective, they need to ensure attractive living conditions, *inter alia* by improving the quality of public services on offer. Thanks to incoming investments and

new residents, their revenues grow, which as a rule will generate much positive feedback.

## CHAPTER 3

### THE REGIONAL HINTERLAND OF A CITY – A TENTATIVE DEFINITION

As a matter of course, a city, especially a large one, cannot be viewed as an isolated point in geographical space. With the help of spatial, morphological or functional analysis, we can distinguish different zones relating to how the city influences its surroundings. It should be emphasised that there exist many, sometimes strikingly dissimilar, concepts for delimiting the city region, which is largely due to different definitions of the concept in hand, and to the existence of different impact zones of the city. As a result, the criterion for assessing the correctness and objectivity of a given method for delineating a metropolitan area is largely a consequence of the adopted theoretical approach. There can be little doubt, however, that the range of the city's impact depends on the size and function of the city in question. Depending on the adopted measures, we can come up with a number of city impact zones which will differ in both object and range. On the basis of a review of relevant terminology, we can distinguish two main zones of city impact: a zone of direct impacts in which the relationships are both fixed and strong (*Umland*) and a zone in which the relationships are less vigorous or exceptional (*Hinterland*) (Schöller 1953, cited after Maik 1997; Boudeville 1966).

The former includes the suburban zone, that is the area adjoining to the central city's built-up areas, which is normally identified using the morphological criterion. In addition to open areas, the zone is made up of villages, towns and hamlets; it is a territory with different types of development, unstable in physiognomic, functional and demographic terms, where both the forms and the substance typical of the city and rural areas tend to intermingle. This is a multifunctional space, with the number and nature of its functions being dependent on the development stage and functional structure of the city. The following can be regarded as suburban zone functions: agricultural, recreational, residential, municipal, communication, industrial, health resort and academic. From the perspective of regional and national settlement systems, the suburban



zone forms a part of the urban agglomeration, which also comprises the city's central and external districts. This zone is most seriously exposed to urban sprawl, a phenomenon which is commonly observed across the world, Europe not excluded (Schneider, Woodcock, 2008). It can also be noticed in the EU's new member states, until recently socialist countries (e.g. Jauhiainen 2006), as well as areas undergoing a demographic downturn (e.g. Couch et al. 2005). The reasons underlying this process are universal, and relate to a greater interest of potential investors in greenfield land instead of brownfields reclamation, the location of huge shopping malls outside city centres, and the housing aspirations of inhabitants who wish to own a house in the suburbs.

It should also be observed that the suburban zone, with its close ties with the city, has a more narrow range than the city's impact zone, the boundaries of which are delimited by the spatial extent of various functions performed by the city. Based on the functional criterion, two zones of city impact can be distinguished: one where the ties are strong and durable, that is the entire metropolitan zone, and one which has much weaker ties with the city while remaining within its impacts – that is the metropolitan region.

A metropolitan area can be defined using the spatial distribution of mutually interdependent production, consumption, exchange-related and administrative activities (Castells 1982). Metropolitan functions are performed by the entire metropolitan region (and not only by its constituent city) and can be located in various places. As a result, the metropolitan area is not entirely homogeneous and consists of a mosaic of spaces, each with a different function, but at the same time is characterised by a robust internal integrity. According to J.B. Parr (2007), four dimensions of such a metropolitan area might be distinguished: the built city, the consumption city, the employment city and the workforce city constituted by commuting to work. Its terminological equivalent is a functional urban region or functional urban area (ESPON 1.1.1 2004), that is an area having functional ties with the city. In the functional urban region, daily commuting, which has replaced the former permanent movements of the population, represents the main category of linkages. In addition, other linkages associated with the flow of goods, capital and information can be observed in the region, whereas the diffusion model of social, economic and technological phenomena is not hierarchical in nature. The functional urban region defined in this way largely corresponds to the city-region in the economic base theory, the local system in the settlement system theory, and the urban fields in spatial-interaction theories.

Meanwhile, the notion of the metropolitan region was introduced by R. McKenzie (1933), who combined the city and its hinterland in

a functional whole delimited by the range of the dominant impact of the metropolis. The central city, with its institutions and services that extended to the entire region and tied it with other regions, was the centre of functional linkages. Among such services, the major ones were: press, communications, finance, management, as well as specialised trade functions and professional services. Just as in the case of the urban functional region, in certain aspects its terminological counterpart is the functional macroregion, the extent of which can be identified using tools such as impact analysis of competitive cities. For instance, studies examining the range of such impacts which were conducted in France also looked at different types of impact (economic, cultural) and, consequently, their different ranges of extent (cf. Maik 1997).

Here, we would like to quote the definition of a polarised region, formulated by J.R. Boudeville (and cited after: Grzeszczak 1999, pp. 18-20), whereby such a region is a 'hierarchical entity made up of the metropolis, its satellites and rural areas dominated by them. It is a heterogeneous space, the different parts of which are mutually complementary and maintain a more intensive exchange between them, and particularly with the dominant pole, than they do with the poles of the same order from the neighbouring regions. As such, it is a place for exchange of goods, services and information, whose internal intensity at any given point is higher than external intensity. A polarised region is an integrated entity, and it is not an autarky – it is a system.' The author contrasts polarised regions with urban regions, 'which represent a generally uniform space, marked by a high population density, high employment in industry and services, varied forms of non-discrete urbanisation, interspersed with farming enclaves. Hierarchical structures are dystrophic, giving way to strongly integrated structures characterised by functional interdependencies.' Although J.R. Boudeville set his definitions in a historical context, they could also well be transposed to a spatial context. As regards the terms mentioned above, the first definition should be ascribed to the metropolitan region (nodal region), while the second – to the metropolitan area (a region which is largely homogeneous).

To sum up, in light of the spatial extent of the city discussed above, the notion of the metropolis should be viewed as equivalent to a system composed of a centre and a metropolitan area (Fig. 3). Among other aspects, this is associated with the blurring of centrality as part of a metropolitan system. In many metropolises, the economic centre is no longer clear-cut, as a result of the process whereby satellite centres are created, interconnected by a network of strong functional ties with the main metropolitan centre (e.g. Sassen 2000; Hall, Pain 2006). In this way, a polycentric metropolitan area emerges, which comprises the metropolitan centre (central city) and

the adjoining, densely populated areas, and has strong ties within the network. On the other hand, a metropolitan macroregion is a Boudevilleian 'polarised region' – a region influenced by the city, the boundaries of which are limited by the range of impact of other metropolises. In this approach, a metropolitan area constitutes the internal hinterland zone for the city, and the metropolitan macroregion – the external hinterland zone.

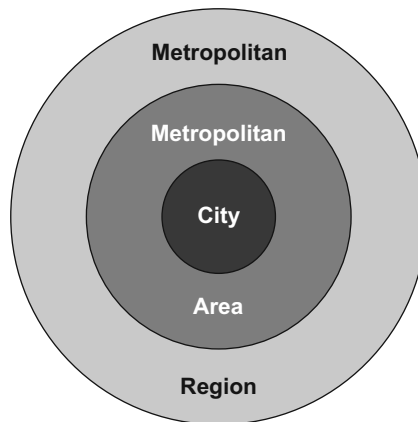


Figure 3. Metropolitan macroregion and its constituent parts

Source: prepared by the author.



## PART 2

### METROPOLITAN MACROREGIONS IN EUROPE – INTRAREGIONAL COHESION?



## **CHAPTER 1**

### **METROPOLISES IN THE EUROPEAN SPACE**

#### **1.1. METROPOLISES – THEIR CHARACTERISTICS AND CLASSIFICATION**

Not every city with a large population can be termed a metropolis. Factors which are of crucial importance for the metropolisation process include: qualitative features associated with a high-quality technical infrastructure, a well-developed sector of higher-order services and potential for innovation, in addition to the specific ‘flavour’ of a given city. For this reason, huge cities which fail the qualitative criteria are referred to as ‘megacities’, a term which is most widely used in connection with cities in developing countries.

The literature of the subject frequently equates metropolises with world cities (Friedmann 1986) or global cities (Sassen 1991). It should also be pointed out that some authors (e.g. Derudder 2006) claim that these are two dissimilar theoretical concepts, since the former focuses on the concentration of control functions arising from the city being the seat of transnational corporations, whereas the other emphasises the role of global corporations providing advanced information services in the city’s economy.

Irrespective of the above reservations, we can name certain attributes which are typically associated with the metropolitan character of a city (Jałowiecki 2000). In the contemporary information economy, metropolises act as both exporters and importers of production factors, that is labour, capital and information. They also serve as the seats of headquarters and branch offices of huge transnational corporations, banks and insurance companies. They are also places where public institutions (scientific, educational and cultural) operate on a supranational scale. Metropolises are furnished with infrastructure which can support the organisation of international-scale events (congresses, exhibitions, etc.) and are connected with the outside world via a well-developed network of fast air, road and rail transport links, as well as an efficient telecommunication infrastructure for the transmission of information. In addition to the above, a metropolis will host mass-media of supranational significance.

The most commonly used criterion to determine the metropolitan status of a given city (Jałowicki 2000, p. 33, after Bassand 1997) is the population size of approximately one million. Other criteria include the following:

- A well-developed service sector (mostly institutions and services related to: financial brokerage, mass-media, telecommunications, control functions of the economy, science and research, art, culture, as well as public administration)<sup>1</sup>;
- Potential for innovation (institutions associated with the generation and processing of information, such as universities, research institutes or laboratories);
- The unique, inimitable nature of the city (cultural significance, architectural assets, etc.).

With the above characteristics in mind, many different classifications of metropolises have been proposed. The most popular of them include those developed by researchers affiliated with the GaWC (Globalisation and World Cities) research network, particularly the World City Network (Fig. 4), a classification put forth by P.J. Taylor (2001). In this network, the role of a given city is defined by the location of branch offices of corporations providing business services. On this basis, 21 world cities can be identified in Europe (including Moscow and Istanbul). The majority of these cities are capitals of the largest European countries, with the exception of some cities ranked second or third in terms of size in their respective, large countries, e.g. Frankfurt am Main and Munich in Germany, Barcelona in Spain, Milan in Italy and Geneva in Switzerland.

Other classifications as a rule incorporate a broader set of European metropolises. Here, the annual Cushman and Wakefield European Cities Monitor – a ranking of the attractiveness of major European cities to locate business – can serve as an example. Currently, both hard (e.g. labour costs, transport accessibility) and soft location criteria (e.g. quality of life, investment climate) are evaluated for 36 cities, this group of cities having been considerably expanded in recent years (as compared to 1990, when 25 cities were surveyed). This classification, in addition to the capital cities of the European Union (except for the capitals of the Baltic states, Sofia and Ljubljana), also includes Moscow and Istanbul, as well as cities which normally occupy the second or third place in their national settlement

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<sup>1</sup> A. Gawryszewski, P. Korcelli, E. Nowosielska (1998) include the following economic activities among the metropolitan functions: publishing and printing houses; wholesale trade; hotels and restaurants; transport; post and communication; finance, stock exchange, brokerage houses, insurance; business services; IT; science and research; authorities and supralocal administration; tertiary education; entertainment, art, museums, exhibition sector; diplomatic missions; offices, research institutions, subsidiaries of foreign companies.



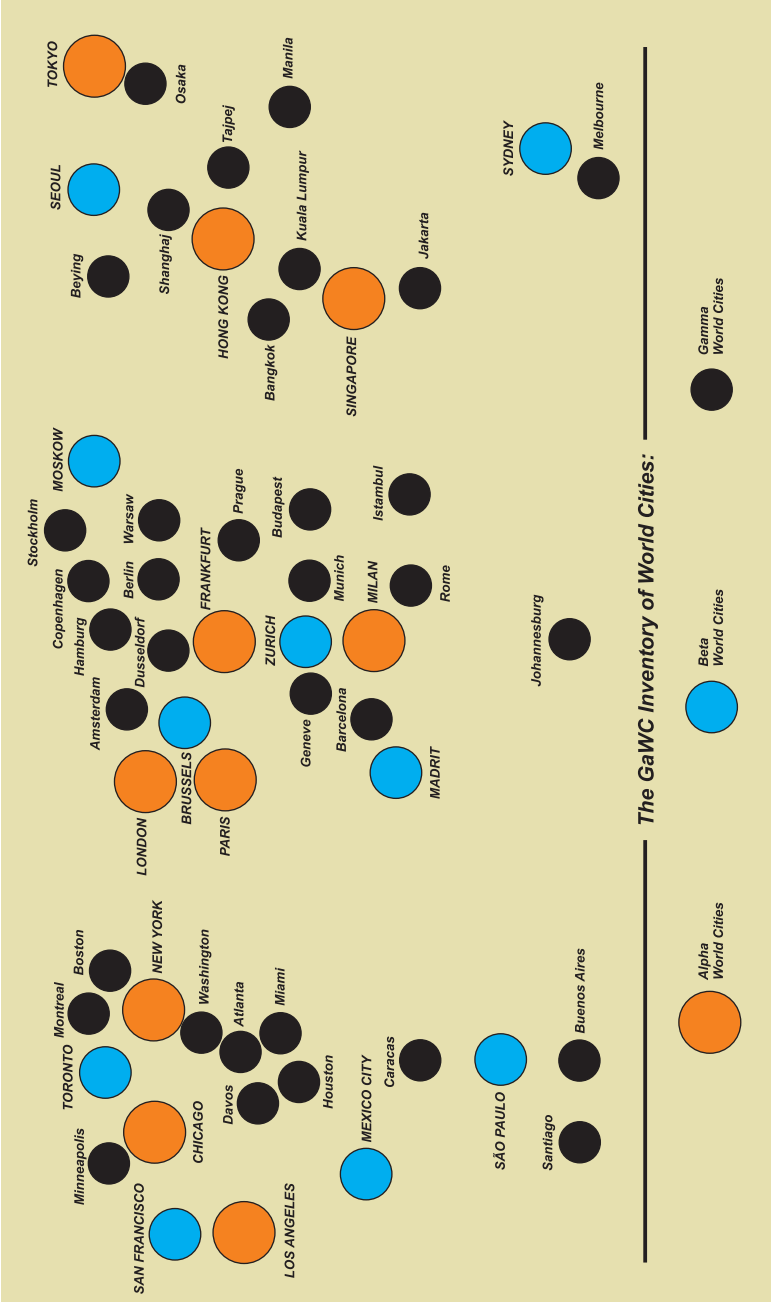


Figure 4. World City Network  
Source: P. Taylor (2001).

systems in countries such as Germany (Frankfurt am Main, Munich, Düsseldorf, Hamburg), Italy (Milan), the United Kingdom (Manchester, Birmingham, Leeds, Edinburgh and Glasgow), France (Lyon), Spain (Barcelona) and Switzerland (Geneva).

## 1.2. METROPOLITAN AREAS IN EUROPE

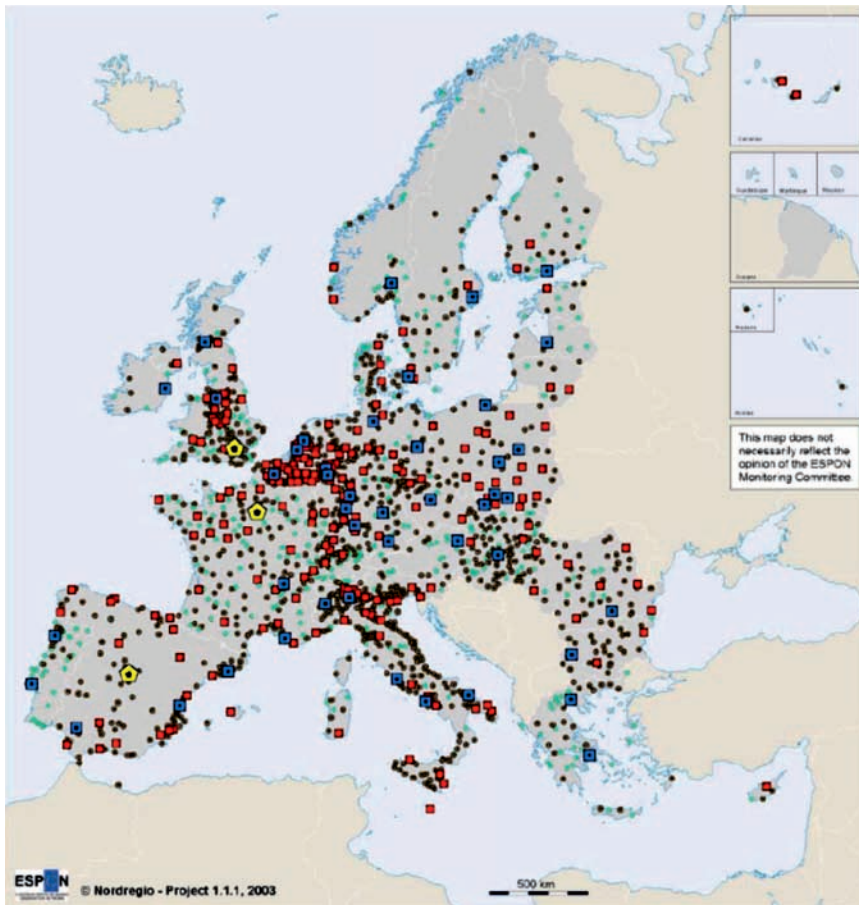
In recent years, many research projects implemented as part of EU programmes have studied the significance of cities and metropolitan areas in the European space. These include among others: ESPON (projects: *Polycentricity* (ESPON 1.1.1), *Zoom In* (ESPON 2.4.2), and INTERREG (projects: *PolyMETREXplus Towards a Polycentric Metropolitan Europe* and *The Polycentric Metropolis: Learning from Mega-city Regions in Europe* (Hall, Pain 2006). In addition, since 1998, information about cities and metropolitan areas in Europe has been made available via statistics compiled as part of Urban Audit, a project which, in its subsequent versions, takes into account more and more cities (with 258 cities included in the second project round). On this basis, such reports as *the State of European Cities – Adding Value to the European Urban Audit* have been developed (ECOTEC 2007).

The European urban system can be analysed using the concept of functional urban areas. It was applied e.g. in the ESPON 1.1.1. project (2004), based on the Functional Urban Areas (FUA)<sup>2</sup> (Fig. 5a). The number of FUAs was estimated at 1595; among them, a group of Metropolitan European Growth Areas (MEGA) was distinguished (Fig. 5b). The criterion for their selection was informed by the assumption that the standing of a given city depends not only on the size of its population but also on the functions that it performs, particularly those of a supranational significance. The functions which were considered as those of utmost importance were: transport, industry, knowledge-based economy as well as control and management functions. This implies that a rather dichotomous approach was adopted, which accommodated both traditional industrial and transport functions as well as modern innovation and management functions, a view which can be explained by the as yet unfinished process of transition from an industrial to an information economy. On this basis, 76 MEGAs were distinguished, including five situated outside of the EU (27) – in Norway and Switzerland. At the lower end of the hierarchy,

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<sup>2</sup> In countries with a population of over 10 million, Functional Urban Areas (FUA) were defined as urban centres consisting of a core with a population of at least 15 000 and a total population in excess of 50 000. In countries with a smaller population size, the criterion of the aggregate number of inhabitants was replaced by a 0.5% share in the national population and the presence of supralocal functions.

Figure 5a. Functional urban areas (FUA) with population over 20,000

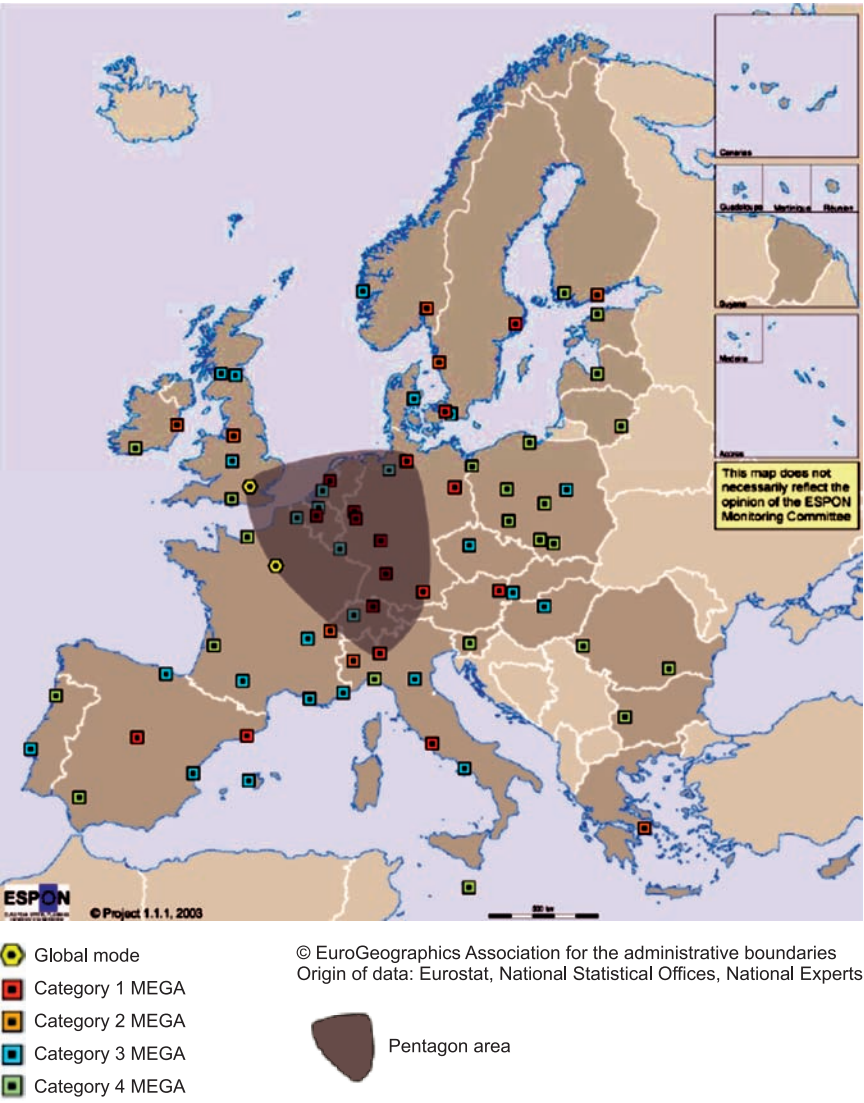


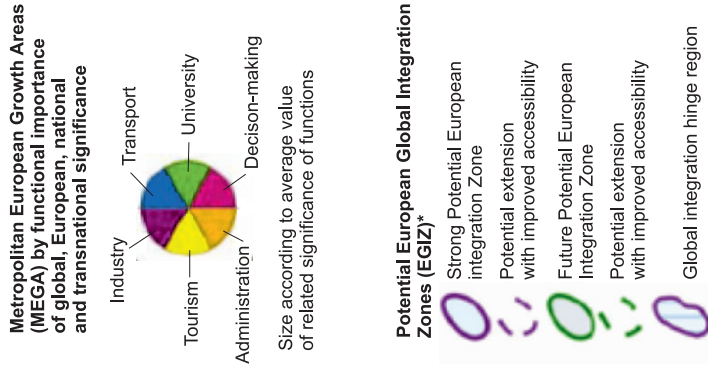
Total FUA population in FUAs with more than 20 000 inhabitants 2000–2001

- > 5 million inhabitants
- 1-5 million inhabitants
- 250 000-1 million inhabitants
- 50 000-250 000 inhabitants
- < 50 000 inhabitants

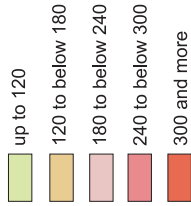
Geographical Base: Eurostar GISCO  
Origin of data: National Statistical Offices,  
National experts

Figure 5b. Typology of Metropolitan European Growth Areas (MEGA)





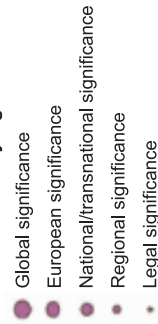
**Accessibility to the nearest MEGA by truck – travel time to reach the nearest MEGA in minutes**



**Travel times of one hour or less by air or rail between 71 MEGAs in 2003**

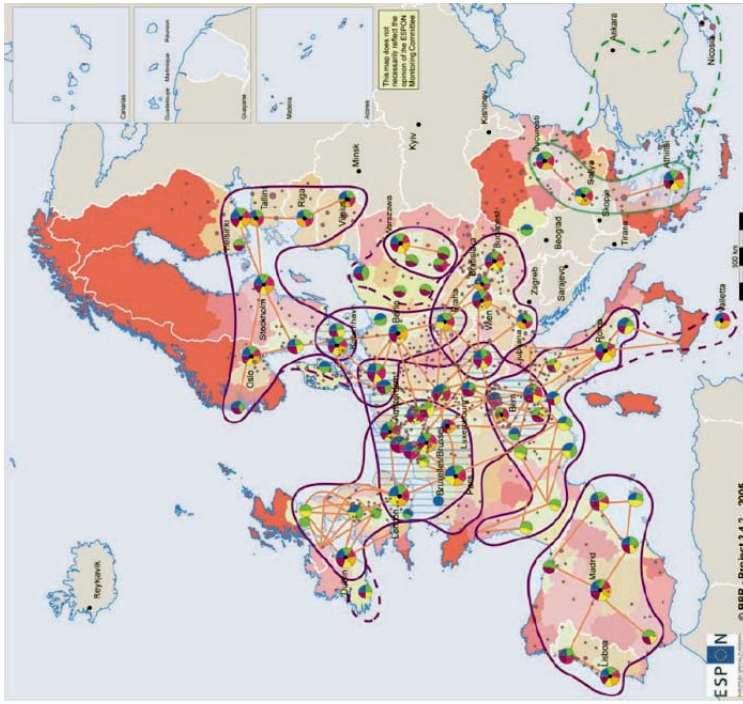


**Decision-making functions outside MEGA's by significance**



\* The potential European Integration Zones (EGIZ) were delineated on the basis of accessibility to the nearest MEGA (regional cohesion) and the travel time connections. The nucleus consists of at least one MEGA covering all functions of European significance

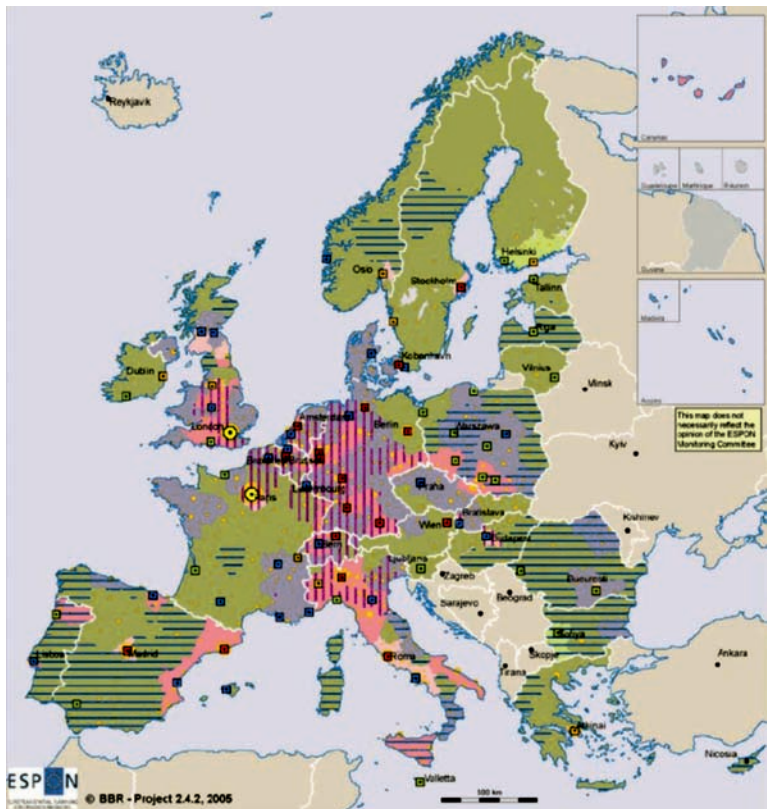
Figure 5c. Regionalisation of MEGAs – global areas of integration



© EuroGeographics Association for administrative boundaries Regional level: NUTS 2  
Origin of data: ESPON 1.1.1 Nordregio; ESPON 1.2.1 INRETS  
Corpus: data for government controlled areas only; no data on accessibility for remote areas



Figure 5d. Settlement structure – metropolis-region relationships



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Source: ESPON 1.1.1 Nordregio; ESPON 2.4.2 BBR. Calculations by the author.

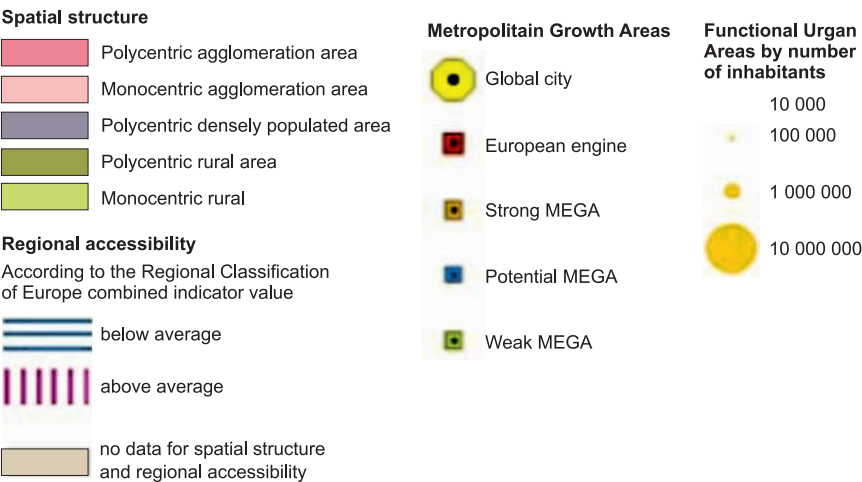


Figure 5. Functional urban areas (EU-27), plus Norway and Switzerland (EU27+2)  
Source: ESPON (1.1.1, 2004), ESPON (2.4.2, 2006).

MEGAs were complimented by 219 supranational or national functional urban areas. Of these MEGAs, only 48 were cities with a population in excess of one million. It should be pointed out, however, that some of the remaining MEGAs (10) had at least 750,000 inhabitants, and, among the smallest MEGAs: five were capital cities of smaller countries, whereas all the others (with the exception of two sea ports, Le Havre and Southampton) were second or third-largest cities in medium-sized European countries (Finland, Ireland, Romania and Sweden).

In the categorisation of metropolises carried out as part of the project (Fig. 5b), the surveyed factors included their size (population size and level of GDP), competitiveness (GDP per capita, location of the headquarters of 500 largest firms), accessibility (number of passengers at airports, development of multimodal transport) and development of a knowledge-based economy (education levels of inhabitants and share of the employed in R&D activity). As before, the first criterion, related to demographic and economic potential, seems to be of primary importance: every subsequent category of metropolises is, on average, inhabited by a smaller population, viz. 3.2 million, 2.0 million, 1.5 and 1.0 million, respectively (Tab. 6). Clearly, this is not a linear relationship as there are cities with a low MEGA ranking despite their considerable demographic potential, while other cities are highly ranked even though their population is rather small. The former group includes such cities as e.g.: Athens, Naples, Katowice (the Upper Silesian conurbation), Warsaw, Manchester and Budapest, Lisbon, Birmingham, Rotterdam, Lyon and Bucharest. As we can see, these include on the one hand, the capitals of countries with a relatively lower level of economic development (the role of the GDP criterion) and on the other – cities which occupy a lower rank in their national settlement systems. At the same time, notwithstanding their lesser population potential, such cities as Cologne, Stockholm, Copenhagen, Brussels, Dublin, Amsterdam and Helsinki – that is, almost solely the capitals of highly-developed countries – are highly ranked.

Following an analysis of the functional urban areas and metropolitan centres, the European core, or so-called ‘pentagon’ was distinguished, with the apexes formed by London, Paris, Milan, Munich and Hamburg. It is estimated that the core occupies 14% of the total area of the European Union (27), and accounts for approximately 32% of its population, while its enterprises altogether generate 43% of the Community’s GDP. Other analyses enable us to distinguish the following potential global integration zones<sup>3</sup> (Cf. ESPON 2.4.2, 2006; Fig. 5c):

<sup>3</sup> The distinguished zones include at least one metropolitan growth area which incorporates all the surveyed types of functions, as well as the neighbouring centres which make up a coherent area in terms of transport accessibility, measured by the travelling

- Zones adjoining the pentagon (and partly mutually overlapping), such as: the north-western zone (British and Irish metropolises), the southern belt (French and Italian metropolises), the Danube zone (metropolises of CEE countries), the central-eastern zone (metropolises of eastern and northern Germany, as well as Denmark and the Czech Republic),
- Insular zones which have no direct linkages to the pentagon, such as the Iberian, Polish and Baltic zones (with metropolises of the Nordic and Baltic states) and the potential eastern zone (metropolises of Bulgaria, Greece and Romania).

Table 6. Categories of MEGAs in EU27+2 and their population

| Category                              | Number | Average population (in million) | Maximum; minimum population size |
|---------------------------------------|--------|---------------------------------|----------------------------------|
| Global cities                         | 2      | 11.5                            | 11.9 ; 11.1                      |
| European metropolises (MEGA1)         | 16     | 3.2                             | 6.9 ; 1.3                        |
| Strong metropolises (MEGA2)           | 6      | 2.0                             | 3.9 ; 0.8                        |
| Potential metropolises (MEGA3)        | 23     | 1.5                             | 3.0 ; 0.5 (0.1)*                 |
| Poorly developed metropolises (MEGA4) | 24     | 1.0                             | 3.0 ; 0.2                        |

\* Luxembourg was a specific case in the MEGA3 category.

Source: prepared by the author on the basis of ESPON 1.1.1 and Eurostat statistics (Urban Audit).

Another interesting research topic is the role of metropolises in regional settlement systems. Studies which were carried out as part of the ESPON 2.4.2 project (2006) enabled us to see the existing metropolitan areas in their regional contexts. These surveys took into account the shape of settlement structures (manifested inter alia by the size of the largest urban centre) and the population density in NUTS2 regions. Another pertinent factor was the share of the largest city in the region's overall population (with the system regarded as monocentric if more than 50% of the population lived in the city). In consequence, the European core was identified (Fig. 5d), with a shape resembling a 'blue banana' (cf. RECLUS 1989), characterised by a combination of polycentric metropolitan areas and densely populated areas. Moreover, the majority of key European metropolitan areas is situated here, whereas the metropolises situated outside of the 'blue banana' strip are, as a rule, only potential in character or poorly developed. The latter normally function in polycentric systems made up of smaller

times for trucks, and business accessibility, measured by the travelling times for air or rail journeys.



cities and are characterised by relatively poor accessibility. In this context, we could definitely distinguish the north-east part of the Mediterranean Spanish coast, as well as some densely populated regions situated in south part Poland that to a large extent were similar to the European core.

However, with the use of the criterion of larger urban zones (LUZ), which were conceptually distinguished for the purposes of the Urban Audit, the European settlement system could be characterised in the manner described below (Tab. 7, Fig. 6).

Table 7. The settlement system of EU27+2 – population of urban areas

| Urban areas  | N   | Population<br>(in million) | % of aggregate<br>LUZ with over<br>250,000 | % of the population<br>of EU27+2 |
|--------------|-----|----------------------------|--|----------------------------------|
| Total LUZ    | 208 | 211.4                      | 100.0                                      | 42.0                             |
| Over 10 mln  | 2   | 23                         | 10.9                                       | 4.6                              |
| 3-6          | 8   | 34                         | 16.1                                       | 6.8                              |
| 1-3          | 50  | 81.3                       | 38.5                                       | 16.2                             |
| 0.75-1       | 18  | 15.6                       | 7.4  | 3.1                              |
| 0.50-0.75    | 41  | 25.1                       | 11.9                                       | 5.0                              |
| 0.25-0.5 mln | 89  | 32.3                       | 15.3                                       | 6.4                              |

Source: prepared by the author based on Urban Audit.

Urban complexes with over one million inhabitants approximately accounted for 65% of the population of cities with over 250,000 inhabitants. Altogether, the 60 largest LUZs made up about 27.5% of the overall population of the European Union with Norway and Switzerland. By comparison, the remaining 148 medium-sized LUZs were much less significant demographically (with 16.5% of the total population of EU27+2). On top of that, only 59 of them had a population in excess of 500,000, although it should be borne in mind that this group also included the capital cities of some of the smaller EU countries.

On the basis of the map showing the distribution of the biggest LUZs, we can identify the European triangle (equilateral, with the sides having a length of approximately 400 km) with apexes in London, Paris and in the border areas of the Netherlands, Belgium and Germany, and a population of over 60 million living in large cities. Other areas which are characterised by a large population living in big and medium-sized cities include: northern and central England; northern, southern and eastern Germany (including the Czech Republic); northern and southern Italy; southern France; southern Poland; south-central Spain and the border

areas of Austria, the Czech Republic, Slovakia and Hungary. The resultant picture most closely resembles the spatial structure of the ‘green grape’ (Parysek 1995, p. 239, after Kunzmann and Wegner 1991). In light of this theory, many competing urban agglomerations which can make use of their potential and their inimitable character in the European economic landscape, can serve as foci of European development.

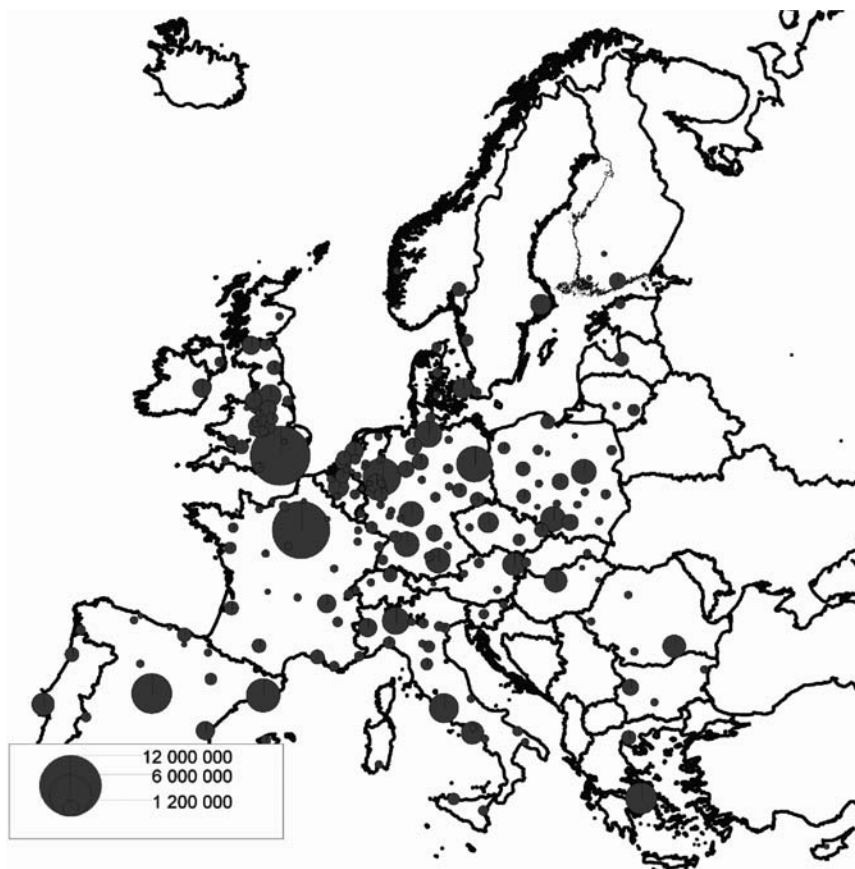


Figure 6. Larger Urban Zones in EU27+2 with a population of over 250,000

Source: prepared by the author based on the Urban Audit statistics.

### 1.3. LINKAGES OF EUROPEAN METROPOLITAN AREAS

The above description of the European metropolitan space is primarily based on the significance of individual urban centres associated with their demographic potential and, to some extent, with the functions that they perform. However, this description largely leaves out the actual economic ties between these cities, and their relationships with the global economy.

Analyses carried out as part of the ESPON FOCI 2010 project can complement this picture as they, inter alia, tackled the issue of economic, transport and scientific linkages between cities on different spatial scales. The studies also took into account all the European functional urban areas (FUA), although in some aspects the analyses only included the metropolitan growth areas (MEGA, after ESPON 1.1.1. 2004)

*Linkages between major global firms<sup>4</sup>*

In the contemporary economy dominated by multi-dimensional globalisation processes, transnational corporations play a special role. The business location decisions that they make are frequently translated into foreign direct investments, which in 2007 alone reached a staggering USD two billion, a scale which unquestionably has a tangible impact on the operation of cities and regions – both those which represent source areas and those which are target areas for capital flows. In order to evaluate the degree to which a given city participates in the global economy, data about the location of headquarters and branch offices of major transnational corporations can be used. During the ESPON FOCI research, the ORBIS<sup>5</sup> database was used to find ownership information for the 3000 largest global capital groups. On this basis, the degree of internationalisation of European metropolitan areas was assessed, as well as the importance of these cities for transnational corporations.

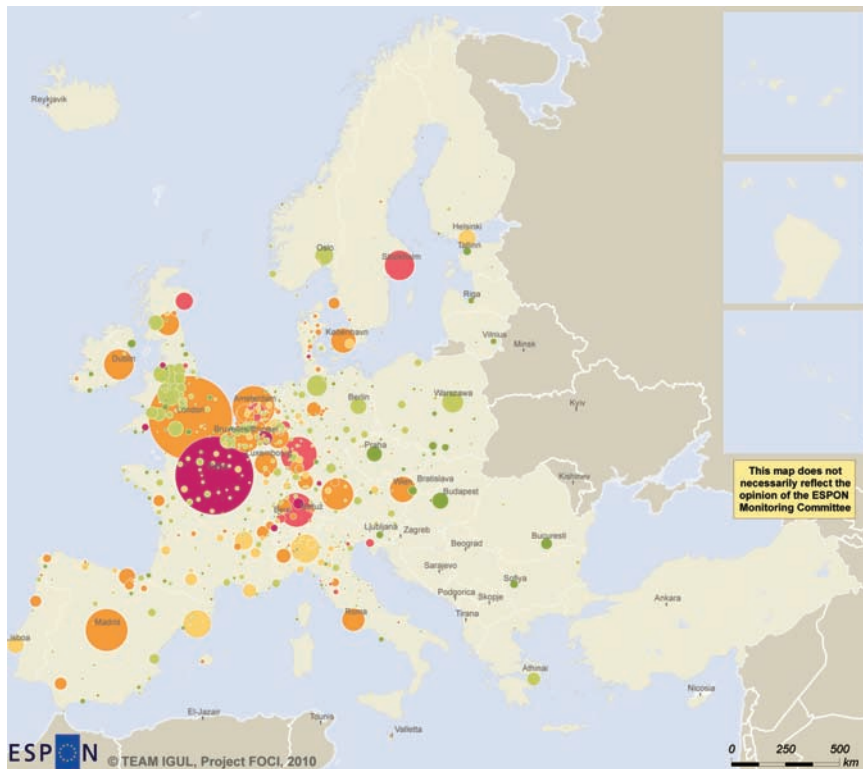
In terms of the internationalisation of cities, there was a clearly visible domination of the so-called European ‘blue banana’, stretching from London to Milan (Fig. 7a). In addition to this area, Paris showed strong linkages with the global economy, followed by Madrid, Munich, Stockholm, Edinburgh and Dublin. In Central and Eastern Europe (CEE), a certain prominence of Berlin and Vienna could be observed and, to a lesser extent, that of the capital cities of the other countries of the region, including Warsaw and Ljubljana.

The relative significance of the control functions performed by individual cities can be manifested by the number of subsidiaries controlled by enterprises located in a given metropolitan area, as compared with the number of subsidiaries whose parent companies are located abroad. Using this definition, we can say that these functions are of the greatest significance for the economies of the metropolitan areas of Paris and Zurich. Meanwhile, they play a relatively smaller role in the case of London,

<sup>4</sup> Elaborated on the basis the part of the ESPON FOCI Report prepared by Céline Rosenblat.

<sup>5</sup> ORBIS is a global database with information about 60 million companies, run by Bureau Van Dijk, <http://eps.bvdep.com>.

Figure 7a. Transnational corporations: headquarters and subsidiaries



Level: FUA  
 Origin of data: OEBIS, BVD, 2007  
 © Euro-Geographics Association for administrative boundaries

**Controlled subs. - subs. from outside**  
**Controlled subs. + subs. from outside**

0.7-1  
 0.5-0.7  
 0.2-0.5  
 0-0.2  
 -0.5-0  
 -1 - -0.5

**Controlled subs. + subs. from outside\* by FUA (except local links)**

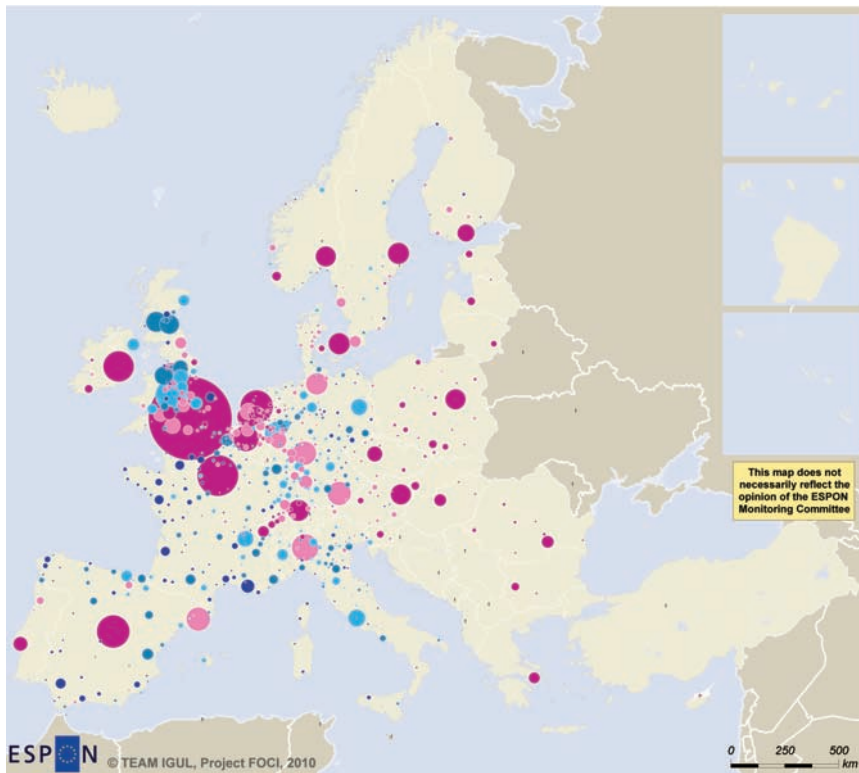
54 000  
 14 000  
 1

\* in the sample of the 600 000 direct of subsidiaries in the world of the first 3000 worldwide multinational firms

Figure 7. Degree of internationalisation and role of European cities in the global economy

Source: ESPON FOCI (2010).

Figure 7b. Transnational corporations: foreign subsidiaries



Level: FUA

Origin of data: OEBIS, BVD, 2007

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**Location of foreign subsidiaries\***  
(in % of the total number of located subsidiaries, excepted the local controls)



**Total number of located subsidiaries**  
(excepted the local controls) by FUA

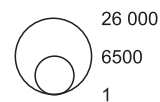


Figure 7. Degree of internationalisation and role of European cities in the global economy

Source: ESPON FOCI (2010).

which much more frequently hosts branch offices of external companies, yet where the number of corporate headquarters visibly dominates. At the other extreme, there is e.g. Dublin, a city with a prevalence of foreign company subsidiaries. This is a typical feature of metropolitan areas in CEE countries, with the exception of Ljubljana.

The role of a given city for global corporations can be assessed on the basis of the number of subsidiaries of transnational corporations which have their seats in a given metropolitan area (Fig. 7b). In this approach, London comes first as a city which not only plays the role of an intermediary opening up access to the European economic area but also as a central node (in addition to New York and Tokyo) of the global economy. Other European cities which enjoy a relatively high place in this respect are Dublin and Madrid.

To some extent, the division of subsidiaries into branch offices of foreign and national companies helps show the scale of domestic (intranational) linkages within individual countries. Such monocentric networks of linkages controlled by the capital city can be observed in France, Spain, the United Kingdom and Italy.

### **Transport linkages: air and rail<sup>6</sup>**

Fast (but frequently compact-sized) transport connections between the major economic centres play an increasing role in the contemporary economy (Rimmer 1998). As a rule, huge cities act as hubs in transport networks, connecting the regional (domestic) economic hinterland with the global economy. Good accessibility is especially important for business contacts as, according to many authors (e.g. Green 2007), new telecommunication technologies cannot fully replace direct, face-to-face encounters.

In the ESPON FOCI project, we looked at accessibility issues solely in air and rail transport, using rigorously fixed timeframes (journeys between 5:00 and 23:00), which, in addition to the travelling time proper, also included the length of stay in the city of destination (six hours) as well as the time needed to get to/from home from/to the plane or train (five and three hours, respectively). The analyses took into account only the MEGAs situated within the European Union (ESPON 1.1.1.), which to some extent has affected the results obtained, owing to a certain arbitrariness in the selection of those cities.

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<sup>6</sup> Elaborated on the basis of the part of the ESPON FOCI Report prepared by Alain L'Hostis.



Figure 8a. Daily connection networks

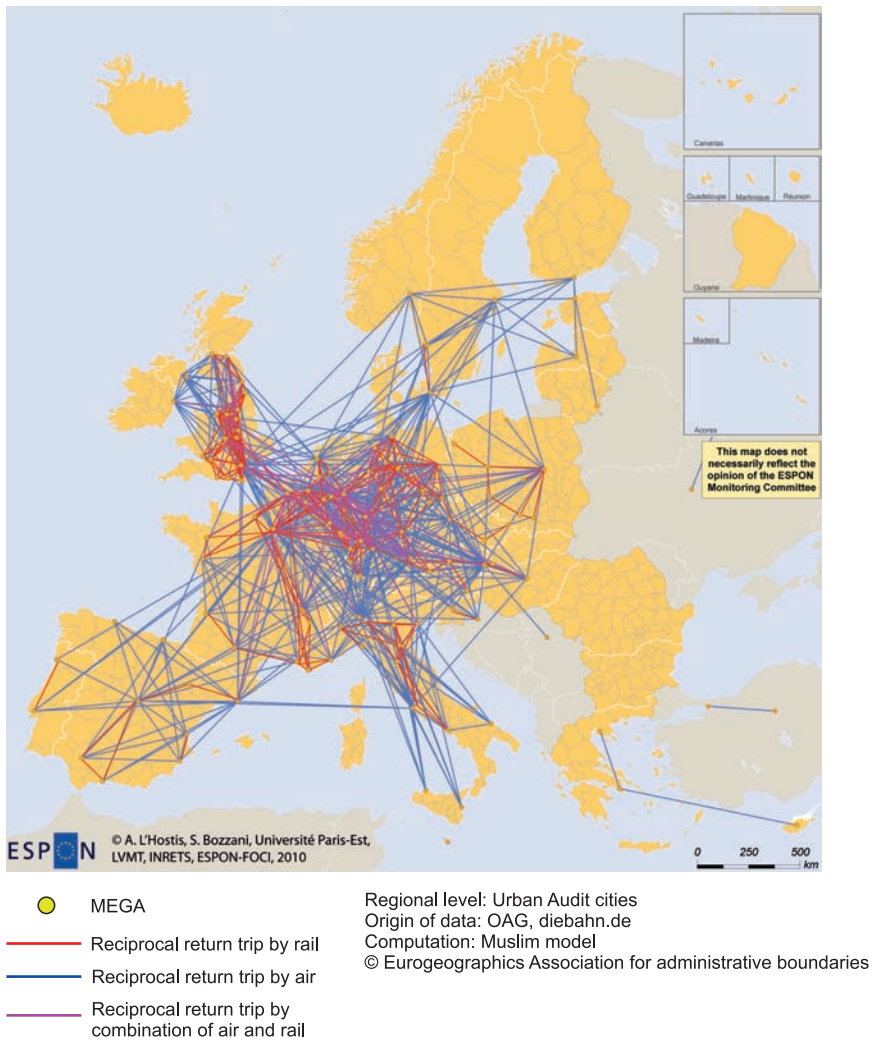
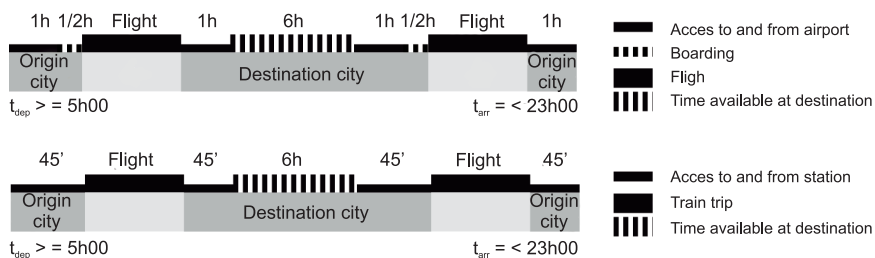
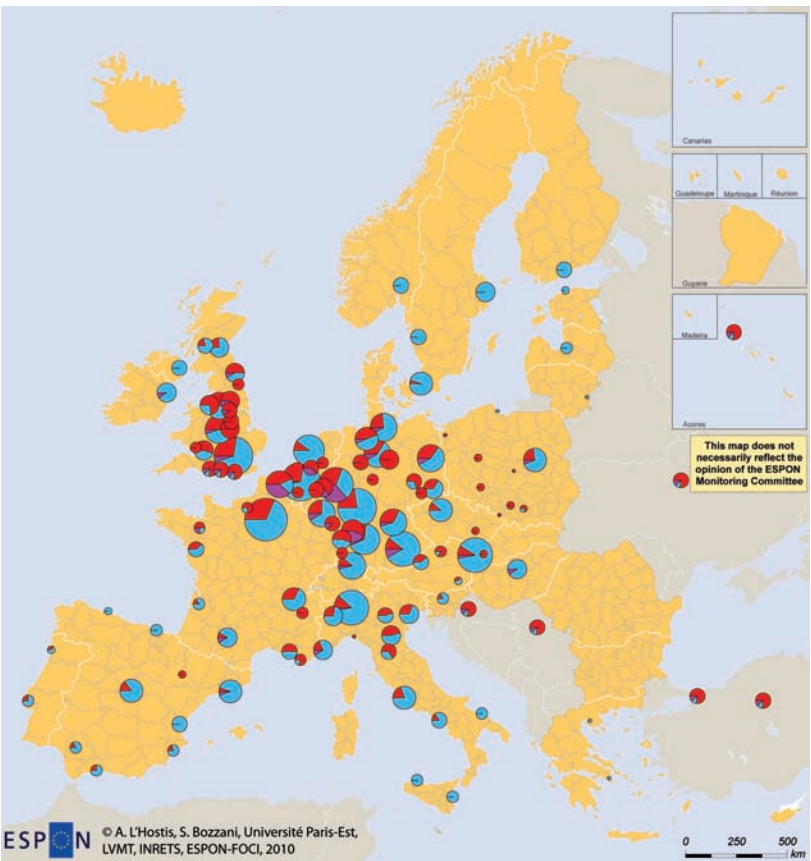
**Structure of the return trips:**

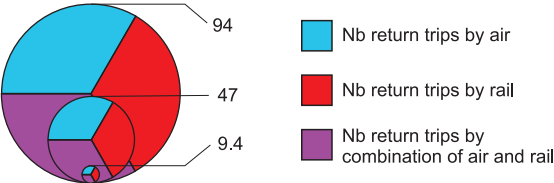
Figure 8. Transport network daily accessibility of MEGA: air and railway connections

Source: ESPON FOCI (2010)

Figure 8b. Number of accessible metropolitan areas



Number of MEGAs reachable in each transport mode  
With return trips between 5h and 23h



Regional level: Urban Audit cities  
Origin of data: OAG, diebahn.de  
Computation: Musliw model  
© Eurogeographics Association  
for administrative boundaries

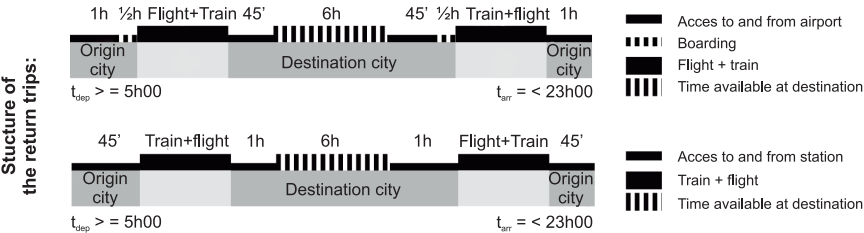


Figure 8. Transport network daily accessibility of MEGA: air and railway connections  
Source: ESPON FOCI (2010)



On this basis, it can be concluded that the role of rail connections is greater in domestic traffic, and that of air travel – in international traffic. This is in line with the literature of the subject which describes the substitution of these two modes of transport depending on the distance covered (Fig. 8a). A high degree of integration between metropolitan networks in terms of rail connections was characteristic for the following countries: the United Kingdom, Germany, France, Spain and Italy (and, to some extent, also Poland). The supra-national role of rail connections was clearly manifested mainly in the case of the Benelux and neighbouring countries, i.e. Germany, France and the United Kingdom. Meanwhile, air connections had a noticeable hub structure, with the hubs located in London, Paris, Frankfurt am Main, as well as Milan, Amsterdam and Munich. Poland was among the peripheral countries in this respect, along with the Nordic, Baltic and Iberian countries.

As regards the number of other MEGAs located outside the so-called European pentagon (the area stretching between London, Paris, Milan, Munich and Hamburg), a relatively high degree of accessibility could be observed in the case of Copenhagen, Berlin, Vienna and, though less so, Warsaw (Fig. 8b).

### **Research and scientific linkages in ‘emerging’ technologies<sup>7</sup>**

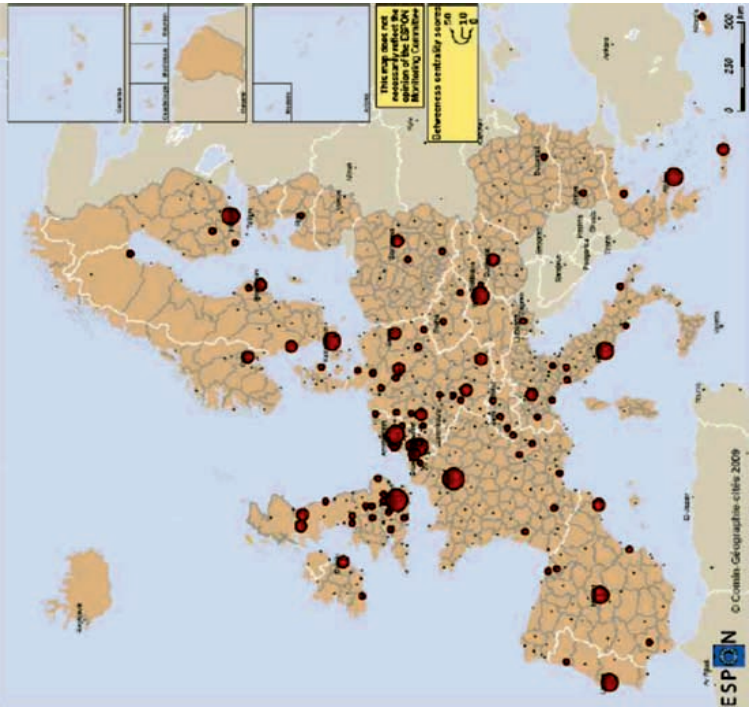
Research and scientific networks play a significant role in the contemporary, innovation-driven economy (Gorzela 2003), acting as vehicles supporting the transfer of technology and knowledge. However, they alone cannot guarantee that a given economy will attain a high level of innovation as this largely depends on the extensive and well-developed links between the science and business sectors. Nonetheless, the number of institutions collaborating within international research networks can provide an indicator on how to assess the role of a given city in the information economy.

In this exercise, the CORDIS<sup>8</sup> database was used, with information on 3675 projects in such innovative research areas as: nanotechnology, biotechnology, ICT technologies as well as cognitive sciences, which were conducted between 1986 and 2006. Two types of indicators were used in the study, viz. degree centrality and betweenness centrality. The former shows the significance of the node in a given network on the basis of its

<sup>7</sup> Elaborated on the basis of the part of the ESPON FOCI Report prepared by: Marie-Noëlle Comin, Denise Pumain and Céline Rosenblat.

<sup>8</sup> CORDIS (Community Research and Development Information Service) is an information base on European research and development activities, providing information on research projects carried out as part of EU Framework Programmes.

b) Betweenness centrality



a) Degree centrality

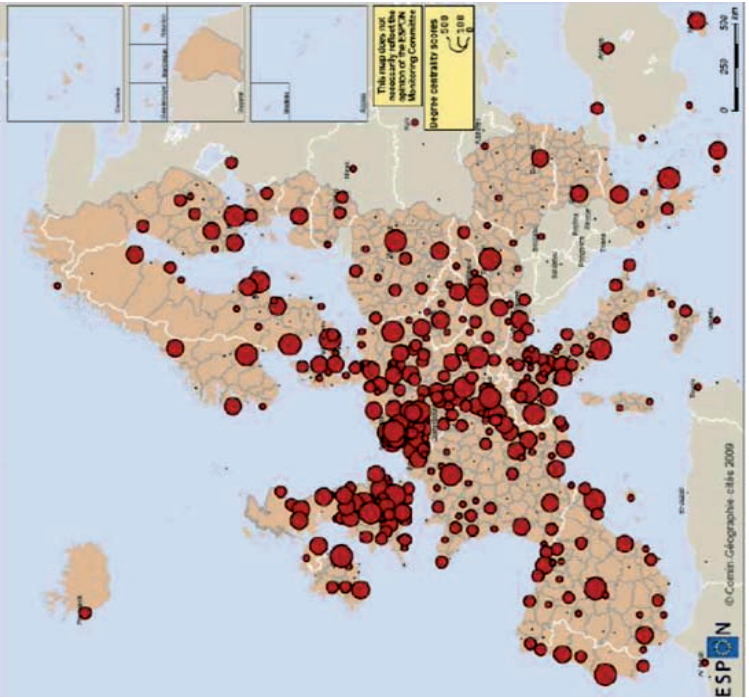


Figure 9. Research and scientific linkages in innovative research areas 1986-2006  
Source: ESPON FOCI (2010).

linkages with other urban centres, whereas the latter highlights the number of the shortest routes connecting two nodes intersecting a given urban centre, which can point to its significance in the transfer of information flowing through this centre.

The average number of linkages of European cities was 74, which, with the low median value (24), meant that several nodal cities were of primary significance, e.g. Paris (760) and London (674), but also Madrid, Athens, Helsinki and Copenhagen (over 600 linkages) (Fig. 9a). Overall, the role of a given city considerably depended on its size and the capital functions it performed. The role of capital cities in the transfer of state-of-the-art technologies is even better visible when the other indicator is employed (Fig. 9b). In this approach, nearly all the capital cities in the peripheral areas, in addition to the main urban centres of the European core, were visible.

## SUMMARY

The settlement system in the European Union, Norway and Switzerland is characterised by, on the one hand, a relatively strong concentration of socio-economic potential within the area forming a pentagon with its apexes in London, Paris, Milan, Munich and Hamburg and on the other hand, by the presence of large, as a rule isolated, metropolitan areas situated in the peripheral regions. Likewise, the global linkages between the urban centres situated within the pentagon both with regard to the control functions they perform in the global economy, and in terms of their attractiveness for businesses offering advanced information services, are significantly better developed than in other areas of Europe. This should have a considerable bearing on the relations between metropolitan centres and their regional hinterlands which, in the former case, tend to be strongly urbanised and in the latter – are in many cases similar in character to traditional rural areas. This issue is discussed in the chapter 2, which analyses the operation of the individual components of European metropolitan macroregions.

## **CHAPTER 2**

### **METROPOLITAN MACROREGIONS AND THEIR COMPONENT PARTS**

This part of the chapter presents a methodology for the selection of metropolitan and urban macroregions for the purpose of city-region analysis. The final outcome, based on NUTS3 regions for the ESPON space, is a ‘technical typology’ of regions enabling a selection of metropolitan areas and their regional hinterlands for further analysis. Using NUTS3 units allows us to avoid data availability constraints at city and larger urban zone levels. Furthermore, it enables us to analyse the situation in the regional hinterlands of large cities.

The following types of spatial units have been adapted to city-region relationship analysis:

- The metropolitan/urban area, in which ties between the city and its surroundings are strong and permanent, and which can be approximated to a Larger Urban Zone as defined by the Urban Audit;
- The metropolitan/urban macroregion that covers territories under the prevailing influence of the city, limited by the impact of other cities at a similar hierarchical level.

Approximations based on NUTS3 units, especially those concerning the delineation of metropolitan macroregions, are obviously a large simplification. Among the weaknesses of this approach, the following might be indicated: significant differences between adjusted metropolitan macroregions depending on statistical divisions in individual countries, the neglecting of functional ties between territories and the necessity of raw estimations in the case of densely populated areas with a polycentric settlement pattern. However, other possible solutions based on smaller units are affected by insufficient availability of socio-economic data. Furthermore, in order to obtain long-term data series, NUTS3 delimitation from 2003 instead of the new NUTS 2006 has been used.

The following general assumptions, underlying the identification of metropolitan and urban regions, have been applied:

- The importance of the city grows to some extent with the city size in terms of the population;

- The influence of the city decreases with the distance from the city centre;
- The administrative borders of upper-tier administrative units (NUTS0, NUTS2) to some extent affect the delimitation of metropolitan macro-regions.

These assumptions are based on gravity potential models that, at least to some extent, illustrate relatively well the range of relationships between the city and its region. However, these assumptions will be under investigation in the second part of this analysis, based on selected case studies. Meanwhile, application of upper-tier administrative units as one of the criteria to separate different hinterlands reflects an attempt to adjust this division to socio-economic reality. For instance, among the advantages of NUTS2 units, one may indicate that these regions reflect (depending on the country): real ties between territories as a result of an analysis conducted for their delineation; historical provinces that still constitute different types of relationships; geographical barriers (like mountains, rivers, etc.) that affect these relationships. Furthermore, there are self-government authorities responsible for socio-economic development at this level in some countries. Regarding national borders, despite transborder integration processes, it should be kept in mind that these are still important elements, not only of the legal and administrative context of regional development, but also of socio-economic ties between territories as well. This analysis would not combine city-region relationships with transborder interactions, because this would require a different methodology.

Other established operational rules and criteria reflect to some extent the principles applied in previous studies, such as the following:

- Identifying European metropolitan and urban regions based on the Urban Audit's Larger Urban Zones (DG Regio, 2008);
- ESPON 1.4.3. Study on Urban Functions (2006);
- ESPON 3.4.3. The Modifiable Areas Unit Problem (2006).

Based on these assumptions and remarks, the first step of this research has been to define metropolitan and urban areas (MA) based on the comparison of Urban Audit Larger Urban Zones (LUZ) and EUROSTAT population data for NUTS3 regions. The following basic rules have been applied: minimal size of LUZ (over 250,000 inhabitants), correspondence between LUZ and NUTS3 (threshold of 70% share of population) and combination of neighbouring metropolitan areas into polynuclear metropolitan areas (maximum distance 60 km). In the next stage, the regional hinterlands (RH) for such metropolitan and urban areas (MA) have been delineated using surrounding NUTS3 combination approximations. Another set of rules has been applied here: neighbouring regions (direct neighbours and maximum distance), predominance of larger metropolitan area regions (ratio 3:1) and separate hinterlands (Annex 1).

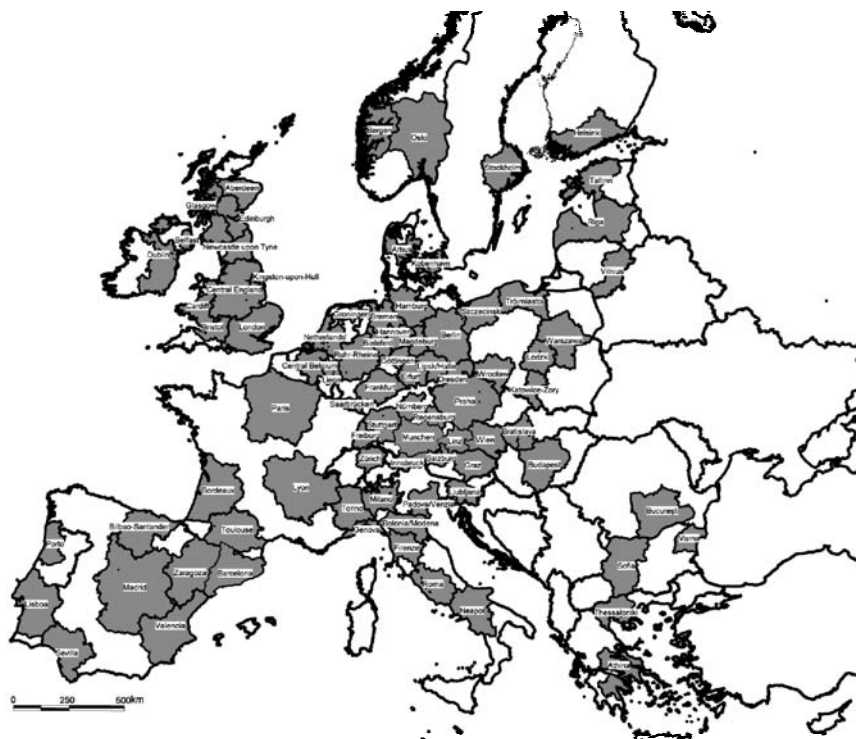


Figure 10. Metropolitan and urban macroregions selected as a sample for city-region analysis

Source: prepared by the author.

Table 8. Basic information about macroregions and their constituent parts

|   | <b>Macro-<br/>regions</b> | <b>Metropolitan<br/>areas (MA)</b> | <b>%</b> | <b>Regional<br/>hinterlands<br/>(RH)</b> | <b>%</b> |
|---|---------------------------|------------------------------------|----------|--|----------|
| Area (sq km)                                  | 2 105 077                 | 473 612                            | 22.5     | 1 631 466                                | 77.5     |
| Population 1995 ('000)                        | 330 127                   | 177 768                            | 53.8     | 152 359                                  | 46.2     |
| Population 2004 ('000)                        | 338 132                   | 182 744                            | 54.0     | 155 388                                  | 46.0     |
| Population density<br>(pp/sq <sup>2</sup> )   | 161                       | 386                                | -        | 95                                       | -        |
| Population change 1995-<br>-2004 (1995 = 100) | 102.4                     | 102.8                              | -        | 102.0                                    | -        |
| GDP 1995 (mln EUR)                            | 5 531 133                 | 3 330 141                          | 60.2     | 2 200 992                                | 39.8     |
| GDP 2004 (constant prices<br>1995) (mln EUR)  | 6 915 492                 | 4 351 797                          | 62.9     | 2 563 695                                | 37.1     |
| GDP real change 1995-<br>-2004 (1995 = 100)   | 125.0                     | 130.7                              | -        | 116.5                                    | -        |

Source: prepared by the author.



Using these rules, we distinguished 83 metropolitan/urban macroregions (Fig. 10). Owing to the specific characteristics of the respective administrative divisions, both the number and the surface area of these macroregions varied depending on the country.

In effect, it should be noted that the analyses were carried out on a sample of macroregions whose selection was largely dependent on the specific natures of the national settlement systems, delimitation of LUZs in the Urban Audit, and the NUTS3 administrative division. It should be acknowledged, however, that despite leaving out some large urban centres, the sample should be sufficient to show the diverse relationships between the metropolis and the surrounding region.

All the identified macroregions were accepted for further analyses. However, we should emphasise the considerable differences between them, which can have a bearing on the results obtained (Annex 2).

The analysed macroregions were inhabited by a population of nearly 340 million and altogether occupied an area in excess of two million km<sup>2</sup>, of which about 1/5 were metropolitan areas, and the rest formed their regional hinterlands (Tab. 8). The demographic situation was different, with over a half of the population living in the core areas, and the dynamics of growth in the researched period (1995-2004) visibly led to a strengthening of this trend. At the same time, metropolitan areas generated over 60% of the macroregional GDP, and its rate of growth was much higher than in the case of the regional hinterland. It should be borne in mind, however, that the GDP in question is expressed in EUR, which means that the overall picture can be affected by the disparities in the development rates between individual countries, as will be discussed below.

As already indicated above, the analysed units are considerably varied (Tab. 9). An average macroregion occupies an area of 25 000 km<sup>2</sup> and is inhabited by a population of four million, which corresponds to the average population density of 182 inhabitants per km<sup>2</sup>. Nevertheless, whilst the population size in an average macroregion was stable over a 10-year period, its GDP expressed in EUR increased on average by over 30%. Significant differences could be observed between the analysed macroregions, expressed by the coefficient of variation (CV): the widest in the case of GDP (ranging from 1.5 billion to 573 billion euros), but also considerable in the case of the population (oscillating from 0.5 million to 21.0 million inhabitants). The dynamics of economic development was also strongly diversified, with real GDP changes ranging from a 1.3% decrease (Bergen) to a 201.4% increase (Vilnius). Demographic development was more stable, with a 6.7% fall (Leipzig/Halle) or a 14.7% increase in the population (Valencia) in extreme cases.

Table 9. Differences between macroregions and their constituent parts

| Indicator  | Area<br>(sq km) | Population<br>density<br>(pp/sq <sup>2</sup> ) | Population<br>1995 ('000) | Population<br>2004 ('000) | Population<br>change 95-05<br>(1995 = 100) | GDP 95<br>(mln EUR) | GDP 04 (constant<br>prices 1995)<br>(mln EUR) | GDP change<br>95-04<br>(1995 = 100) |
|--|-----------------|--|---------------------------|---------------------------|--|---------------------|---|-------------------------------------|
| <b>Metropolitan/Urban macroregions (MA + RH)</b> |                 |  |                           |                           |  |                     |   |                                     |
| Average  | 25 362          | 182  | 3 977                     | 4 074                     | 101.8                                      | 66 640              | 83 319  | 134.8                               |
| Max  | 105 954         | 555  | 20 315                    | 21 004                    | 114.7                                      | 457 761             | 573 105                                       | 300.1                               |
| Min  | 3 658           | 16   | 486                       | 503                       | 93.3                                       | 1 044               | 1 479   | 98.7                                |
| SD   | 18 850          | 119  | 3 929                     | 4 050                     | 4.4  | 85 290              | 107 980                                       | 32.7                                |
| CV   | 74              | 65   | 99                        | 99                        | 4.3  | 128                 | 130   | 24.2                                |
| <b>Metropolitan areas (MA)</b>                   |                 |  |                           |                           |  |                     |   |                                     |
| Average  | 5 706           | 443  | 2 142                     | 2 202                     | 102.3                                      | 40 122              | 52 431  | 143.9                               |
| Max  | 17 612          | 1 951  | 12 182                    | 12 800                    | 115.0                                      | 339 308             | 413 934                                       | 355.3                               |
| Min  | 797             | 29   | 270                       | 274                       | 92.7                                       | 580                 | 999   | 95.2                                |
| SD   | 3 941           | 356  | 2 441                     | 2 511                     | 4.7  | 57 823              | 76 005  | 43.1                                |
| CV   | 69              | 80   | 114                       | 114                       | 4.6  | 144                 | 145   | 29.9                                |
| <b>Regional hinterlands (RH)</b>                 |                 |  |                           |                           |  |                     |   |                                     |
| Average  | 19 656          | 121  | 1 836                     | 1 872                     | 101.2                                      | 26 518              | 30 888  | 119.6                               |
| Max  | 97 926          | 350  | 8 443                     | 8 705                     | 119.3                                      | 130 142             | 159 171                                       | 170.0                               |
| Min  | 1 079           | 6  | 108                       | 107                       | 90.8                                       | 464                 | 479   | 93.4                                |
| SD   | 17 005          | 84   | 1 659                     | 1 720                     | 4.8  | 30 642              | 35 788  | 14.3                                |
| CV   | 87              | 69   | 90                        | 92                        | 4.7  | 116                 | 116   | 12.0                                |

Source: prepared by the author.



The constituent parts of the macroregions were as strongly diversified, slightly more so in the core areas. An average core area occupied an area of 5000 km<sup>2</sup> and was inhabited by over two million people, with a population density of 440 inhabitants per km<sup>2</sup>. In the period in question, the population of such areas increased by 2.3%, and the GDP grew by 43.9% – a considerably better result than in their regional hinterlands, where the population size increased on average by 1.2%, and GDP was 19.6% higher (in constant prices). A typical regional hinterland occupied nearly 20 000 km<sup>2</sup> and had a population of 1.8 million, which meant a density of 121 inhabitants per km<sup>2</sup>, that is still more than the average population density in EUR27+CH+NO.

## CONCLUSIONS

The macroregions sample selected for analysis was strongly varied in terms of area, population and GDP values. This was true for macroregions as a whole and for their constituent parts, i.e. metropolitan regions and regional hinterlands. This means that the results of our research are strongly dependent on the regional context, which implies the need to carry out analyses in the form of case studies which would complement the statistical surveys of the macroregions undertaken at the European level.

The demographic situation of the regions in hand was relatively stable when set against marked differences in the pace of economic growth. In effect, this generated wide differences between metropolitan regions and their hinterlands, but was accompanied by visible differences between individual cases. Therefore, in the subsequent section of the book we will try to identify those macroregions which are developing most rapidly (including their constituent parts), and offer a typology of the macroregions under analysis in terms of disparities in the level and pace of economic development.

## **CHAPTER 3**

### **CONVERGENCE PROCESSES IN METROPOLITAN MACROREGIONS**

In this chapter an empirical study of 83 metropolitan/urban macroregions situated in the EU27, Norway and Switzerland aimed to:

- a) Discuss the developmental dynamics of the core areas in these macroregions in the context of the remaining LUZs regions;
- b) Compare the degree and dynamics of internal disparities in the macroregions measured by GDP per capita;
- c) Compare the dynamics of economic growth in the macroregions' constituent parts, i.e. metropolitan regions and regional hinterlands.

#### **3.1. DYNAMICS OF METROPOLITAN MACROREGIONS' CORE AREAS VS. OTHER LUZ REGIONS**

The first part of the study focused on the developmental dynamics of all NUTS3 regions corresponding to the LUZs as defined in the Urban Audit<sup>1</sup>. The analyses were conducted for the GDP dynamics in nominal terms, and for the GDP values relativised to the national average.

The development dynamics of NUTS3 regions corresponding to LUZs in 1995-2004 was quite similar (with real GDP growth of ca. 27-28%), regardless of the size and degree of correspondence to the NUTS3 region (Tab. 10). The exceptions were polynuclear metropolitan macroregions (15.6% increase) and regions situated in close proximity to larger urban centres (20.6% increase). Although statistically significant, these differences largely stemmed from the condition of the economies in the individual countries, because the overall picture significantly changed once the data were relativised to the average pace of growth in a given country. Firstly, we could observe a significantly lower pace of growth (in comparison to the regions' national average) of those LUZs which were

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<sup>1</sup> The study also included Marseilles, Nice-Grasse and Lille. Owing to the approximation of LUZ with a NUTS3 region for which GDP data was available, some LUZs were treated jointly, i.e. Białystok-Suwałki, Arnhem-Nijmegen, Rouen-Le Havre and Oviedo-Gijón.

situated close to larger urban centres (lower by 2.3pp), and those with a population under 250 000 (lower by 0.6pp). Meanwhile, the highest values could be observed in monocentric systems regardless of the LUZ – NUTS3 correspondence (2.5-3.0pp above the national average). The pace of development of polynuclear metropolitan macroregions was also higher than the national average (1.2pp).

**Table 10.** GDP dynamics in 1995-2004 in different types of LUZ regions\*

| Name  | N   | GDP growth 1995-2004 (%) | STDV** | GDP growth 1995-2004 (each country = 100) | STDV** |
|---|-----|--------------------------|--------|---|--------|
| Metropolitan areas' regions (strong correspondence between LUZ and NUTS3) | 78  | 127.0                    | 24.3   | 102.7                                     | 8.8    |
| Metropolitan areas' regions (weak correspondence between LUZ and NUTS3)   | 61  | 128.4                    | 17.0   | 103.0                                     | 9.2    |
| Polynuclear metropolitan areas  | 47  | 115.6                    | 8.4    | 101.2                                     | 6.6    |
| Metropolitan areas subordinated within metropolitan macroregions          | 50  | 120.6                    | 15.4   | 97.7                                      | 8.5    |
| Other urban areas regions (LUZ < 250 000)                                 | 49  | 128.5                    | 20.2   | 99.4                                      | 12.2   |
| Total   | 285 | 124.5                    | 19.1   | 101.1                                     | 9.4    |

\* unavailable data was replaced by the following estimates, assuming that regional GDP growth was the same across the country for Bulgaria (1995), Romania (1995-1997), Norway (2004), Switzerland (2004) and Athens (GR) (1995-2000).

\*\* STDV – standard deviation.

Source: prepared by the author.

The poorer results of urban centres situated in the vicinity of large metropolises support the hypothesis of the 'metropolis shadow', which means the backwashing of functions and developmental resources from smaller urban centres into the core area. Characteristically, only some regions from this group recorded a pace of growth which was distinctly higher than the national average (Cambridge and Portsmouth in the metropolitan region of London, Brescia in the metropolitan region of Milan and Płock in the metropolitan region of Warszawa – higher than the national average; altogether, 22 regions were developing faster, while 31 regions – slower). On the other hand, the poorer results in smaller urban centres corroborate the thesis that small cities have lesser opportunities to participate in metropolisation processes. Given that, we should bear in mind that these results may arise from the weak correspondence of

LUZs to the NUTS3 administrative division, due to the inclusion of rural areas into these regions. At the same time, some regions of smaller cities provided more examples of speedy development (10pp higher than the national average), which is usually associated with the development of modern industries or tourism (Cork (IE), Győr (HU), Ancona, Sassari (IT), Coimbra, Funchal, Ponta Delgada, Faro (P), Irakleio, Ioannina (GR), Ajaccio (FR) and Oulu (F)).

The weaker pace of growth in smaller urban centres is also confirmed in a different research dimension which only included LUZs located outside the zone of impact of larger urban centres (Tab. 11). When this set is divided into three classes, i.e. LUZs with a population over one million; those between 0.5 and one million; and those under 0.5 million, we will see that while the first two groups developed at an average rate ca. 3.5pp higher than the national average, the smaller LUZs merely matched the national level (plus 0.6pp); however, the statistical significance of this difference was not high (t-test,  $p = 0.15$ ).

Table 11. GDP change in 1995-2004 (%) in metropolitan areas' regions 1995-2004\*

| Groups                           | N   | GDP growth 1995-2004<br>(each country = 100) | STDV*** |
|----------------------------------|-----|--|---------|
| <b>Population</b>                |     |  |         |
| > 1 mn                           | 60  | 103.7  | 8.6     |
| 0.5-1 mn                         | 55  | 103.4  | 8.4     |
| < 0.5 mn                         | 70  | 100.6  | 8.1     |
| <b>Capital city status</b>       |     |  |         |
| Capital city-regions**           | 27  | 107.0  | 9.2     |
| Other metropolitan areas regions | 159 | 101.6  | 8.0     |

\* LUZs with less than 0.25 million population and LUZs situated within the metropolitan macroregions of a larger urban centre were excluded.

\*\* capital cities of Cyprus and Malta were excluded.

\*\*\* STDV – standard deviation.

Source: prepared by the author.

The differences can also be explained by the fact that different urban centres perform different functions. For example, this can be seen in capital city regions, which in the period 1995-2004 reached a pace of growth 7pp higher than the national average, while in the remaining cases the LUZs developed, on average, at a modest rate which was only 1.6pp higher than that in other areas in a given country.

Based on the analyses made, we can propose the following conclusions:

- The national context is of considerable importance in investigating the growth dynamics of LUZ regions;

- The pace of development in the regions of cities located within the macroregion of a large metropolis is normally much lower than the average dynamics observable in a given country, although some exceptions to this rule can also be found;
- The regions of smaller urban centres (LUZ under 0.5 million) generally develop more slowly; certain exceptions can occur when these cities perform specific functions (such as: national capital, tourist industry, modern industrial complex).

### 3.2. INTERNAL DIFFERENCES IN METROPOLITAN MACROREGIONS

This section discusses the scale and dynamics of the internal disparities within macroregions. Its aim was to test the hypothesis that metropolisation processes tend to increase disparities in the development level between metropolitan areas and their regional hinterlands.

The degree of internal disparities within macroregions can be measured by comparing the development level of the core areas and their surroundings, expressed in the form of GDP per capita. To this end, the following index was used:

$$W_{ZR} = (\text{GDP per capita (MA)} / \text{GDP per capita (RH)}) - 1$$

where: MA – metropolitan area, RH – regional hinterland.

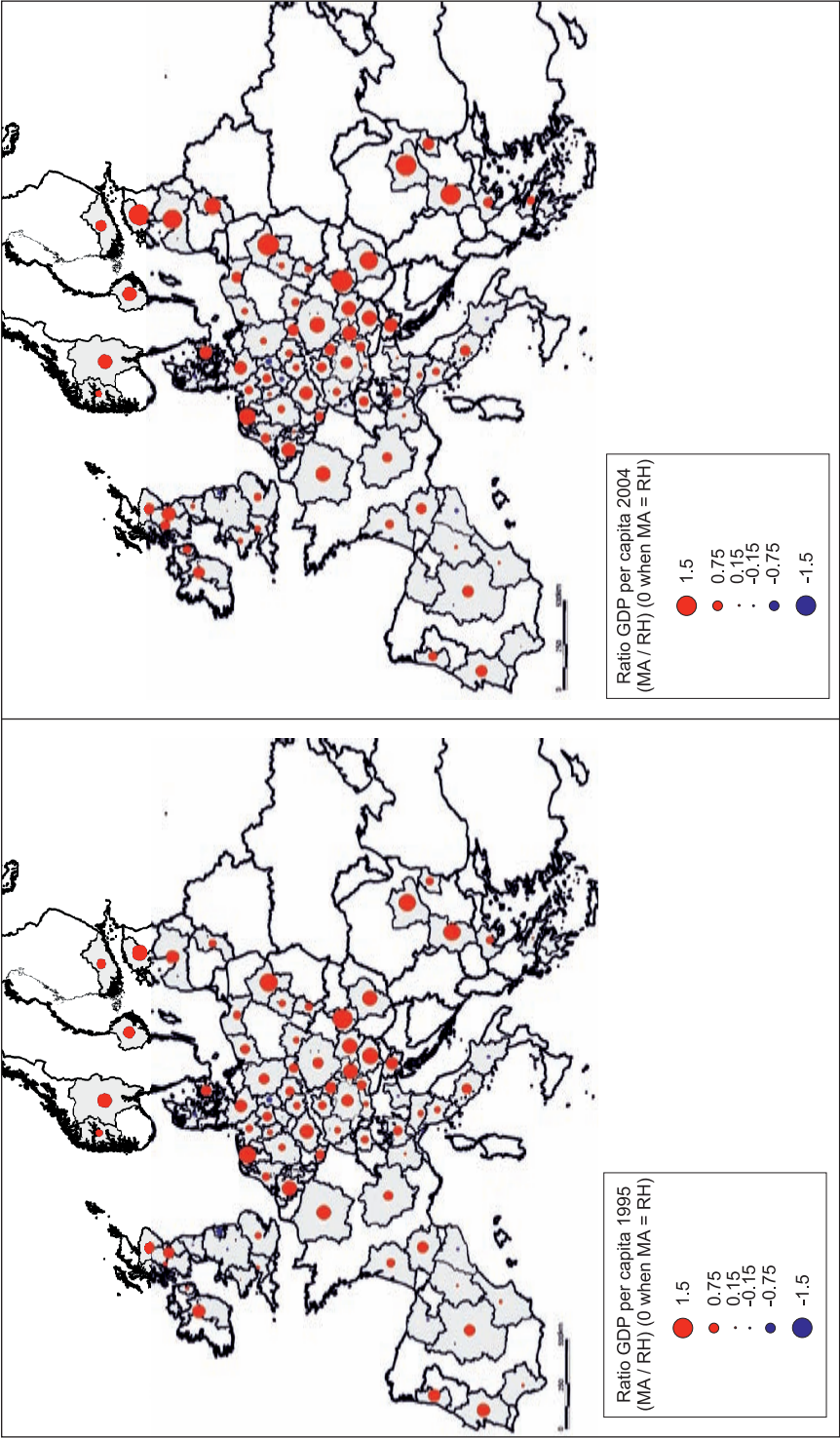
The indicator in question has positive values when the development level of the metropolitan area is higher than that of the regional surroundings, and negative in the reverse situation.

In 1995, its average value was +0.33, and increased in 2004 to +0.40, i.e. by 0.07 units. In 1995, the widest intraregional differences in the development level could be observed in Central and Eastern European countries, particularly in capital city macroregions, e.g. Bratislava (1.25), Warsaw (1.02), Bucharest (0.91), Vienna (0.76) (Fig. 11). The differences were also considerable in the Nordic countries (particularly Oslo and Stockholm), as well as in the polynuclear region of Central Belgium and the Groningen region in northern Holland (these cases could to some extent be affected by commuting to work). Meanwhile, minor differences could be observed in Spain (excluding Madrid) and Greece, as well as in Italy (except Rome and Milan) and the United Kingdom (with the exception Glasgow and Edinburgh). In Germany, the widest intraregional disparities could be observed in Frankfurt am Main and Hamburg (in the latter case, former GDR regions were included in the metropolitan sphere of influence).

On the other hand, the differences in the case of smaller urban centres in Germany were insignificant, and in the case of Magdeburg and Gottingen, the regional hinterland manifested a higher level of development than the metropolitan area.

In subsequent years, (1995-2004) this situation quite rapidly changed. In particular, the increasing intraregional differences in Central and Eastern European countries should be emphasised (with the exception of smaller urban centres which were not national capitals, which could be attributed to delayed industrial restructuring processes). The most prominent increase in disparities could be seen in the capital city regions of the Baltic states. Other distinct countries where the differences markedly increased were the United Kingdom (with a relatively weaker increase in the London region and the polynuclear Central England region), the Nordic countries (primarily the regions of Stockholm and Copenhagen) and Greece. The existing disparities decreased in Austria and Germany – especially in the former GDR (except Dresden and the macroregions situated in the southern *Länder*). The intraregional differences also clearly diminished in Portugal (possibly due to the small size of the Lisbon and Porto respective LUZs, which could lead to interpreting some of their functional urban areas as the regional hinterland). On the other hand, the situation in France and Spain was relatively stable. Altogether, 55 macroregions recorded a growth of disparities in development level, as compared to 28 where a decrease could be observed. When we exclude the 19 relatively stable regions ( $\pm 0.0025$ ) from the picture, 42 recorded an increase (on average by 0.171), and 22 – a decrease (on average by 0.076).

Placing the scale of intraregional disparities in the context of their dynamics made it possible to develop a simplified regional typology, which aimed to identify extreme cases in terms of both the conditions and the dynamics of such disparities (Fig. 12). Generally speaking, there was no clear correlation between the scale of internal disparities and its dynamics. However, it is worth examining the situation of macroregions in two cross-sections: firstly, geographical, along the east-west axis and secondly, related to the threshold of LUZs with a population of one million. As it turned out, extreme situations in terms of the level and dynamics of the disparities could be observed in the capital city macroregions situated in Central and Eastern European countries regardless of the size of the LUZ. Meanwhile, the macroregions of smaller LUZs did not differ considerably when compared to the remaining macroregions of Western Europe. At the same time, the macroregions in the EU15 plus Norway and Switzerland were more similar both in terms of internal disparities and the dynamics of change. Interestingly, although the macroregions of smaller cities were more varied in terms of developmental differences, the changes in this





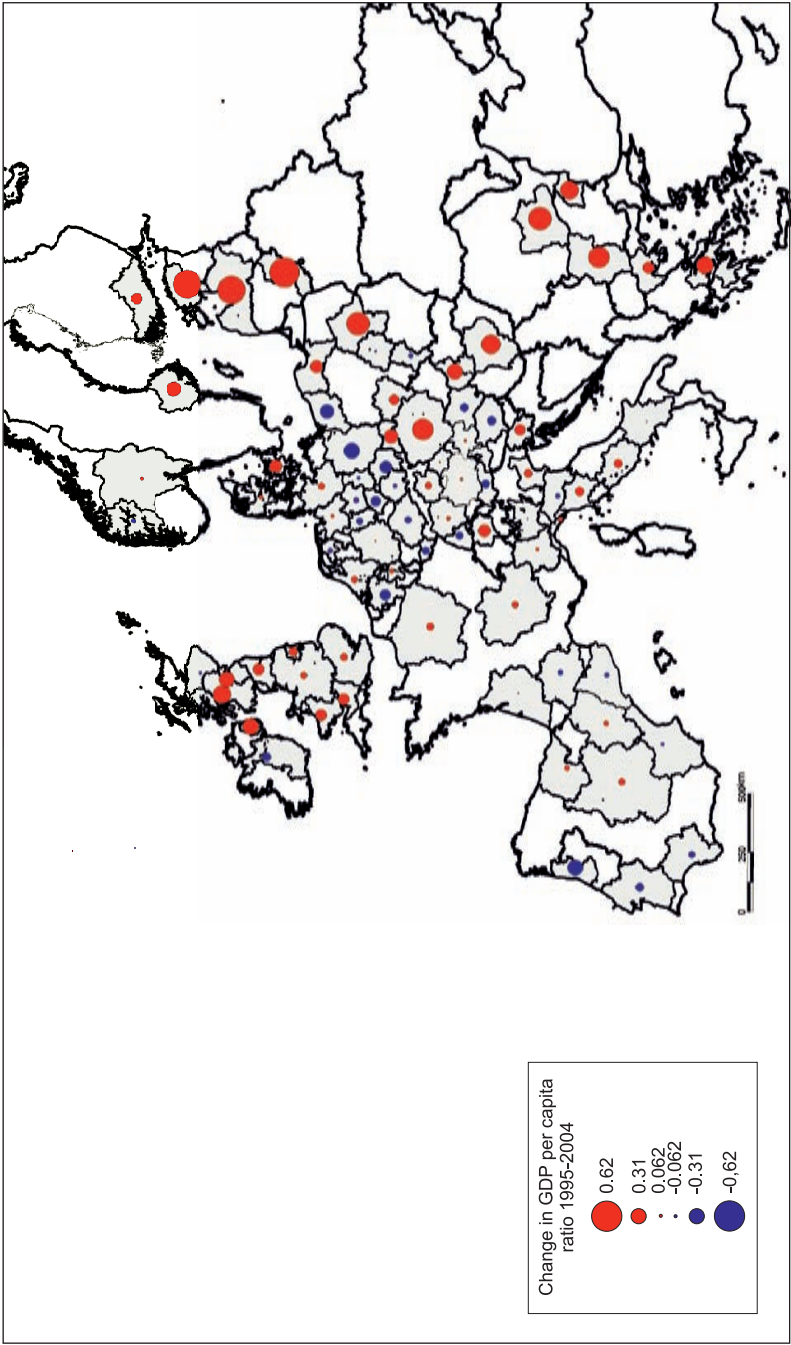


Figure 11. Disparities in the development level between the metropolis and its region in 1995-2004  
Source: prepared by the author.



variance were relatively insignificant but more prone to decrease. The situation in the macroregions of metropolitan areas with a population of over 1 million was different as they more frequently recorded higher disparities in the level of development. Interestingly enough, this increase was as a rule higher in those macroregions which were characterised by a smaller scale of internal disparities.

The typologies of macroregions in terms of the level and dynamics of disparities in GDP were developed using the average value (1.33) for the level of disparities, after introducing an additional interval at a distance of  $1/4$  of the standard deviation ( $\pm 0.07$ ). At the same time, an additional, 'stability' interval was introduced for changes in the disparities, in the  $\pm 0.025$  range for 0. The results were rendered on a map (Fig. 13) in which the regions with a rapid increase in the level of disparities were marked in red; regions with a rapid decrease – in green, and stable macroregions in grey. The intensity of the colour indicates the scale of divergences – the more intense the saturation, the wider the internal differences were in 1995. The macroregions with the highest level and pace of disparities in development level included regions situated in Central and Eastern Europe, as well as Paris, Madrid, Edinburgh and Hamburg. Meanwhile, in the macroregions of Portugal, Austria, Dublin, Toulouse, Frankfurt, Central Belgium and Groningen in the Netherlands, the scale of disparities decreased despite

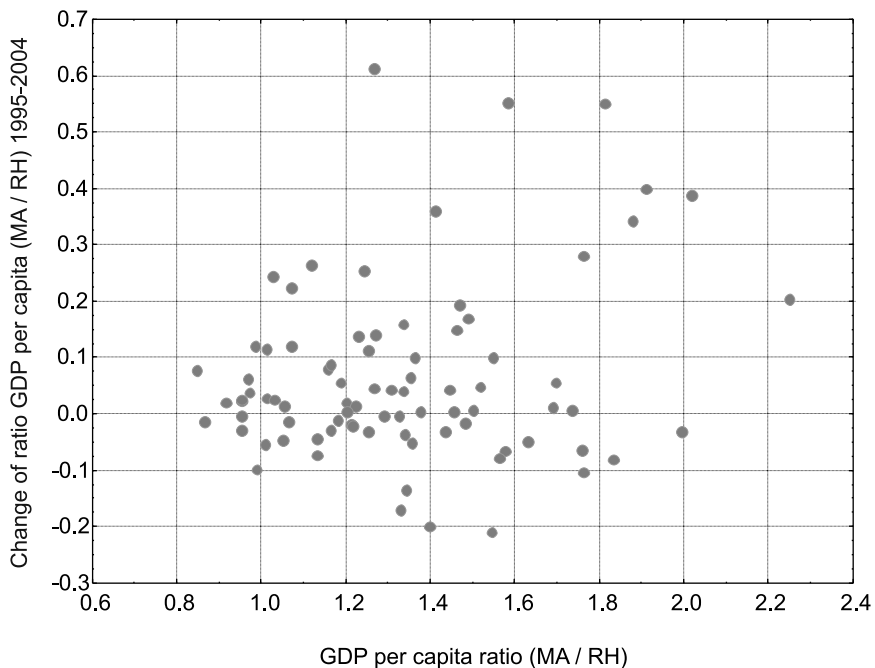


Figure 12a.

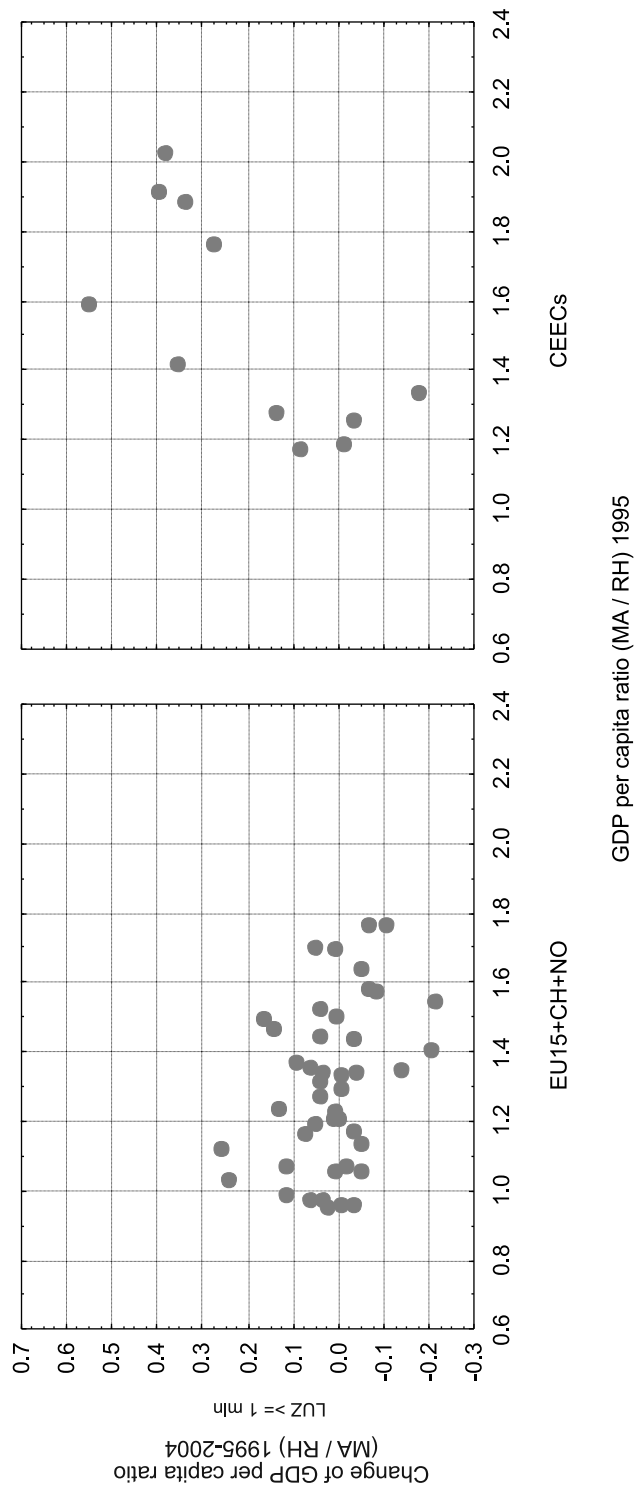


Figure 12b.

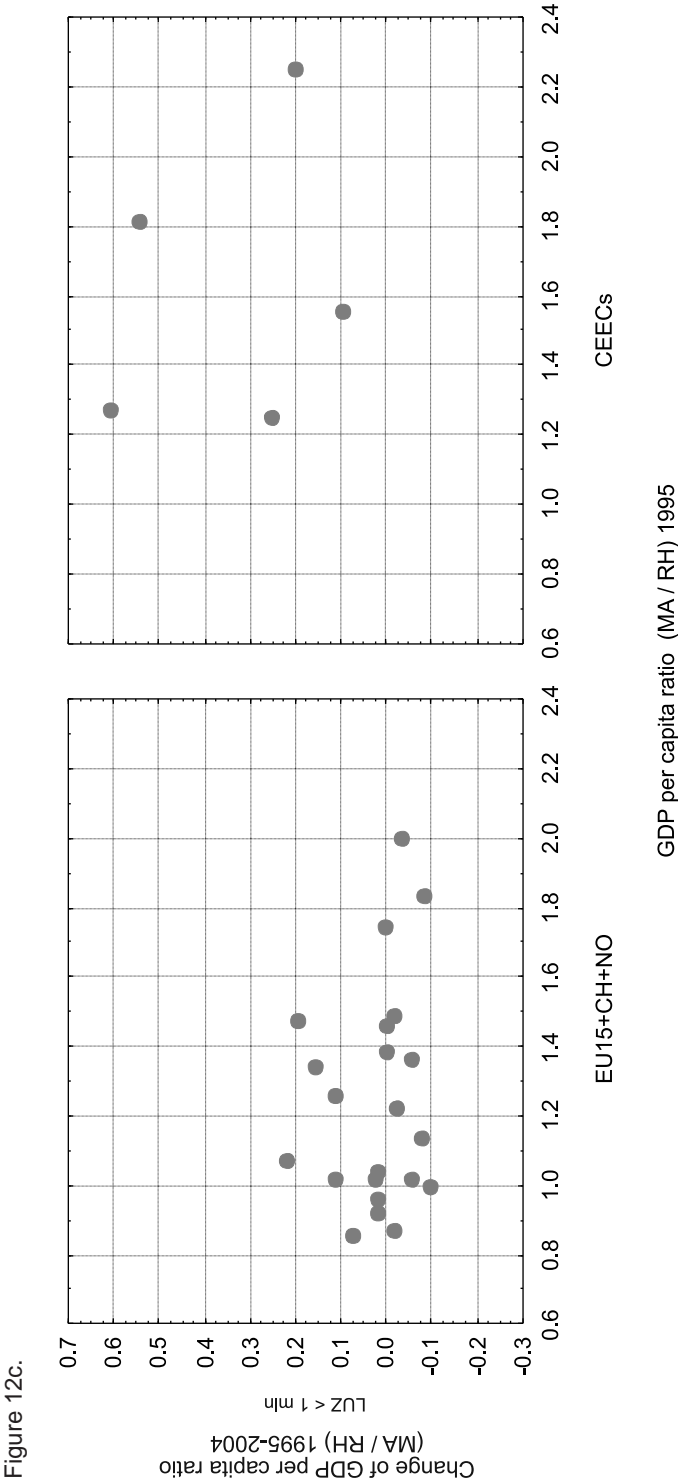


Figure 12. GDP per capita and its change in 1995-2004 (MA/RH ratio)  
Source: prepared by the author.

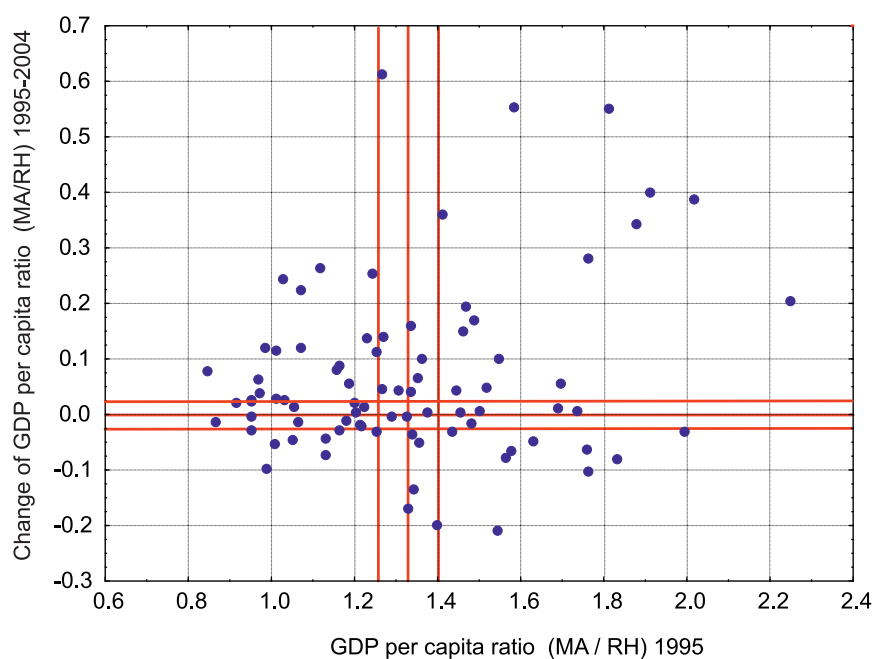
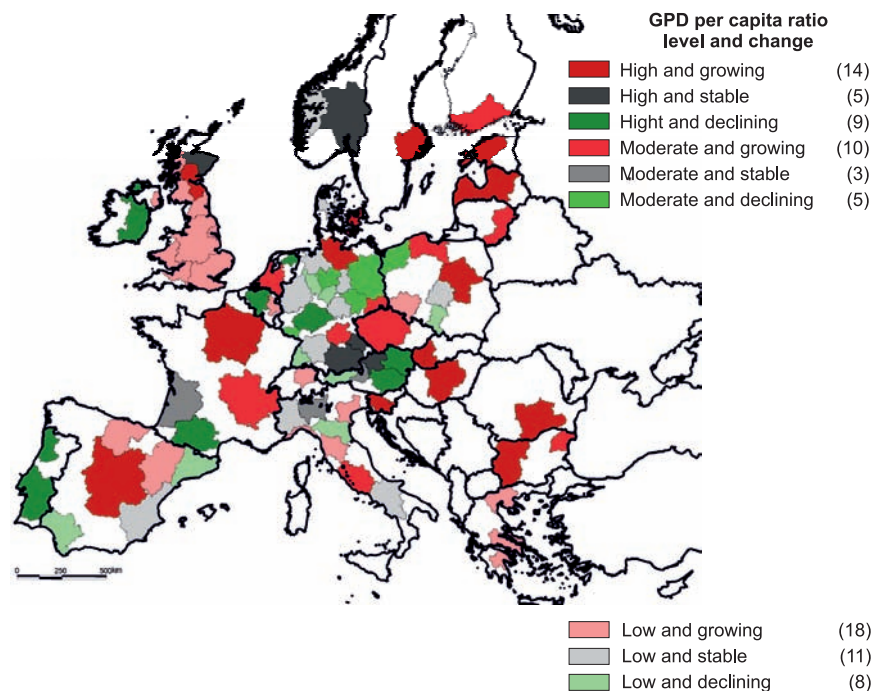


Figure 13. Typology of macroregions based on GDP per capita ratio level and change

Source: prepared by the author.

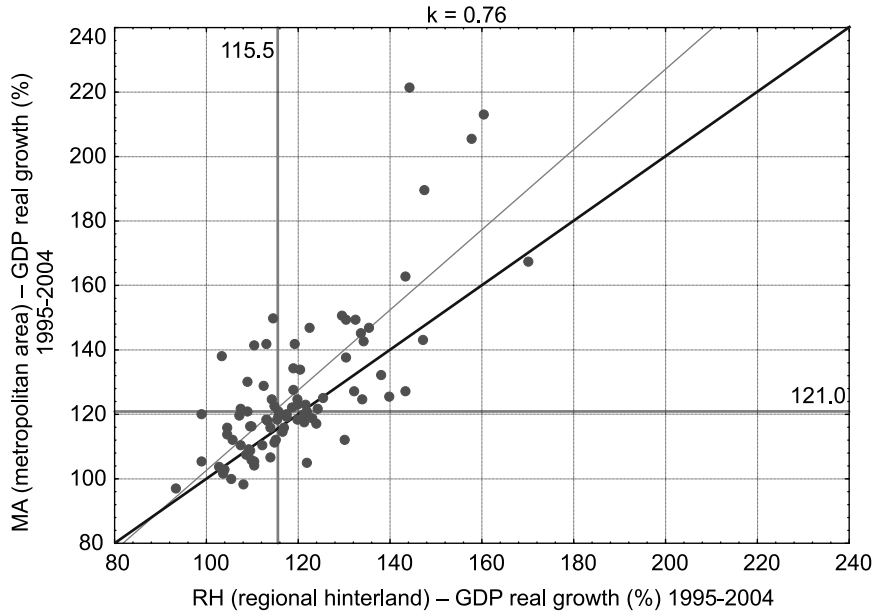
their being quite wide. At the other extreme, there were regions with a similar level of development in the core and in the periphery, where the disparities increased, e.g. the majority of British and Greek macroregions, as well as Zaragoza and Bilbao-Santander in Spain, Firenze and Padua-Venice in Italy, Zurich in Switzerland, Liege in Belgium and Wrocław in Poland. On the other hand, particularly in smaller German macroregions such as: Göttingen, Bielefeld, Freiburg, and in Barcelona, Seville, Emilia-Romagna and Innsbruck, although they were insignificant, the disparities in the level of development diminished even further.

### **3.3. CONVERGENCE PROCESSES IN METROPOLITAN MACROREGIONS**

This section looks at the consequences of a rapid development of the metropolitan region for its regional hinterland. To this end, the correlations between the GDP for the metropolitan area and its surroundings were examined both in nominal values and in relation to the national average. In addition, a typology was developed for the median values. On this basis, the core areas and the regional hinterlands which developed faster or slower than the median values were separately defined (Fig. 14). As a result, we were able to distinguish four types of macroregions, viz.: a) rapidly developing metropolis and regional hinterland, b) rapidly developing metropolis and slowly developing regional hinterland, c) slowly developing metropolis and rapidly developing regional hinterland, and d) slowly developing metropolis and regional hinterland.

Comparison of the pace of growth in the macroregions' constituent parts showed that there was a strong positive correlation between the rate of growth in the central area and its surroundings, of  $k = 0.76$  ( $k = 0.60$  after excluding outliers) (Fig. 14a). Furthermore, the majority of cases showed a faster increase in the central area than that of its surroundings (54:29). The average GDP increase in the core areas was 28.4%, compared to 19.6% in their hinterland. In general terms, no real GDP decrease could be observed in the researched period (save for one exception – Göttingen in Germany). The distribution of these types (Fig. 16a) illustrates the European-wide differences between the centrally located countries (Germany, Italy, Austria and Belgium), which recorded a low level of economic development in the period in question, and the external countries which developed at a faster rate: Central and Eastern Europe, the Nordic countries, the United Kingdom, Ireland, Spain, Portugal and Greece. The above is also confirmed by the analysis of the real rate of growth of these countries (Fig. 15). As regards the central area, the exceptions to the above pattern were the metropolitan regions of Munich, Regensburg and Dresden

a) real growth %



b) each country's growth = 100

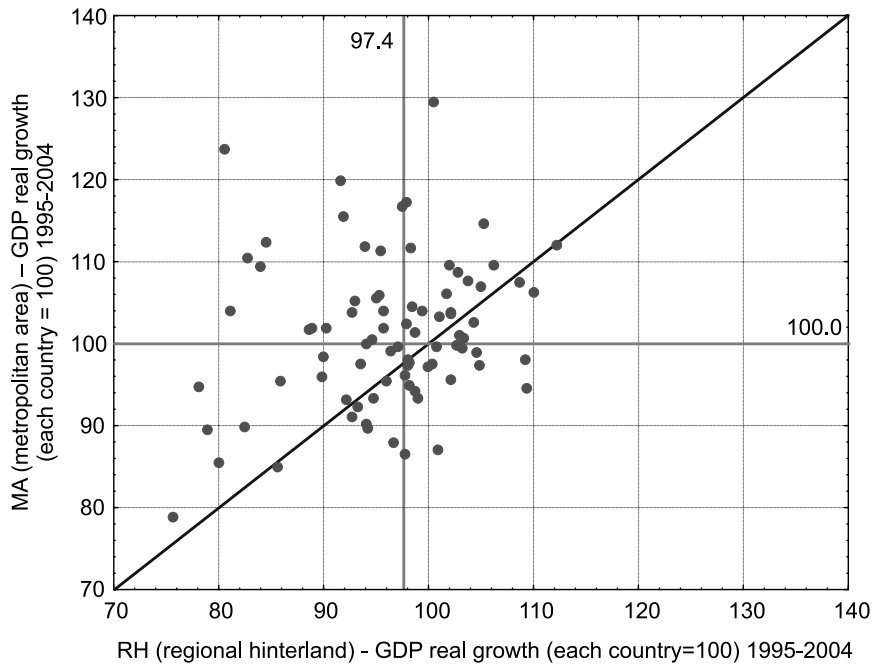


Figure 14. GDP growth in constituent parts of macroregions 1995-2004

Source: prepared by the author.

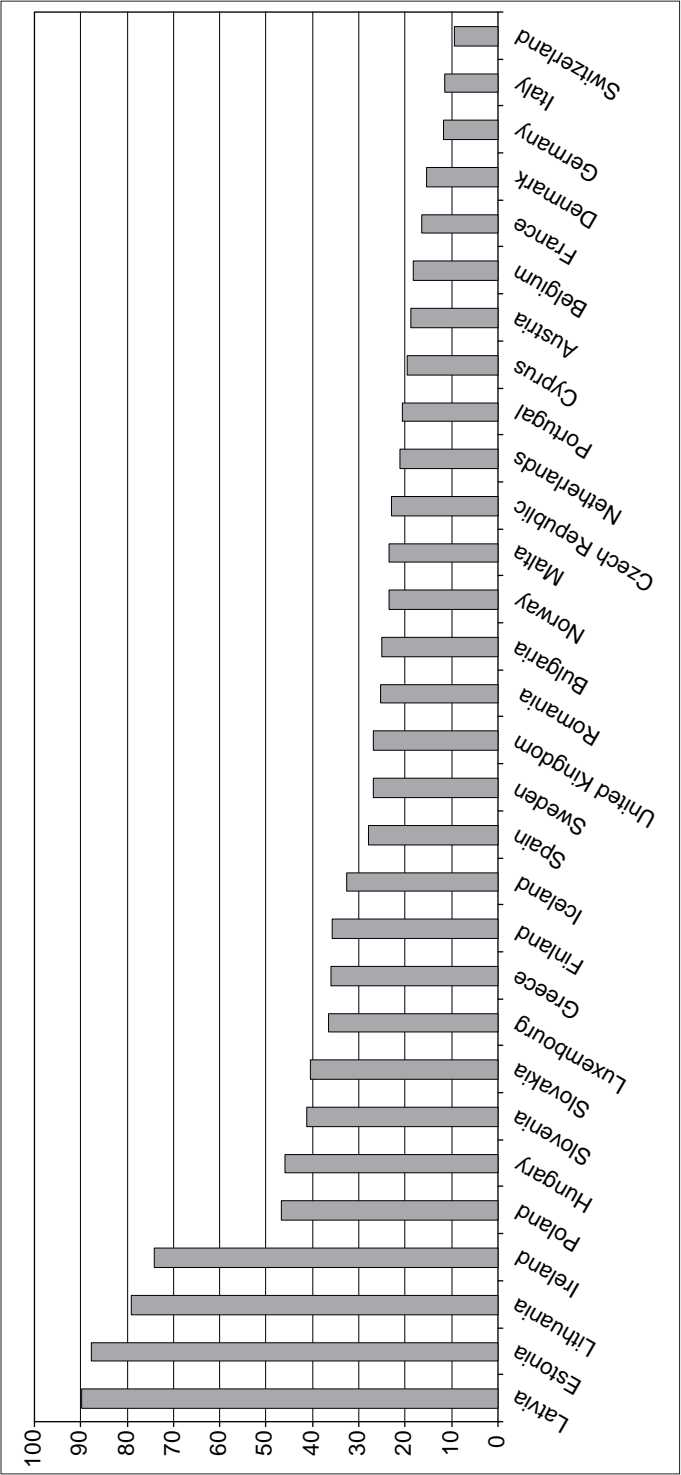
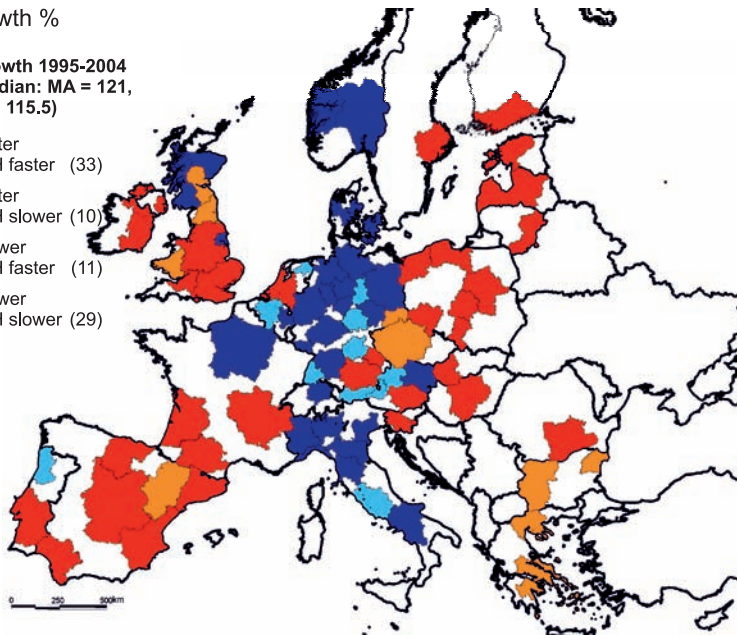


Figure 15. GDP growth (%) in constant prices in ESPON countries 1995-2004  
Source: prepared by the author based on UNECE data.

## a) real growth %

GDP real growth 1995-2004  
typology (median: MA = 121,  
RH = 115.5)

- MA faster  
and RH faster (33)
- MA faster  
and RH slower (10)
- MA slower  
and RH faster (11)
- MA slower  
and RH slower (29)



## b) each country's growth = 100

GDP growth 1995-2004  
each country = 100  
typology (median: MA = 100,  
RH = 97.4)

- MA faster  
and RH faster (23)
- MA faster  
and RH slower (21)
- MA slower  
and RH faster (19)
- MA slower  
and RH slower (20)

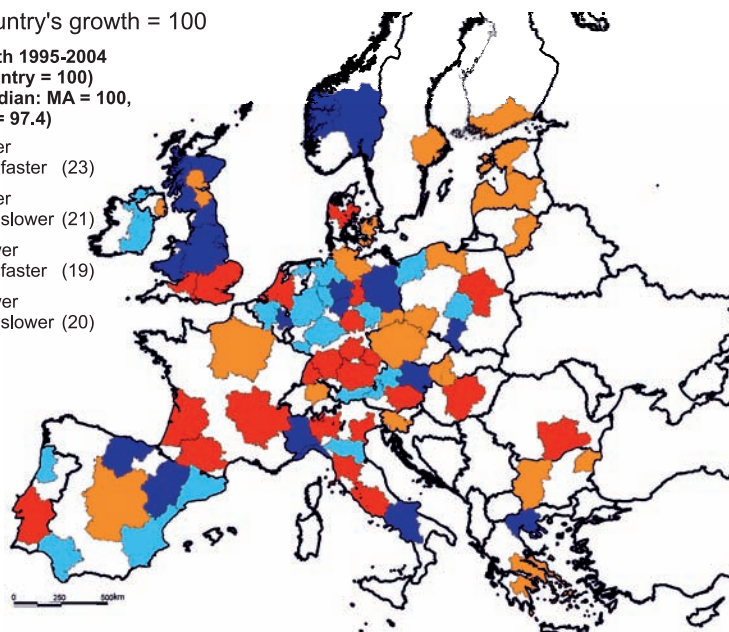


Figure 16. Typology of macroregions based on GDP growth 1995-2004

Source: prepared by the author.



(although in the latter case the metropolis' surrounding area developed more slowly than the average), and in the peripheral areas – the British macroregions: Glasgow, Aberdeen and Kingston-upon-Hull.

More interesting results can be obtained when the observations are made independently of the rate of economic growth in individual countries (Fig. 14b). In this case, no correlation between the growth rate of the metropolis and its regional surroundings could be observed<sup>2</sup>. As before, the number of macroregions whose core areas developed faster than their hinterland was distinctly higher (51:32). In most cases, the rate of growth in core areas was 1.6pp higher than the national average, whilst their surrounding area developed 3.9pp more slowly. As compared to the respective national economies, the metropolitan area of Warszawa grew the fastest (by 29.5pp), while the Bergen metropolitan area lay at the other extreme (-21.1pp). The growth rate 'leaders', other than the remaining Central and Eastern European metropolises, included: Bristol, Munich, Stockholm, Helsinki and Toulouse. Meanwhile, most acute problems were experienced by regions with a considerable share of industry in their economies, e.g.: in Poland (Katowice, Łódź and Szczecin), Portugal (Porto), the United Kingdom (Aberdeen), Italy (Turin) and Germany (Saarbrücken). The regional hinterland developing at the fastest rate was that of München, and of the East German cities: Magdeburg and Erfurt, and – probably due to the development of tourist functions – the hinterlands of Valencia (Spain) and Innsbruck (Austria). Faster development of the macroregions' two constituent parts was easily visible in southern Germany (also in Magdeburg and Erfurt), southern England (London, Bristol), French macroregions (save for the Paris macroregion where the surrounding area developed more slowly than the median value), certain capital city macroregions in Central and Eastern European countries (Warsaw, Budapest, Bucharest), as well as in the region of Lisbon, some cities in central and northern Italy (Rome, Milan, Padua-Venice, Firenze), Graz (Austria) and Aarhus (Denmark).

## CONCLUSIONS

The macroregions covered by the study were characterised by a prevailing tendency for increasing disparity in development level between metropolitan areas and the areas surrounding them. This was particularly visible in capital city regions (notably in Nordic as well as Central and Eastern European countries), but such processes could also be observed

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<sup>10</sup> A very weak correlation ( $k = 0.31$ ) could be observed once the extreme situations were removed.

in some other large cities. A declining scale of internal disparity was less frequent, with the most pronounced scale appearing in eastern and northern Germany (except Hamburg), Portugal, Austria and Ireland. It should be noted that, as a rule, this was the case in those regions where the scale of internal disparities had previously been very high. In the period in question these countries – with the exception of Ireland – were characterised by a relatively low pace of economic development. It would therefore seem that metropolisation processes spurred faster development in large urban centres, which at the same time resulted in an increase in development disparities in the metropolis-region system. The implications of this process for the regional hinterland in terms of development dynamics are discussed in the chapter below, which compares the development rate in the metropolis and its hinterland. However, a more complete and thorough analysis of these processes and corroboration of the results obtained will only be possible after examining development factors at the European level, and on the basis of case study analyses.

The development dynamics in the macroregions was quite distinctly correlated with the nationwide rate of growth (in some countries, this was related to a significant share of one macroregion in the national economy). There were relatively few macroregions which deviated from this rule i.e. rapidly developing regions in countries with a lower growth rate, and slowly developing regions in countries with a high rate of growth. Moreover, a faster or slower nationwide rate of growth generally affected both the metropolitan areas and their regional hinterlands. In this respect, however, the number of exceptions was higher, which resulted in either a fast increase in the disparities related to developmental level, or in their visible decline. Putting the rate of growth in the context of the national average made it possible to clearly show the differences between the regions within a given country. In effect, the interrelationships between the development rates of metropolis and its regional surroundings were neglectable, and the probability of individual types of macroregions occurrence was similar. Consequently, we indicated macroregions where rapid development of the metropolitan area was accompanied by speedy development of its surroundings. This could be viewed as proof of the lack of barriers to the diffusion of developmental processes. Meanwhile, the reverse situation could point to structural differences or low accessibility which hampered diffusion processes or, alternately, led to the backwashing of developmental resources from the periphery into the regional centre. In situations where there was slower development of the centre, the surroundings as a rule coped slightly better than the mean value. This could indicate either relatively weak intraregional linkages or point to a competent use of endogenous resources by the regional hinterland (e.g.

related to the development of tourism or modern industries). Nevertheless, there also existed macroregions where both the metropolis and the remaining part of the macroregion developed tangibly more slowly than the national average; this could be seen as proof either of their strong intraregional ties or of their structural affinities.

## **CHAPTER 4**

### **INTERNAL DISPARITIES AND TYPOLOGY OF METROPOLITAN MACROREGIONS**

#### **4.1. INTERNAL DISPARITIES WITHIN METROPOLITAN MACROREGIONS**

This section provides a comparison of selected European metropolitan macroregions and their component parts (i.e. metropolitan areas and regional hinterlands) in terms of:

- The demographic situation – which regions and their component parts experience population growth and which become depopulated? What is the role of migration and of natural increase in these processes? Does this affect the shape of the settlement system (size of cities in the regional hinterland, degree of polycentricity of the metropolitan area)?
- The economic structure – what is the degree of similarity between the metropolis and the surrounding region, particularly with regard to the role of the market services sector, and what are the relationships between the development of ‘specialised’ and ‘simple’ services?
- The labour market situation – what is the situation in the macroregional labour market in terms of the activity rate and unemployment rate? Are the dynamics of change similar across the macroregion? Are there any marked differences in labour productivity in individual sectors?

Unfortunately, due to the lack of relevant NUTS3 data for most of the Member States, a comparative analysis of metropolitan macroregions did not cover aspects relating to the quality of human capital, degree of innovation and the macroregions’ attractiveness for tourism (Annex 3).

The analyses based on available data were multi-dimensional in character as they took account of both the status and the dynamics of processes occurring in metropolitan macroregions (broken down by metropolitan areas and their regional hinterlands) and the interrelationships between the metropolis and the region (Tab. 12).

Table 12. Dimensions of the intraregional disparities analyses

| Research area                                    | Metropolitan Area (MA) |          | Regional Hinterland (RH) |          | MA / RH Ratio |          |
|--|------------------------|----------|--------------------------|----------|---------------|----------|
|  | State                  | Dynamics | State                    | Dynamics | State         | Dynamics |
| Demographic situation<br>incl. settlement system |                        |          |                          |          |               |          |
| Economic structure<br>incl. specialised services |                        |          |                          |          |               |          |
| Labour market<br>incl. labour productivity       |                        |          |                          |          |               |          |

Source: prepared by the author.

### Demographic situation

In the period 2000-2005, the majority of macroregions (55) recorded a population increase, with a population decrease noted in only 25 regions<sup>1</sup>. The average increase reached 3.1% (with the fastest in Valencia macroregion – 12.8%), whereas the average decrease was -1.7% (with the steepest reduction in the Leipzig and Halle region – -4.7%). The migration balance played a greater role in the population dynamics, unlike the natural increase. As a rule, the migration balance was positive (with a negative balance recorded in 20 macroregions), and amounted to ca. 6.1‰ annually. In contrast, the natural increase was usually neutral, reaching ca. -0.2‰ annually (there were more deaths than births in 37 macroregions). These processes likely result from a high migration attractiveness of metropolitan areas (their favourable labour market situation) and population ageing (first and foremost in the regional hinterland of metropolises), coupled with a fall in the birth rate.

In both component parts of the macroregion, the population dynamics were mostly shaped by migration processes, and to a much lesser degree – by the natural increase *in situ* (Tab. 13).

However, while the migration balance was positive both in metropolitan areas and in their regional hinterlands (56 regions), and the scale of migration was rather similar (in 27 cases, the relative inflow of immigrants to the metropolitan area was higher than to its regional hinterland, and in 29 a reverse situation could be observed), metropolitan areas as a rule had

<sup>1</sup> The demographic situation of metropolitan macroregions is shown using the data compiled for the DEMIFER project for the years 2000-2005. This was performed for 80 of 83 macroregions selected for analysis (excluding Norway and Switzerland).

a positive natural increase (42 cases), whereas regional hinterlands lost population due to an excess of deaths over births (51 cases) (Tab. 14). Situations in which the centre showed a positive migration balance and the regional hinterland a negative one – suggesting migration flows from the periphery to the centre of the macroregion – were relatively rare (12 cases, most of them in Central and Eastern Europe); meanwhile, outflow from metropolises to regional hinterlands, suggesting counterurbanisation processes, was even less common (3 relatively small macroregions: Belfast, Saarbrücken, Bratislava) (Fig. 21c, p. 128).

Table 13. Basic demographic indicators in metropolitan macroregions

| Constituent part    | Population change in 2000-2005 in % | Average natural increase in ‰ | Average migration balance in ‰ |
|---------------------|-------------------------------------|-------------------------------|--------------------------------|
| Metropolitan area   | 2.1                                 | 0.3                           | 3.6                            |
| Regional hinterland | 1.2                                 | -0.8                          | 2.6                            |

Source: prepared by the author.

As a rule, demographic processes followed a similar direction in both component parts of a given metropolitan macroregion (Tab. 14). In only 19 cases, opposing processes could be observed: in 14 macroregions the population increased in the metropolitan area and decreased in the regional hinterland, while in five macroregions the reverse process took place. The former situation involved mostly Central and Eastern European macroregions, ranging from Sofia and Bucharest through Prague and Warsaw to Berlin and Vienna, as well as Athens and Naples (Fig. 21a, p. 127–128). The greatest polarisation between these processes could be observed in the macroregions of smaller cities such as Varna (MA: +4.0%; RH: -7.8%), Graz (MA: +5.6%, RH: -1.2%) and Bergen (MA: +3.0; RH: -0.6%). Meanwhile, the depopulation of metropolitan areas coupled with a simultaneous population increase in their regional hinterlands was a process that could primarily be observed in the UK macroregions of Belfast, Cardiff and the polycentric region of Central England, as well as the German Rhine-Ruhr and Genoa in Italy.

In the macroregions with a growing population, the increase was as a rule higher in metropolises than in their regional hinterlands (31 of 46 macroregions). However, this correlation could not be observed in the case of population decrease: in eight macroregions, it more strongly affected the metropolitan areas, and in seven cases – the regional hinterlands of metropolises.

A relatively small number of macroregions (London, Paris, Milan, Lyon, Stuttgart) recorded a positive natural increase both in the metropolis

and in its hinterland (Fig. 21b, p. 127). In other macroregions, particularly in Western Europe, the positive natural increase model prevailed in metropolitan areas, with a simultaneous population decrease in the regional hinterland. Meanwhile – with few exceptions – CEE countries and northern Germany noted more deaths than births in both constituent parts of metropolitan macroregions.

Table 14. Demographic trends in metropolitan areas and their regional hinterlands (2000-2005)

| Type of macroregion       | Population change | Natural increase | Migration balance |
|---------------------------|-------------------|------------------|-------------------|
| Increase MA > Increase RH | 31                | 16               | 27                |
| Increase MA < Increase RH | 15                | 10               | 29                |
| Increase MA & Decrease RH | 14                | 16               | 12                |
| Decrease MA < Decrease RH | 7                 | 23               | 5                 |
| Decrease MA > Decrease RH | 8                 | 12               | 4                 |
| Decrease MA & Increase RH | 5                 | 3                | 3                 |

Source: prepared by the author.

The changes taking place in the component parts of the surveyed macroregions were quite distinctly correlated (Tab. 15). In particular, this was true for the natural increase ( $k = 0.76$ ). In contrast, migration processes were not as strongly interlinked ( $k = 0.52$ ), which in some macroregions could point to movements of people between the metropolis and its hinterland, directed to metropolitan areas. At the same time, the relativisation of the population dynamics in metropolitan macroregions to the situation in individual countries revealed a negative correlation: a population increase in the metropolitan area faster than the average national increase denoted a smaller than average increase of the population in the regional hinterland. This was mainly due to the differences in the migration balances. We can conclude therefore that the compatibility of demographic trends observable in macroregions largely resulted from the differences between individual countries (Fig. 21), whereas the dominant trend observable in individual countries was the concentration of the population in metropolitan areas.

The analysis of extreme cases produced interesting information which helped interpret the phenomena described above as it placed them more specifically in their regional context (Tab. 16). In the group of five metropolitan areas with the greatest demographic dynamics, there were three Spanish cities: Madrid, Valencia and Barcelona, Toulouse (France) and Dublin (Ireland). Interestingly, in as many as three of these cases (Valencia, Dublin and Barcelona), the rate of population increase in the

regional hinterland was faster than in the metropolitan area, which proved a high migration attractiveness of these macroregions (probably owing to natural environmental assets).

Table 15. Correlation between changes in metropolises and their regional hinterlands (2000-2005)

| <b>Regional hinterland</b>                              | <b>Population change</b> | <b>Natural increase</b> | <b>Migration balance</b> |
|---|--------------------------|-------------------------|--------------------------|
| <b>Metropolitan area</b>                                |                          |                         |                          |
| <b>a) nominal values</b>                                |                          |                         |                          |
| Population change                                       | 0.64**                   | 0.38*                   | 0.60**                   |
| Natural increase  | 0.52**                   | 0.76**                  | 0.37*                    |
| Migration balance                                       | 0.45**                   | 0.01                    | 0.52**                   |
| <b>b) values relativised using the national average</b> |                          |                         |                          |
| Population change                                       | -0.56**                  | -0.28*                  | -0.51**                  |
| Natural increase  | -0.21                    | -0.43**                 | -0.05                    |
| Migration balance                                       | -0.60**                  | -0.14                   | -0.63**                  |

Source: prepared by the author.

Table 16. Extreme cases in terms of population change in the metropolitan area

| <b>Metropolitan macroregion</b>                            | <b>Metropolitan area</b>     |                             |                              | <b>Regional hinterland</b>   |                             |                              |
|--|------------------------------|-----------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|
|  | <b>Population change (%)</b> | <b>Natural increase (‰)</b> | <b>Migration balance (‰)</b> | <b>Population change (%)</b> | <b>Natural increase (‰)</b> | <b>Migration balance (‰)</b> |
| <b>Metropolitan areas with highest population increase</b> |                              |                             |                              |                              |                             |                              |
| Madrid   | 12.2                         | 4.2                         | 18.8                         | 5.5                          | -0.9                        | 11.7                         |
| Toulouse   | 8.9                          | 5.0                         | 12.1                         | 5.4                          | -1.3                        | 11.8                         |
| Valencia   | 8.7                          | 1.1                         | 15.7                         | 15.7                         | 3.0                         | 26.1                         |
| Dublin   | 7.7                          | 9.5                         | 5.2                          | 11.4                         | 6.6                         | 14.9                         |
| Barcelona  | 7.5                          | 2.0                         | 12.4                         | 14.4                         | 1.0                         | 26.0                         |
| <b>Metropolitan areas with highest population decrease</b> |                              |                             |                              |                              |                             |                              |
| Łódź   | -2.3                         | -4.3                        | -0.2                         | -1.1                         | -1.3                        | -1.1                         |
| Riga   | -2.3                         | -4.7                        | -0.1                         | -3.2                         | -4.4                        | -2.1                         |
| Leipzig/Halle  | -2.3                         | -3.1                        | -0.4                         | -6.6                         | -5.5                        | -7.1                         |
| Bratislava   | -2.6                         | -1.2                        | -4.0                         | -0.7                         | -1.8                        | 0.5                          |
| Glasgow  | -2.7                         | -0.6                        | 0.2                          | -1.3                         | -1.9                        | 1.6                          |

Source: prepared by the author.



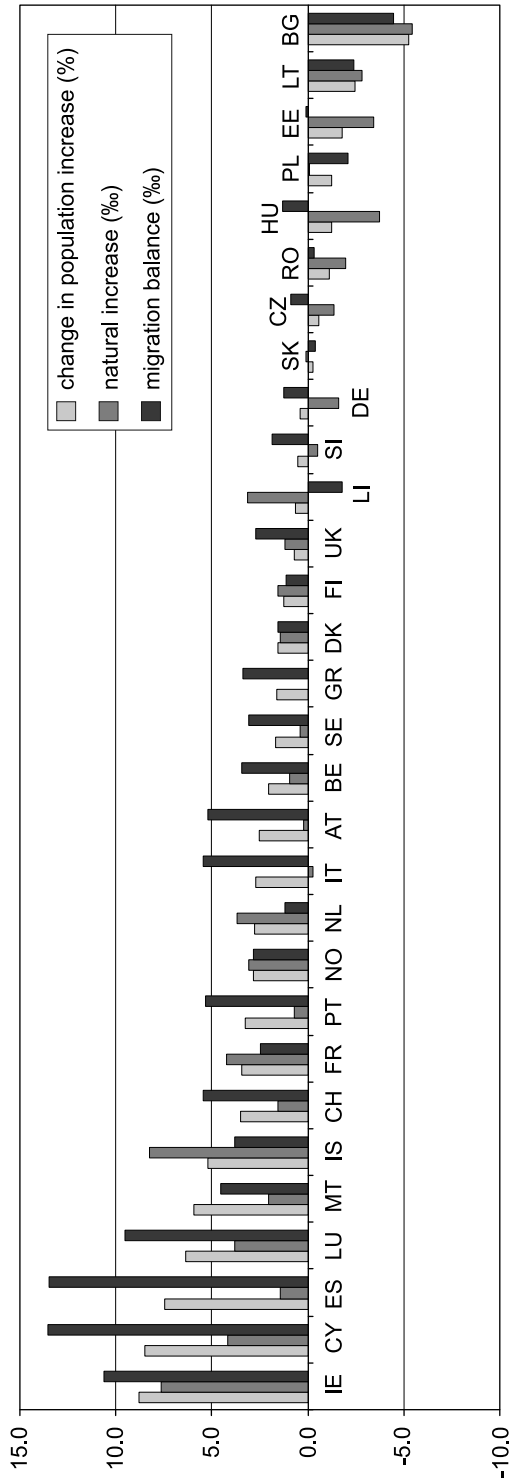


Figure 17. Demographic situation by ESPON countries in 2005

Source: prepared by the author.

Meanwhile, among the five metropolitan areas where population decrease was the fastest were old industrial districts such as: Łódź (Poland), Leipzig/Halle (Germany), Glasgow (Scotland), as well as two capital city regions of the new Member States, i.e. Riga and Bratislava. And, while the regional hinterlands of Glasgow and Bratislava had a positive migration balance – suggesting suburbanisation processes going beyond the metropolitan area boundaries – in the remaining cases the reduction of the population clearly affected the two component parts of macroregions.

In the analysis of the impact of the settlement system on demographic processes, a few simple indicators<sup>2</sup> were used such as:

- The population size and density in the metropolitan area and its regional hinterland;
- The share of the largest city (within its administrative boundaries) in the population of the metropolitan area and in the population of the regional hinterland;
- The ratio between the population of the largest cities (within their administrative boundaries) in the metropolitan area and the regional hinterland.

It turned out that the structure of the settlement system shown in this manner was not distinctly correlated with demographic processes. The only significant if weak correlations could be observed between the following indicators (in brackets, values of the *k* coefficient with the significance level of 0.05):

- The population size of the metropolitan area and the natural increase in the metropolitan area (0.27);
- The share of the city in the population of the metropolitan area and migration inflow into the city (0.26) as well as the natural increase in the regional hinterland (-0.36);
- The population size of the regional hinterland and the natural increase both in the metropolis (0.25) and in the regional hinterland (0.23);
- The migration inflow to the metropolitan area and the population density in the regional hinterland (-0.24);
- The size of the largest city of the regional hinterland and the natural increase in the regional hinterland (0.28);
- The ratio of the population density in the centre and that in the regional hinterland and the population increase in the metropolitan area (0.27).

The majority of these correlations were most likely merely superficial, due to the impact of extreme cases, which can be distinctly seen in the scatter diagrams. In some cases the correlations were indirect, related to other factors such as differences in the age structure of the population of the

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<sup>2</sup> Data derived from the most recent Urban Audit (2003-2006).

macroregions' component parts, as well as differences in the immigrants' areas of origin.

Based on our analyses, we can propose the following conclusions relating to the demographic development of metropolitan macroregions in the years 2000-2005:

- The population increase observable in most metropolitan macroregions helped strengthen their role in the analysed countries;
- The population increase in metropolitan macroregions was mainly caused by migration inflows (positive migration balance both in the metropolitan areas and in the regional hinterland of the metropolis), which was probably connected with the segmentation of migration – young people of working age would immigrate to metropolitan areas to seek employment or to study, whereas middle-aged or retired people would move to areas situated further from the centre, seeking a higher quality of life and better living conditions;
- Natural increase played a smaller role in the population dynamics, and was, as a rule, positive in metropolitan areas and negative in regional hinterlands, which in all probability was caused by the differences in the age structure of the population: metropolises were to a larger extent inhabited by people of reproduction age, whereas people in older age groups accounted for a larger share of the population in the regional hinterlands;
- In light of the research, the structure of the settlement system, measured using simple indicators (population density, degree of polycentricity), did not have any substantial bearing on these processes.

### **The economic structure**

There were marked differences between the surveyed macroregions in terms of economic structure<sup>3</sup>. The smallest differences could be observed in the agricultural sector as its share in the gross value added (GVA) in 2005 was on average 2.1%, exceeding 5.0% only in few macroregions. The role of industry was more varied, with differences ranging from 15.4% to 41.5%

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<sup>3</sup> The economic structure of metropolitan macroregions (N = 79) was analysed on the basis of 2003 EUROSTAT data on gross value added (GVA) for three main sectors: agriculture, industry and construction, and services for NUTS3 entities. In addition, for some macroregions (N = 77), the internal structure was analysed taking into account three aspects: 'simple' services (sections: G: trade and repairs, H: hotels and restaurants, I: transport, storage and communication), 'advanced' services (J: financial intermediation; K: real estate, renting and business activities), and 'public' services (L: public administration, M: education, N: health and social work, O: community services). These data were derived from the IGEAT database created for the needs of the project based on the NUTS3 system for 2006.

– and its share in GVA reached on average 28.2%. Similarly, the services sector had a nearly 70% share in GVA, oscillating from 56.2% to 83.5%.

In the years 1998-2005, the share of the agricultural sector in the value of products and services fell systematically in all macroregions (Tab. 17). The reduced share of agriculture was more strongly visible in non-metropolitan areas (-1.9pp) as this sector had already played a lesser role in the economies of metropolitan areas (on average, 1.1% of GVA). At the same time, deindustrialisation processes affected metropolitan areas more strongly (-2.5pp), while in their regional hinterlands, industry was still a significant player despite a 1.5pp decrease (32.5%). As a result of these processes, the share of the services sector increased by 3.1pp in metropolises, mostly at the expense of industry, and by 3.2pp in the regional hinterland – which is a reflection of the waning of the traditional agriculture-and industry-based economy.

Table 17. Basic economic structure indicators in metropolitan macroregions

| Component part      | Agriculture   |                           | Industry and construction |                           | Services      |                           |
|---------------------|---------------|---------------------------|---------------------------|---------------------------|---------------|---------------------------|
|                     | % GVA in 2005 | Change in pp in 1998-2005 | % GVA in 2005             | Change in pp in 1998-2005 | % GVA in 2005 | Change in pp in 1998-2005 |
| Metropolitan area   | 1.1           | -0.7                      | 25.5                      | -2.5                      | 73.4          | 3.1                       |
| Regional hinterland | 4.2           | -1.9                      | 32.5                      | -1.5                      | 62.4          | 3.2                       |

Source: prepared by the author.

While in the case of agriculture, the directions of changes in both component parts of the majority of macroregions were convergent, the situation in industry and services was much more complex (Tab. 18). In about 20 macroregions, opposing tendencies relating to the role of these sectors in the metropolis and in the region could be observed.

In the vast majority of macroregions, deindustrialisation was the dominant process; it progressed at a particularly fast rate in the regional surroundings of large cities in the United Kingdom, Italy, France, Benelux countries and Germany (with the exception of Stuttgart and Erfurt) (Fig. 22a, p. 129). In some macroregions, these processes of relative deindustrialisation of metropolitan areas were accompanied by an increased role of industry in the regional hinterland. Here, examples include the capital city macroregions of CEE countries (including Austria) as well as some regions of Spain (Valencia, Saragossa). A growing role of industry was seen only in a very small number of macroregions, either in metropolitan areas, e.g.: Bilbao, Stuttgart, Thessaloniki, Graz, Innsbruck

or Erfurt, or in regional hinterlands, e.g. Madrid, Seville or Bratislava. As a matter of course, increased industrialisation was followed by a relative diminishing of the significance of the service sector in the economy.

Table 18. Structural trends in the metropolitan areas and their regional hinterlands (1998-2005)

| Type of macroregion         | Share of agriculture | Share of industry | Share of services |
|-----------------------------|----------------------|-------------------|-------------------|
| Increase MA > Increase RH   | 0                    | 6                 | 24                |
| Increase MA < Increase RH   | 0                    | 3                 | 35                |
| Increase MA and Decrease RH | 1                    | 6                 | 7                 |
| Decrease MA < Decrease RH   | 27                   | 13                | 1                 |
| Decrease MA > Decrease RH   | 51                   | 37                | 0                 |
| Decrease MA and Increase RH | 0                    | 14                | 12                |

Source: prepared by the author.

The role of the services sector grew relatively faster in non-metropolitan locations. Nevertheless, in some areas of Europe (northern England and Scotland, northern Italy, the regions of some cities in Central and Eastern Europe and in northern Germany), this sector developed relatively faster in metropolises than in their hinterlands (Fig. 22b, p. 129). Moreover, opposing tendencies concerning the development of this sector could be frequently observed in the metropolis-region context. As a rule, this led to a relative increase in the concentration of the services sector, particularly in the capital city regions of CEE countries. Meanwhile, a relative deconcentration of services was particularly distinct in Spanish macroregions (Madrid, Bilbao), some regions of Germany (Stuttgart, Erfurt) and Austria (Innsbruck, Graz) and, to a lesser extent, in some of CEE countries (Budapest, Sofia, Bucharest).

A synthetic view of the structural differences between the metropolis and the region for the three principal sectors can be shown using the dissimilarity index (DS), expressed by the following formula:

$$DS = \sum_{i \rightarrow N} |a_i/A - b_i/B| / 2$$

where:  $i$  – sector of the economy,  $a/A$  – GVA of the metropolitan area,  $b/B$  – GVA of the regional hinterland.

This index can be expressed as a percentage and can assume values from 0 – total similarity, to 100 – denoting the total dissimilarity of the economic structure.

In the period 1998-2005, the average structural similarity rate within metropolitan macroregions was very high (ca. 11%) as well as stable (only 0.2% change). Nevertheless, significant differences were observable between macroregions, with the figures ranging from 0% to 40%. At the same time, the pace of changes in the economic structure was similar in the metropolis- region context, reaching 3.7pp in metropolitan areas and 4.1pp in regional hinterlands.

Structural disparities were particularly high in capital city macroregions of CEE countries (Warsaw, Budapest, Sofia, Bucharest, Vilnius, Ljubljana, Bratislava, Prague), including Greece (Athens) (Fig. 23, p. 130). At the same time, some macroregions were internally homogenous in terms of economic structure, e.g. the Spanish regions of Barcelona, Valencia, Seville, Emilia-Romagna in Italy or selected regions of northern Germany (e.g. Hamburg and Bremen), as well as southern Germany (e.g. Stuttgart, Nuremberg). On the other hand, changes in the dissimilarity index values were rather 'patchy' spatially. The differences in this respect generally increased in CEE countries, northern England and Scotland, and in selected regions of Germany (Hamburg, Munich, Rhine-Ruhr), Italy (Turin, Milan, Florence), Spain (Valencia, Seville) and Greece (Athens). In contrast, in some of the major Western European macroregions (including London and Paris), the economic structures of the metropolis and the regional hinterland became increasingly similar.

The structural changes in the metropolis and in the region did not show any significant correlation. This means that, for instance, the increased significance of the services sector in the metropolis did not imply specific structural changes in the regional hinterland. In effect, there existed wide disparities in this regard between macroregions, which could be seen as proof of the *differentia specifica* of each metropolis-region system.

This is also corroborated by the analysis of five extreme cases in terms of decreased similarity in economic structure. In some (e.g. Warsaw and Athens), the deindustrialisation process progressed rapidly in metropolises, accompanied by a simultaneous development of the production sector in their regional hinterlands (Tab. 19). However, in other macroregions (e.g. Edinburgh) the speedy development of the metropolitan service sector was accompanied by a deindustrialisation process in the regional surroundings. Meanwhile, the unique character of the region of Groningen, a city in northern Holland, was expressed by the fact that the significance of industry in the economy increased – quite a typical situation in smaller urban centres which do not perform significant service functions for external parts of the regional hinterland.

In the contemporary information economy, the increasing role of specialised B2B services is extremely important as compared to other types

of services. The analysis investigating the share of specialised services in two NACE sections (J – financial mediation and K – real estate, renting and business activities to simple services such as: trade and repair, (G), transporting, storage and communication (H) as well as hotels and restaurants – I) shows that the higher the share of services in the economy of a given macroregion the higher the share of specialised services (Tab. 20).

Table 19. Extreme cases in terms of the dissimilarity of economic structures

| Macroregion                | GVA in agriculture |                           | GVA in industry and construction |                           | GVA in services |                           |
|----------------------------|--------------------|---------------------------|----------------------------------|---------------------------|-----------------|---------------------------|
|                            | % in 2005          | Change in pp in 1998-2005 | % in 2005                        | Change in pp in 1998-2005 | % in 2005       | Change in pp in 1998-2005 |
| <b>Metropolitan area</b>   |                    |                           |                                  |                           |                 |                           |
| Warsaw                     | 1.1                | -0.5                      | 18.5                             | -8.2                      | 80.4            | 8.7                       |
| Athens                     | 0.4                | -0.2                      | 15.0                             | -3.8                      | 84.6            | 4.0                       |
| Riga                       | 1.3                | 0.0                       | 19.6                             | -8.5                      | 79.0            | 8.6                       |
| Groningen                  | 1.3                | -0.7                      | 51.2                             | 2.5                       | 47.5            | -4.8                      |
| Edinburgh                  | 0.4                | -0.2                      | 16.8                             | -9.5                      | 82.8            | 9.7                       |
| <b>Regional hinterland</b> |                    |                           |                                  |                           |                 |                           |
| Warsaw                     | 13.2               | -2.6                      | 30.9                             | 3.5                       | 55.9            | -0.9                      |
| Athens                     | 7.3                | -4.2                      | 47.8                             | 9.5                       | 44.9            | -5.3                      |
| Riga                       | 10.4               | 1.1                       | 27.1                             | -0.9                      | 62.4            | -0.2                      |
| Groningen                  | 3.9                | -2.0                      | 28.4                             | -3.2                      | 67.8            | 2.2                       |
| Edinburgh                  | 2.1                | -1.0                      | 30.2                             | -3.5                      | 67.7            | 4.4                       |

Source: prepared by the author based on EUROSTAT data.

This correlation was visible equally in the metropolises and in their regional hinterlands. Furthermore, the metropolis' 'advancement' in services, understood as a high share of specialised services in Gross Value Added, had a positive though smaller impact on the services sector in the regional hinterland. The role of simple services was different: their high share in the metropolitan economy generally implied a small share of services in the regional hinterland's GVA, and therefore broader differences in the role of services between the metropolis and the region.

This correlation can hypothetically indicate situations when the provision of simple services to the regional hinterland by the metropolitan centre obstructs the development of such services in the regional hinterland and leads to the so-called 'shadow effect' of the metropolis. However, a comparative analysis of the service sector structure shows a positive correlation between the role of the simple services sector in the metropolis

and in the regional hinterland (Tab. 21). Moreover – and very interestingly – a higher share of simple services in the metropolitan economy implies a smaller role of the specialised services sector and (albeit to a lesser extent) public services in the regional hinterland's economy. This interrelationship is difficult to explain, and it should be borne in mind that it could be coincidental, caused by an interplay of other factors not included in this part of the study.

Table 20. Correlation between the share of specialised services in GVA and the role of the service sector (2002)

|   | Metropolitan<br>area (MA)<br>– share<br>of services<br>in GVA | Regional<br>hinterland<br>(RH) – share<br>of services<br>in GVA | Ratio<br>of services'<br>share in GVA<br>(MA/RH) |
|---|---|---|--|
| <b>Share of specialised services in GVA</b> |   |   |  |
| – metropolitan area                         | 0.61**  | 0.42**  | 0.01   |
| – regional hinterland                       | 0.19  | 0.59**  | -0.44**  |
| <b>Share of simple services GVA</b>         |   |   |  |
| – metropolitan area                         | 0.06  | -0.41**   | 0.46**   |
| – regional hinterland                       | 0.00  | 0.24*   | -0.25*   |

\*\* at the significance level of 0.01

\* at the significance level of 0.05

Source: prepared by the author.

Table 21. Correlation between the shares of different types of services in GVA in the metropolis and in the region (2002)

|                                  | Regional<br>hinterland | Share of simple<br>services | Share<br>of specialised<br>services | Share of public<br>services |
|----------------------------------|------------------------|-----------------------------|-------------------------------------|-----------------------------|
| <b>Metropolitan area</b>         |                        |                             |                                     |                             |
| share of simple services         |                        | 0.46**                      | -0.57**                             | -0.44**                     |
| share of specialised<br>services |                        | -0.28*                      | 0.59**                              | 0.26*                       |
| share of public services         |                        | -0.17                       | 0.13                                | 0.67**                      |

\*\* at the significance level of 0.01

\* at the significance level of 0.05

Source: prepared by the author.

Based on our analyses, we can draw the following conclusions concerning the changes in economic structure which took place in metropolitan macroregions in the years 1998-2005:



- The structural differences between the metropolis and the region are primarily due to the different roles of industry in the economy, whereas the differentiating significance of the agricultural sector, expressed as its share in gross value added, is only marginal.
- It is difficult to identify linkages between structural changes occurring in metropolises and in their regional hinterlands. In some regions, similar processes take place (e.g. an increasing role of services), whereas opposing trends can be observed in other macroregions (e.g. an increasing share of services in the metropolitan area's economy, accompanied by a simultaneous industrialisation of the metropolitan regional hinterland).
- The role of services in metropolitan areas results from a growing role of specialised services, whereas the service 'advancement' of the metropolis is usually accompanied by an increased role of services in the regional hinterland.
- A greater role of simple services in the metropolis is correlated with a smaller role of specialised and public services. However, finding a direct reason for this is difficult.

### **Labour market situation**

Analyses of the labour market situation<sup>4</sup>, reveal few disparities in this regard between the metropolis and the region as compared to demographic and structural aspects. In 2005, per 1000 inhabitants of the metropolitan region, on average ca. 448 were employees. In effect, the activity rate was 47.7%, with the rate of unemployment reaching 9.5%. In addition, despite favourable economic performance, there was no marked improvement in the situation in macroregional labour markets in the years 2002-2005. For instance, the average unemployment rate remained at a similar level even though the activity level improved, albeit slightly.

The surveyed component parts of macroregions, i.e. metropolitan regions and their regional hinterlands, differed mostly in terms of the number of employees per 100 inhabitants (Tab. 22), which was visibly higher in metropolises. This may be due to a higher percentage of the non-working age population and to commuting to work from locations beyond the boundaries of metropolitan areas. At the same time, the situation in

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<sup>4</sup> Data on the situation in macroregional labour markets used in the present study were derived from two EUROSTAT sources: ESA95 (European System of Accounts) – showing data on the number of employees by place of work, and LFS (Labour Force Survey) – providing data on the numbers of economically active population and unemployment rate by place of residence. The data from the former source referred to the NUTS3 level in 2003, and from the latter – to the NUTS3 system in 2006.

macroregional labour markets in terms of activity rate and unemployment rate was quite similar, with a slight prevalence (by about 2pp) of metropolitan areas over their regional hinterlands.

Table 22. Basic labour market indicators in metropolitan macroregions (2005)

|                     | Employees per 100 inhabitants |                           | Activity rate |                           | Unemployment rate |                           |
|---------------------|-------------------------------|---------------------------|---------------|---------------------------|-------------------|---------------------------|
|                     | % in 2005                     | Change in pp in 2000-2005 | % in 2005     | Change in pp in 2002-2005 | % in 2005         | Change in pp in 2002-2005 |
| Metropolitan area   | 48.8                          | 0.9                       | 48.9          | 1.3                       | 8.4               | -0.1                      |
| Regional hinterland | 41.0                          | 0.2                       | 46.6          | 0.9                       | 10.5              | 0.1                       |

Source: prepared by the author.

In addition, the labour market dynamics was fairly similar in the surveyed metropolises vs. the regions (Tab. 23). Generally, the labour market situation improved, mainly in metropolitan areas, and this was particularly evident in British, Spanish and CEE macroregions. In contrast, in many of German, French, Italian and Austrian macroregions the labour market situation deteriorated in both component parts. In the remaining countries, the situation varied from country to country, whereas the distribution of individual types of macroregions was rather patchy, which was particularly visible in Italy and Poland (Fig. 24, p. 132-133).

Table 23. Labour market trends in metropolises and their regional hinterlands

| Types of macroregions       | Employees per 100 inhabitants | Activity rate (%) | Unemployment rate (%) (reversed scale) |
|-----------------------------|-------------------------------|-------------------|--|
| Increase MA > Increase RH   | 24                            | 24                | 11                                     |
| Increase MA < Increase RH   | 15                            | 13                | 7                                      |
| Increase MA and Decrease RH | 7                             | 2                 | 16                                     |
| Decrease MA < Decrease RH   | 1                             | 21                | 15                                     |
| Decrease MA > Decrease RH   | 17                            | 5                 | 20                                     |
| Decrease MA and Increase RH | 10                            | 9                 | 5                                      |

Source: prepared by the author.

The situation and changes in the labour market situation were quite similar in the analysed metropolises and regions. In particular, an improved situation in the metropolitan labour market generally implied an

improvement in the regional hinterland's labour market, mostly with regard to the unemployment rate ( $k = 0.68$ ) and the number of employees per 100 inhabitants ( $k = 0.72$ ). In contrast, the intraregional correlation in terms of activity rate changes was weaker ( $k = 0.54$ ). In 2005, the correlation between the values of the three analysed indicators (i.e. employees, activity rate and unemployment rate) in the metropolis and in the region remained at a similar level. Furthermore, in 2005 a high level of unemployment in metropolises was strongly correlated statistically with a small percentage of employees per 100 inhabitants in the regional hinterland, which is difficult to interpret. It could well be that this was caused by the negative impact of the metropolis' problems on cooperation linkages between the metropolis and the region.

Table 24. Correlation between labour market situation and change in the metropolis and its regional hinterland]

| <b>Metropolis \ Region</b>    | <b>Employees per 100 inhabitants</b> | <b>Activity rate</b> | <b>Unemployment rate</b> |
|-------------------------------|--------------------------------------|----------------------|--------------------------|
| <b>a) status (2005)</b>       |                                      |                      |                          |
| Employees per 100 inhabitants | 0.58**                               | 0.30*                | -0.33*                   |
| Activity rate                 | 0.15                                 | 0.52**               | -0.07                    |
| Unemployment rate             | -0.77**                              | -0.24*               | 0.58**                   |
| <b>b) change (2002-2005)</b>  |                                      |                      |                          |
| Employees per 100 inhabitants | 0.72**                               | -0.02                | -0.59**                  |
| Activity rate                 | 0.06                                 | 0.54**               | 0.22*                    |
| Unemployment rate             | -0.53**                              | 0.33*                | 0.68**                   |

\*\* at the significance level of 0.01

\* at the significance level of 0.05

Source: prepared by the author.

It should be pointed out that the labour market dynamics in the surveyed metropolises and regions was significantly shaped by the economic performance in the country at large. In the years 2002-2005, the situation in this respect varied from country to country. The highest fall in the unemployment rate was recorded in CEE countries (except Bulgaria), mostly the Baltic countries (Lithuania, Latvia, Estonia), as well as Poland, Slovakia and Romania. Meanwhile, among the EU-15, the situation improved in Spain and Italy, and deteriorated – though not as strongly – in Germany, Portugal, Sweden and the Netherlands (Fig. 18).

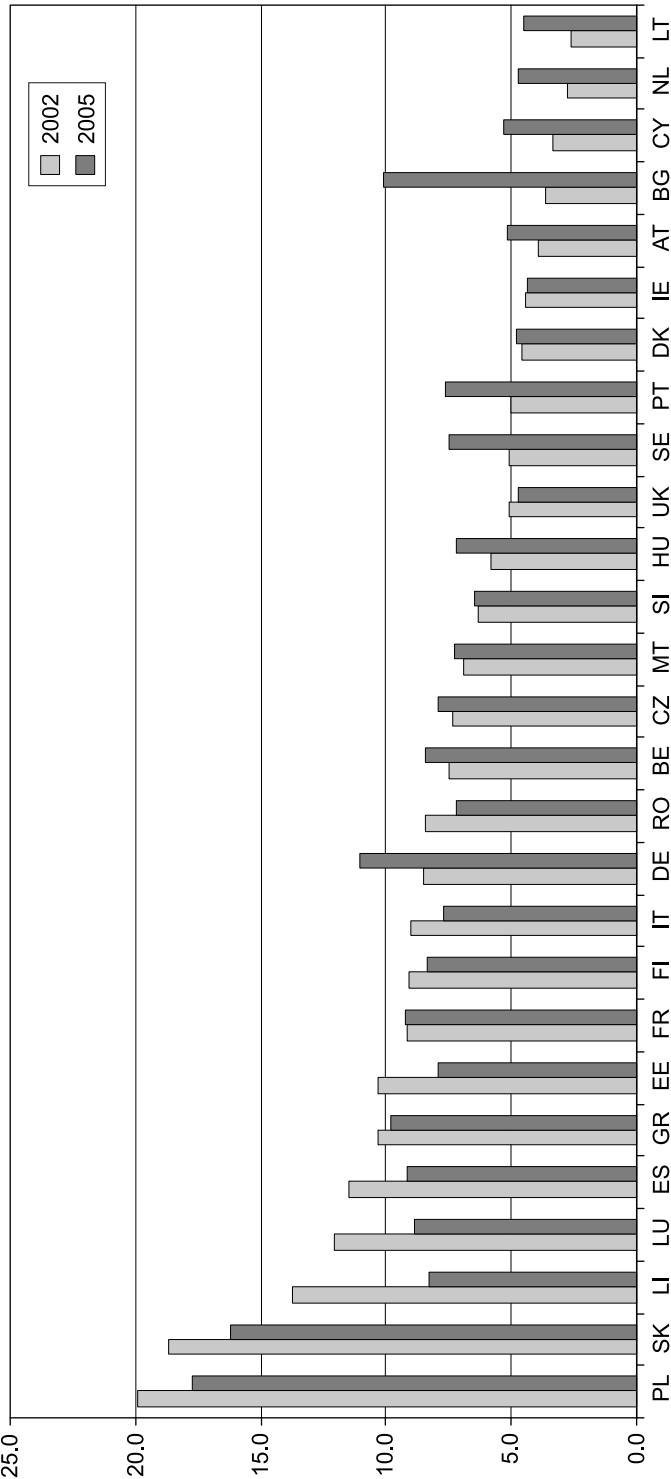


Figure 18. Changes in unemployment rate by ESPON country in 2002-2005  
Source: prepared by the author.

To some extent, the tendencies described above are reflected in an analysis of extreme cases (Tab. 25). For instance, the most significant unemployment rate decreases, measured in percentage points, could be observed in the metropolises of Southern Europe: in Naples (Italy) and Seville (Spain) as well as in Central and Eastern Europe: Vilnius (Lithuania), Varna and Sofia (Bulgaria). As unemployment fell, the number of employees per 100 population increased rapidly, which was particularly visible in Bulgaria. The unemployment rate also fell in the regional hinterlands of these metropolises (except Naples). As a result, the situation in regional labour markets became more uniform – except in Seville and Varna, where unemployment was still felt more acutely in the metropolis' regional hinterland.

At the same time, the labour market situation deteriorated most alarmingly (with an increase in the unemployment rate of 3-5pp) in four German metropolises, and in Porto (Portugal). These processes affected the metropolises and their regional hinterlands equally strongly, as a result of which the unemployment rate was similar across the entire macroregion. Here, the differentiating factor (between the metropolis and the region) was the number of employees per 100 inhabitants, which oscillated between 45-52 in the metropolitan area and between 39-48 in the regional hinterland of the metropolis.

The fact that economic growth occurred without fostering a distinct improvement in the labour market situation was perhaps mainly due to an increase in labour productivity. Productivity in the surveyed metropolitan macroregions differed from region to region (Tab. 26). A comparison of productivity in industry and in services (without taking internal differences between them into account) points to a higher productivity in the former sector (by 13% higher in the metropolis and 11% in the regional hinterland), characterised by an increasing tendency concerning these disparities (ca. 5-6pp in 2002-2005). Meanwhile, productivity in industry was even 2.5 to 3 times higher than in agriculture both in the metropolis and in the regional hinterland, and this ratio increased tangibly during the three years.

A comparison of metropolitan areas and regional hinterlands in terms of labour productivity revealed that while productivity in agriculture was on the whole similar and becoming increasingly uniform in the period in question (1998-2005), the disparities in the two remaining sectors were significant and growing wider (Tab. 27). Labour productivity in the industrial sector in metropolises was around 17% higher than in their regional hinterlands. The scale of disparities in labour productivity was similar in the service sector (14%). Nevertheless, owing to substantial internal differences in the sector, it was predictably much higher in the case of specialised services, and lower in the sector of simple and public services.

Table 25. Extreme cases in terms of unemployment rate changes in the metropolitan area

| Macroregion   | Metropolitan area |                           |                              | Regional hinterland |                           |                              |
|---|-------------------|---------------------------|------------------------------|---------------------|---------------------------|------------------------------|
|   | Unemployment rate |                           |                              | Unemployment rate   |                           |                              |
|   | % in 2005         | Change in pp in 2002-2005 | Employed per 100 inhabitants | % in 2005           | Change in pp in 2002-2005 | Employed per 100 inhabitants |
| <b>Metropolitan areas with highest unemployment rate decrease</b> |                   |                           |                              |                     |                           |                              |
| Naples  | 15.2              | -7.2                      | 31.5                         | 14.1                | -0.3                      | 31.5                         |
| Seville   | 13.9              | -6.3                      | 37.9                         | 17.1                | -8.6                      | 34.9                         |
| Vilnius   | 8.6               | -5.9                      | 46.6                         | 7.1                 | -8.1                      | 40.5                         |
| Varna   | 9.5               | -5.8                      | 46.2                         | 16.7                | -10.8                     | 41.0                         |
| Sofia   | 8.0               | -4.7                      | 53.5                         | 10.3                | -7.1                      | 39.7                         |
| <b>Metropolitan areas with highest unemployment rate increase</b> |                   |                           |                              |                     |                           |                              |
| Saarbrücken   | 11.4              | 3.3                       | 50.8                         | 10.2                | 3.5                       | 39.3                         |
| Hanover   | 11.0              | 3.3                       | 51.1                         | 10.8                | 2.8                       | 41.4                         |
| Ruhr-Rhine  | 11.3              | 3.6                       | 47.2                         | 08.8                | 2.8                       | 44.8                         |
| Bremen  | 11.6              | 4.5                       | 48.0                         | 11.7                | 4.6                       | 43.5                         |
| Porto   | 10.8              | 4.8                       | 46.1                         | 7.4                 | 3.5                       | 48.5                         |

Source: prepared by the author.

Table 26. Differences in labour productivity between sectors and their changes

| Ratio                  | Metropolitan area |      | Regional hinterland |      |
|------------------------|-------------------|------|---------------------|------|
|                        | 2002              | 2005 | 2002                | 2005 |
| Industry / Services    | 1.07              | 1.13 | 1.07                | 1.11 |
| Industry / Agriculture | 2.66              | 3.14 | 2.44                | 2.70 |

Source: prepared by the author.

Table 27. Ratio of labour productivity between the metropolis and the region in metropolitan macroregions

|                                 | Agriculture |                           | Industry   |                           | Services   |                           |
|---------------------------------|-------------|---------------------------|------------|---------------------------|------------|---------------------------|
|                                 | 2005 ratio  | Change in pp in 1998-2005 | 2005 ratio | Change in pp in 1998-2005 | 2005 ratio | Change in pp in 1998-2005 |
| Labour productivity ratio MA/RH | 1.03        | -0.03                     | 1.17       | 0.02                      | 1.14       | 0.01                      |

Source: prepared by the author.

## Summary

Based on our analyses, we can propose the following conclusions concerning the situation in the macroregional labour markets in 1998-2005:

- The pool of labour in metropolitan areas was higher and better utilised than in regional hinterlands;
- There were marked linkages between the labour market situation in metropolises and in their regional hinterlands, but this applied to the dynamics rather than the situation on the macroregional labour market – and was largely a consequence of changes in the nation-wide labour market;
- The situation in macroregional labour markets was rather stable despite a period of good economic performance, and economic growth was mostly produced by an increase in productivity;
- The disparities in productivity between the metropolis and the region were relatively wide, in both industrial and services sectors.

### *Multidimensional coherence of metropolitan macroregions*

Intraregional cohesion should be evaluated not only in terms of equalising the development level disparities between the metropolitan area and its further regional hinterland, but – more importantly – in terms of the correspondence between the directions of change in both these territorial

systems. In addition to the strictly economic dimension (GDP per capita), these transformations may relate to other aspects, e.g. demographic and structural aspects as well as the labour market situation. To evaluate the similarity of intraregional changes in metropolitan macroregions, nine of the following variables were selected:

- Demographics: population change, natural increase, migration balance;
- Economic structure: changes in the share of agriculture, industry and services;
- Labour market: changes in the number of employees per 100 population, changes in the economic activity and unemployment rates.

The next step was to assess these variables, and the following changes were regarded as positive: population increase, positive natural increase and migration balance; an increased role of services in the economy and reduced role of agriculture; an increase in the number of employees and activity rate, as well as a reduction in the unemployment rate. In the case of industry, owing to the significance of the sector’s internal structure, we decided to forgo assessment at this level of aggregation.

Table 28. Compatibility in the directions of change in metropolitan macroregions

| Similarity in directions of change<br>(0 or 1 indicator) |                | Dissimilarity in directions of change<br>(2 or more indicators) |                |                            |                |
|--|----------------|---|----------------|----------------------------|----------------|
| N = 31   |                | N = 43  |                |                            |                |
| MA favourable*   | RH favourable* | High<br>(4 or more indicators)                                  |                | Low<br>(2 or 3 indicators) |                |
| N = 12   | N = 19         | N = 8   |                | N = 35                     |                |
|  |                | MA favourable*  | RH favourable* | MA favourable*             | RH favourable* |
|  |                | N = 8   | N = 0          | N = 20                     | N = 15         |

\* at least 5 indicators

Source: prepared by the author.

In some of the surveyed metropolitan macroregions, there was some discrepancy in the directions of change (Tab. 28). As a rule, this divergence could only be observed for one of the three examined aspects (two or three analysed indicators in the case of 35 macroregions). Slightly more frequently, this was related to a greater number of positive trends in the metropolitan area (20 cases) than in the regional hinterland (15 cases). A wider divergence in directions of change (comprising four or more



indicators) was observed in as few as eight macroregions. Here, the predominance of positive trends in the metropolitan region was clearly visible, possibly due to the backwashing of development resources from the regional hinterland to the metropolis.

Meanwhile, the directions of intraregional changes were similar in 31 metropolitan macroregions (ca. 40%). As a rule, this resulted in the relative strengthening of the role played by the regional hinterland (19 cases), which could point either to its endogenous growth potential or to the positive effects of the diffusion of development processes generated by the metropolitan centre.

The distribution of the individual types of metropolitan macroregions in the European space was quite patchy and did not easily yield to generalisation (Fig. 25, p. 134). The widest intraregional dissimilarity in directions of change could be observed in macroregions situated in Central and Eastern Europe (six of eight cases). These included the capital city macroregions of: Warsaw, Bucharest, Sofia, Ljubljana, as well as Wrocław and Dresden. The group also included Athens and Saarbrücken. Lesser dissimilarities (also with an excess of more favourable trends for the metropolitan area than for the regional hinterland), were also quite common in CEE countries, e.g. Austria, the Czech Republic, Hungary and Lithuania, and in some Italian and Spanish macroregions. This group also included the polycentric metropolitan macroregions of central England and the Netherlands. A certain discrepancy concerning development trends in a more favourable situation in the regional hinterland was visible in the remaining capital city macroregions: Paris, Lisbon, Dublin, Berlin, Tallinn, Helsinki and Bratislava. This group also included some macroregions in the United Kingdom, France and Italy. On the other hand, German macroregions, some British and Spanish macroregions (including London and Barcelona) as well as certain macroregions in Sweden and Latvia were characterised by full compatibility in the directions of change.

#### **4.2. TYPES OF METROPOLITAN MACROREGIONS**

The above analyses show that, despite some common characteristics, metropolitan macroregions of Europe represent a rather motley set in such aspects as the dynamics of economic growth, demographic processes, structural changes and labour market situation. This is largely the effect of development underpinned by dissimilar evolution of these territorial units through long-term historical processes. For these reasons, this section of the report set out to identify the key dimensions of the disparities among metropolitan areas and their regional hinterlands. These dimensions were then used to create separate classifications of metropolises and their

regions, and ultimately a typology of metropolitan macroregions. This typology served to analyse the dynamics of interregional disparities in the development level, which led to the formulation of certain generalisations concerning the development paths of individual types of macroregions.

In the analysis, a rather formalised procedure was adopted for identifying the key dimensions of disparities and typological classes of macroregions. Multivariate analyses (principal component analysis and cluster analysis) were used, in order to achieve some degree of objectivity in the results. Below, the variables used in the study are summarised, along with short descriptions of the methods applied.

Regional socio-economic disparities may be analysed both on the basis of specially selected variables, or in an exploratory manner, using the broadest possible spectrum of indicators. In the present study, the latter method was applied. We should also bear in mind that the selection of features was largely dependent on the availability of comparable data on NUTS3 subregions in the analysed countries. Ultimately, the data used for analyses were as follows:

- Level of economic growth: GDP per capita (EUR and the national average = 100);
- Demographic potential and characteristics of the settlement system: population size, population density (pp/km<sup>2</sup>), population of the metropolitan centre (actual number and % of the population of the metropolitan region);
- Economic structure: gross value added by basic sectors: agriculture, industry and services (%), gross value added by groups of services: simple, specialised and public (% of the total and % of the service sector);
- Labour productivity: productivity (EUR), productivity in basic economic sectors and groups of services (EUR and % of total productivity);
- Labour market: people in work (per 100 population), economic activity (%), unemployment rate (%).

Altogether, 25 variables were used in the analyses, some of which were complementary variables. Expanding this mix by indicators illustrating: human capital, level of innovation, social capital or the institutional environment, would certainly serve to offer a fuller picture of the major dimensions of disparities. Unfortunately, such data could not be taken into account due to the lack of relevant statistics for NUTS3 subregions in many of the analysed countries. Nonetheless, analyses carried out in Central and Eastern European regions (Smętkowski, Wójcik 2009) indicate that such indicators are correlated with the variables used in the study, and we can therefore assume that the dimensions of disparities associated with them could at least partly be identified owing to the application of multivariate methods of data analysis.

Factor analysis using the principal component method was applied to identify the major dimensions of disparities between the constituents of metropolitan macroregions. This method, exploratory in character, involves the reduction of variables which are replaced by weakly correlated principal components, which in fact represent the meta-dimensions of disparities. As a result, it is possible to reduce the number of variables without losing key information. The significance of the selected principal components results from their share in total variance; in further analysis, those components were used which better explain the disparities than a single component – in this case, the screen test was used (Catell 1966). As a next step, the number of variables was reduced using the correlation and factor method proposed by G. Gorzelak (1979). This method involves elimination of insignificant variables characterised by: a low value of the variation coefficient (adopted value: 0.1), a high degree of correlation (adopted value: 0.8), poor correlation with the adopted principal components before rotation (adopted value: 0.4). Then, to facilitate interpretation of the disparities' dimensions, the principal components were transformed orthogonally using the Varimax method. In naming the components, the spatial distribution of the values of individual components was used, as well as other background information.

In the next stage, all the above components of socio-economic disparities were used to offer a classification of the constituents of metropolitan macroregions. This classification was made using hierarchical cluster analysis and the Ward optimisation method. The advantage of this method lies in a considerable homogeneity of the typological classes, coupled with a tendency to identify many small clusters. On this basis, a classification tree was produced, which allowed for the identification of similar units. The similarity threshold was arbitrarily determined within the range of 20-30% of the maximum distance between the elements, and its actual height was dependent on the shape of the classification tree. Typological classes were identified on the basis of the average values of the analysed meta-traits and an analysis of their distribution as well as of other background information. The classes were given summary names.

### **Classification of metropolitan areas**

Based on the principal components analysis, we can distinguish four major dimensions to differentiate metropolitan areas in demographic and economic terms (Annex 4):

- Component 1, 'modern economy' (25% of the total variance), which referred to highly-developed service centres characterised by high labour productivity in industry and a good labour market situation;

- Component 2, 'population potential' (16% of the total variance), which referred to populous, densely populated and usually deindustrialised metropolitan areas with a significant role of the service sector (with specialised services in particular) in the economy;
- Component 3, 'national growth poles' (12% of the total variance), which referred to highly-developed metropolitan areas in countries with a relatively large share of simple services in the economy and a small role of public services;
- Component 4, 'weak suburban zone' (12% of the total variance), which referred to monocentric metropolitan areas with a low population density and low labour productivity in agriculture.

A better evaluation of the diagnostic value of the adopted components will be possible with an analysis of the spatial distribution of their actual values (Fig. 26, p. 135-136).

The high values of the first component were characteristic primarily of metropolitan areas situated in highly-developed countries such as Germany (Frankfurt am Main and the south *Länder*), Austria, France (especially Paris) and Italy (northern part), the Nordic countries and Ireland. At the other extreme, there were metropolises in CEE countries, Greece and the Iberian Peninsula. To some extent (with the exception of the UK and the Netherlands) – this component indicated the classical economic dimension of European disparities, related to the modern character of the economy between the centre and the periphery.

The high values of the second component were mostly characteristic of the largest metropolitan areas, as a rule including the capital city: London, Paris, as well as Rome, Madrid, Berlin and Warsaw, in addition to former polycentric industrial conurbations: Rhine-Ruhr and Central England. The remaining capital cities (save for the smallest states) also had relatively high values of this component. In addition, other large urban centres such as: Frankfurt am Main, Milan, Lyon, Toulouse and Naples were included in this group. Meanwhile, the smallest values typified the industrialised metropolitan areas of smaller cities such as: Bilbao, Saragossa, Varna, Regensburg or Groningen. This component indicated the demographic dimension of the disparities, showing the major areas of population concentration with well-developed service functions catering to the national and supra-national economic areas.

The high values of the third component mostly indicated those metropolises which had a high development level in relation to their national economies; they were mainly capital cities, especially those situated in Central and Eastern Europe. These metropolises were quite frequently characterised by a considerable share of simple services in the form of well-developed trade, transport and tourist traffic functions. At

the other end of the scale, there were cities with a relatively low level of wealth compared to the national average, located in France, the UK, eastern Germany (not excluding Berlin), as well as central (not excluding Rome) and southern Italy. This component therefore shows the national dimension of disparities, associated with inter alia services rendered by the major growth poles to their national economies.

The last principal component identifies metropolitan areas with a high degree of monocentrism, e.g. the demographic domination of the key urban centre, with a relatively high percentage of people employed in agriculture in the suburban zone (and thus a low productivity of labour in this sector). This group mainly included CEE metropolises (with Austria), as well as some of the metropolitan areas situated in Western Europe, e.g.: Toulouse, Edinburgh, Rome as well as Munich, Nuremberg and Stockholm. The remaining metropolises of the former EU-15 had average or low values of this component. Therefore this component best illustrates the agricultural dimension of disparities in the suburban zone of the metropolis along the European east-west axis.

Table 29. Average principal component values in identified types of regions

| Types of metropolitan areas   | Modern economy | Demographic potential | National growth pole | Weak suburban zone |
|---|----------------|-----------------------|----------------------|--------------------|
| (1) Highly-developed large service centres                                | 0.62           | 0.53                  | -0.20                | 0.38               |
| (2) Highly-developed small and monocentric metropolitan areas             | 0.87           | -0.87                 | 0.19                 | 1.61               |
| (3) Large polycentric metropolitan areas                                  | 0.32           | 2.04                  | 0.06                 | -1.16              |
| (4) Highly-developed small centres with nation-wide functions             | 0.79           | -0.70                 | 0.77                 | -0.82              |
| (5) Secondary national metropolitan areas                                 | -0.28          | -0.23                 | -1.66                | -0.47              |
| (6) Traditional monocentric metropolitan areas with nation-wide functions | -0.99          | 0.23                  | 1.40                 | 0.99               |
| (7) Traditional medium-sized metropolitan areas                           | -1.27          | -0.50                 | 0.14                 | -0.13              |

Source: prepared by the author.

It should be emphasised that the above principal components explain only some of the disparities between the analysed metropolitan areas

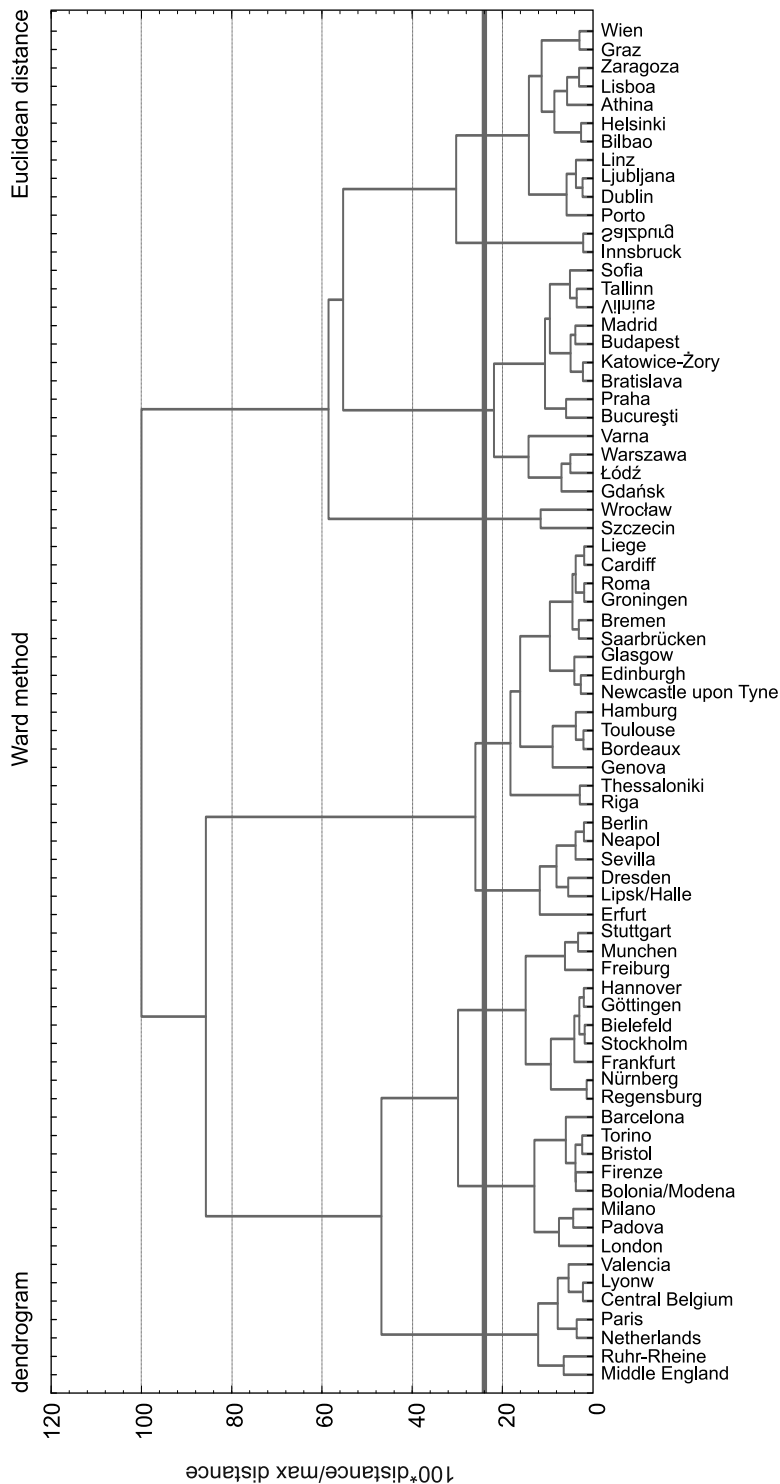


Figure 19. Classification of metropolitan areas – graph  
Source: prepared by the author.

(65.6% of the variance). This could suggest that other dimensions of disparities exist, not incorporated into our analysis, and associated for example with human or social capital or the institutional environment.

The values of these four principal components of the disparities were used in the classification of macroregions, the results of which are shown in Fig. 19.

In this case, identification of classes was not formalised; instead, it was based mainly on the analysis of the dendrite structure together with the spatial distribution of the identified types. On the basis of their distribution, analysis of their average values and other background information, individual typological classes were given summary names reflecting their specific character.

On this basis (Tab. 29; Fig. 27, p. 137), seven typological categories of metropolitan areas can be identified, which, with some degree of simplification, could be defined as follows:

- (1) Highly-developed large service centres. The French city of Lyon can be regarded as a typical example of this category, and similar metropolises could be found in many other countries, from Sweden to Portugal. This group of metropolitan areas also included a subgroup of capital city metropolises. Most of these areas were characterised by a relatively high level of population monocentrism.
- (2) Highly-developed small and monocentric metropolitan areas. The Austrian city of Salzburg was a typical example of this category, which could be found only in Austria and Slovenia. Their characteristic features also included low labour productivity in the agriculture of the suburban zone, which was probably associated with their location in mountain areas.
- (3) Large polycentric metropolitan areas. Two subtypes could be distinguished within this category, characterised by somewhat dissimilar economic structures: the service subtype: London, Paris and Randstadt Holland, and the industrial subtype: Rhine-Ruhr and Central England.
- (4) Highly-developed small metropolitan areas with nation-wide functions. The Italian Turin was a typical example of this category, characteristically encountered in northern Italy and southern Germany.
- (5) Secondary nation-wide metropolitan areas. The Belgian Liège was a typical example of this type, and its basic characteristic feature was its occurrence in countries with a complex settlement structure. It included e.g. metropolitan areas situated in eastern Germany, southern parts of Italy and Spain, as well as Scotland and northern England.
- (6) Traditional monocentric metropolitan areas with nation-wide functions. Tallinn (Estonia) was a typical example of this type, which included nearly all capital cities of CEE countries (except Budapest).



- (7) Traditional medium-sized metropolitan areas. Gdańsk (Poland) was a typical example of this category, which included primarily metropolitan areas situated in CEE countries, Greece and on the Iberian Peninsula. Most conspicuous members of this type in terms of size (measured by the population and functions performed) were the metropolitan areas of Athens and Barcelona.

### **Classification of the regional hinterland of metropolises**

On the basis of factor analysis, we can distinguish four major dimensions of disparities between the regional hinterlands of metropolises in terms of their demographic and economic potential (Annex 5):

- Component 1, 'modern economy' (20% of the total variance), which indicated regions with a highly-developed economy, a large share of services, high labour productivity (also in agriculture), and a good labour market situation;
- Component 2, 'well-developed labour market' (16% of the total variance), which indicated regions with a favourable labour market situation, a significant role of industry in the economy and a high level of development by comparison with the rest of the country;
- Component 3, 'demographic potential' (14% of the total variance), which indicated densely-populated regions with large cities and highly productive agriculture;
- Component 4, 'duality of the economy' (10% of the total variance), which indicated regions with low labour productivity in agriculture and high productivity of labour outside agriculture, characterised by a considerable share of simple services in the economic structure.

A better evaluation of the diagnostic value of the adopted components will be possible with an analysis of the spatial distribution of their actual values (Fig. 28, p. 138-139).

The first component showed disparities between macroregions regarding the level of economic development – which was higher in the EU core countries and lower in the former EU-15 cohesion countries and the new Member States. A high level of development was strongly correlated with a high share of the service sector in gross value added and a low share of industry in the economy, as well as high labour productivity in agriculture owing to a small number of employees in this sector. As a result, this component illustrated the classical dimension of disparities, linked to the modern economy in the European centre–periphery system.

The second component showed a favourable situation in the regional labour market with a relatively high role of industry in the economy. As a rule, such regions occupied a prominent place in the national economic



space. Regions with high values of this component made up a distinct cluster with its core in southern Germany, northern Italy and western Austria, and with a wide external zone comprising: central Germany, Czech Republic, eastern Austria and Slovenia. In addition, the high values of this component were characteristic of the regions of Barcelona and Porto, and of the regions of southern and central England. By contrast, the regional hinterlands of metropolises in CEE countries (including the former GDR), in France, Spain and southern Italy were characterised by low values of this component. Thus in general terms, this component illustrated well-developed labour markets in industrial regions.

The third component was associated with the existence of other large cities in the regional hinterland of the metropolis, coupled with a high population density and a relatively high labour productivity in agriculture. High values of this meta-dimension of disparities were characteristic of the regional hinterlands of Paris, London, metropolises in the Benelux countries, western and southern Germany, northern Italy and the Czech Republic. As a rule, more peripheral regions (excluding the regional hinterlands of Varna and Valencia) had lower values of this component. Thus, this component illustrated the demographic dimension of the disparities, while simultaneously showing some degree of polycentrism in the regional hinterlands of metropolises.

The high values of the last component of the disparities identified regions with a high labour productivity in services and industry, associated with low productivity in agriculture. Furthermore, simple services played a considerable role in the economic structure of these regions. This type of regional hinterland was characteristic of Germany, save for its northern part, and for some regions of Central and Eastern Europe. It was also occasionally encountered in other European countries (Sweden, Italy, Ireland, Portugal). This component suggests the dual character of the economy, associated with wide disparities in labour productivity existing between agriculture and non-agriculture sectors, and with functions provided by the metropolitan centres to their regional hinterlands.

It should be emphasised that the selected principal components explained only some of the disparities in the regional hinterlands of the analysed metropolises (59.6% of total variance, less than in the case of metropolitan areas).

The values of these four principal components of disparities were used to make a classification of the regional hinterlands of metropolises, which is shown in the dendrogram below (Fig. 20).

On this basis (Tab. 30; Fig. 29, p. 139), seven main typological classes of regional hinterlands can be distinguished, which can be broadly described as follows:

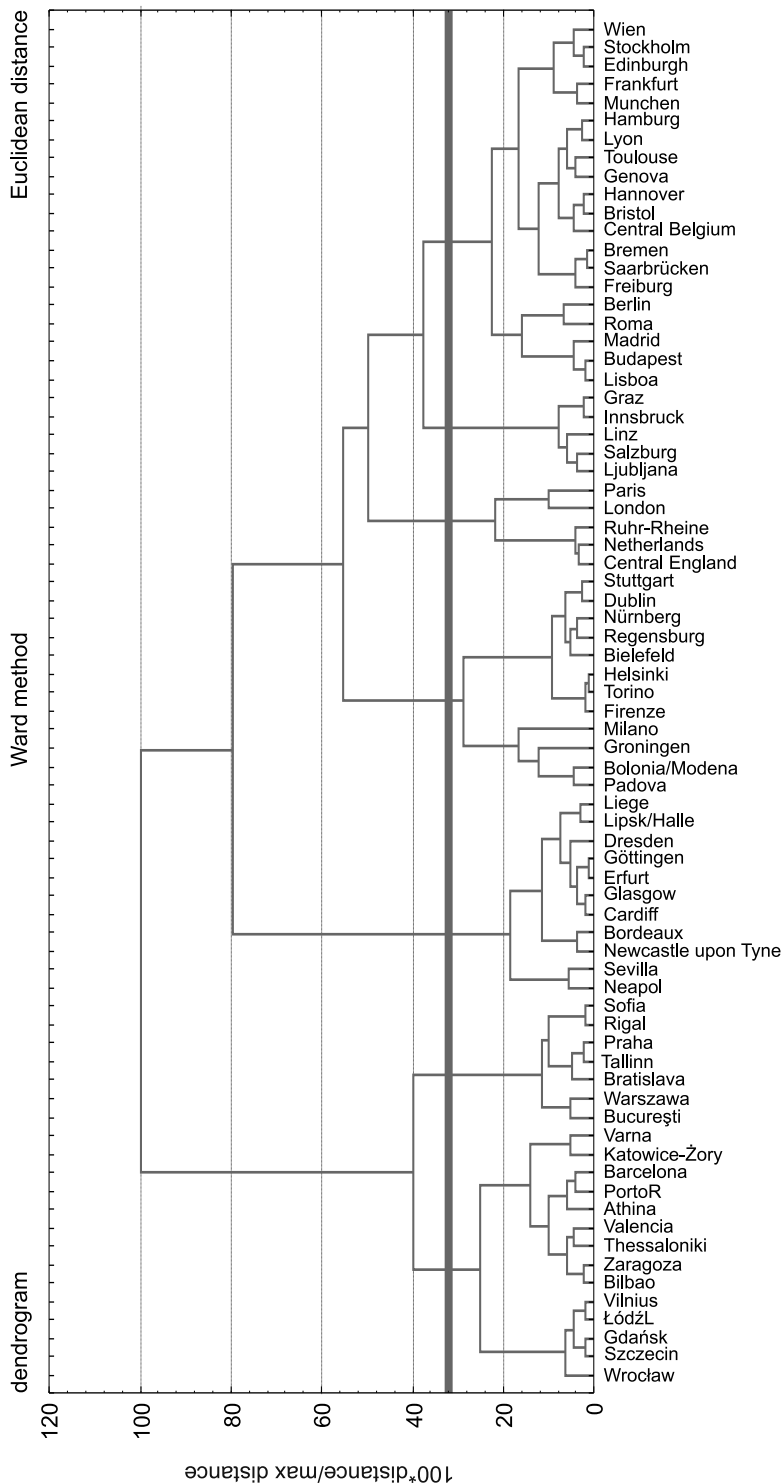


Figure 20. Classification of regional hinterlands of metropolises  
Source: prepared by the author.

Table 30. Average principal component values by types of regional hinterlands

| Type of regional hinterland   | Modern economy | Well-developed labour market | Demographic potential | Duality of economy |
|---|----------------|------------------------------|-----------------------|--------------------|
| (1a) Well-developed labour market and considerable industrialisation in regions with small population density | -0.66          | 0.77                         | -0.74                 | -0.10              |
| (1b) Variation of type 1 with considerable duality of economy   | 0.66           | 1.42                         | -2.17                 | 1.55               |
| (2a) Traditional economy with underdeveloped service sector   | -1.55          | -0.43                        | 0.12                  | -0.39              |
| (2b) Variation of type 2 with considerable duality of economy and labour market problems                      | -0.85          | -1.71                        | 0.65                  | 4.28               |
| (3) Labour market problems with considerable duality of economy   | 0.63           | -0.67                        | -0.44                 | 0.65               |
| (4) Serious labour market problems  | 0.51           | -1.56                        | -0.22                 | -0.77              |
| (5) Well-developed labour market and considerable industrialisation   | 0.54           | 0.75                         | 0.01                  | -0.47              |
| (6) Well-developed labour market, considerable industrialisation and demographic potential                    | 0.49           | 1.05                         | 0.78                  | 0.47               |
| (7) Large demographic potential in polycentric regions  | 0.41           | -0.09                        | 2.02                  | -0.20              |

Source: prepared by the author.

- (1) A well-developed labour market and considerable industrialisation in regions with small population density. Subtype (a) – the regional hinterland of Helsinki can serve as a typical example of this class, which is primarily characteristic of the former EU-15 cohesion countries, i.e. Spain and Portugal, Greece and Ireland, even though regions belonging to this class were also found in Austria and Slovenia. Subtype (b) – the above features coupled with a high degree of duality in the economy. The latter subtype included two regions only: Salzburg and Innsbruck, both situated in mountain areas.
- (2) A traditional economy with an underdeveloped services sector (mostly specialised). Subtype (a) – the regional hinterland of Budapest could serve as a typical example, and this category was primarily characteristic of CEE countries and the hinterland of Madrid. Subtype (b) – the above features plus a high degree of duality in the economy. It included only two regions: Wrocław and Szczecin, situated in the west of Poland.
- (3) Labour market problems and a high degree of duality in the economy. The regional hinterland of Thessaloniki was a typical example of this category, which included inter alia former traditional industrial regions: Saarbrücken, northern England, Scotland and Wales, as well as the regional hinterlands of metropolises which underwent rapid economic restructuring: Riga, Rome, Toulouse and Bordeaux, as well as the metropolises of northern Germany.
- (4) Serious labour market problems. The regional hinterland of Erfurt in Germany was a typical example here. This category was typical for regions of the former GDR and southern Italy (Naples) and Spain (Seville).
- (5) A well-developed labour market with considerable industrialisation. The regional hinterland of Nuremberg was a typical example of this class, which was generally characteristic of southern and central Germany and of the regional hinterlands of Barcelona and Stockholm.
- (6) A well-developed labour market with considerable industrialisation and high demographic potential. Tuscany was a typical example of this category, which also included other regions of northern Italy, as well as southern England.
- (7) High demographic potential in polycentric regions. The Rhine-Ruhr was a typical region in this category, which also included the regional hinterlands of metropolises in the Benelux countries, as well as Lyon in France and Valencia in Spain.

### Typology of metropolitan macroregions

Based on the identification of the above categories, a typological matrix was produced with the dimensions  $7 \times 7^5$ . Of 49 cells in the matrix showing types of metropolis-region systems, 23 fields were occupied (47%), which means that similar conditions determining the relationships between the metropolis and its regional hinterland could be observed in many macroregions. Below, short characteristics are given of those types which occurred most frequently, while leaving out the most unique types. In their identification, correspondence analysis was additionally used (Annex 5) to indicate the major types of metropolitan macroregions.

Table 31. Typological matrix of metropolitan macroregions\*

| <b>MA \ RH</b> | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>7</b> | <b>Total</b> |
|----------------|----------|----------|----------|----------|----------|----------|----------|--------------|
| 1              | 2        | 2        | 7        |          | 5        | 1        | 2        | 19           |
| 2              | 5        |          |          |          |          |          |          | 5            |
| 3              |          |          |          |          |          | 1        | 4        | 5            |
| 4              | 2        |          | 1        |          | 4        | 5        |          | 12           |
| 5              |          |          | 5        | 5        | 1        |          |          | 11           |
| 6              |          | 6        | 1        |          |          |          |          | 7            |
| 7              | 4        | 7        | 1        |          | 1        |          | 1        | 14           |
| Total          | 13       | 15       | 15       | 5        | 11       | 7        | 7        | 73           |

Bold borders denote similar typological classes of the metropolis and the regional hinterland.

Source: prepared by the author.

Among the identified types ( $X/Y_1Y_2$  – where  $x$  – category of metropolitan region,  $y_1$  – category of regional hinterland, and, potentially,  $y_2$  – similar category of regional hinterland), the following proved to be the most important (Tab. 31; Fig. 30, p. 141):

- Type 1/3 ( $N = 7$ ) – highly-developed monocentric, large service centres surrounded by regions with labour market problems. This type was found in three countries, and – more importantly – was usually characteristic of coastal macroregions – northern Germany (Bremen and Hamburg), Scotland (Edinburgh) and Italy (Rome and Genoa).
- Type 1/5 ( $N = 5$ ) – highly-developed large service centres surrounded by regions with well-developed labour markets, considerably industrialised. This type was characteristic of Germany (Frankfurt am Main, Munich, Hanover and Freiburg), and can therefore be summarily referred

<sup>5</sup> For simplification, types 1a and 1b and types 2a and 2b were combined.

to as 'central'. Outside Germany it also included the metropolitan macroregion of Stockholm.

- Type 2/1 (N = 5) – highly-developed small and monocentric metropolitan areas surrounded by well-developed industrialised regions in areas with low population density, frequently in mountain areas. This type was characteristic of Austria (except Vienna) and the neighbouring Slovenia.
- Type 3/7 (N = 4) – huge polycentric metropolitan areas surrounded by highly-developed polycentric regional hinterlands. This type was characteristic of densely populated areas of the European core, enclosed within the quadrangle: Central England, Paris, Rhine-Ruhr and the Netherlands.
- Type 4/56 (N = 9) – modern national growth poles surrounded by well-developed industrial areas. This type comprised two subtypes, represented by German macroregions (southern Germany and Bielefeld), as well as the macroregions of northern Italy.
- Type 5/34 (N = 10) – national metropolitan areas surrounded by areas undergoing economic restructuring – composed of two subtypes with a similar number of regions, differing in the scale of labour market problems. This type included the EU-15 convergence regions – macroregions in the former GDR, southern Italy and Spain, as well as British macroregions (Glasgow, Newcastle, Cardiff), Bordeaux in France and Liège in Belgium.
- Type 6/2 (N = 6) – traditional national growth poles surrounded by traditional farming areas. This type only covered capital city macroregions in Central and Eastern European countries (with the exception of Budapest, Vilnius and Riga).
- Type 7/12 (N = 11) – traditional metropolitan areas surrounded by industrial (7) and farming (4) regions. This type comprised peripheral regions of smaller cities in Central and Eastern Europe, in northern Spain (Bilbao and Saragossa) and Portugal (Porto), and also the metropolitan macroregion of Athens, which differed from other regions in this category.

The remaining metropolitan macroregions (16) were so unique that they made up individual types. As a rule, this was associated with their capital city functions – 10 cases, i.e. the majority of the analysed capital city macroregions of the EU-15.

Most of the major types identified (5) were European in character, i.e. they could be found in at least three countries (Tab. 32). As a rule, these were not neighbouring countries, and are therefore referred to as 'spatially dispersed'. Three further types were national in character (i.e. could be found in not more than two countries), which was generally associated with a relatively high degree of spatial concentration, frequently in direct vicinity.

Table 32. Distribution characteristics of identified types of macroregions

| Type                       | Degree of distribution |          | Degree of concentration |              |
|----------------------------|------------------------|----------|-------------------------|--------------|
|                            | European               | National | Dispersed               | Concentrated |
| Type 1/3<br>'Monocentric'  | x                      |          | x                       |              |
| Type 1/5<br>'Central'      |                        | x        | x                       |              |
| Type 2/1<br>'Mountain'     |                        | x        |                         | x            |
| Type 3/7<br>'Polycentric'  | x                      |          |                         | x            |
| Type 4/56<br>'Industrial'  |                        | x        |                         | x            |
| Type 5/34<br>'Problem'     | x                      |          | x                       |              |
| Type 6/2<br>'CEE capitals' | x                      |          | x                       |              |
| Type 7/12<br>'Peripheral'  | x                      |          | x                       |              |

Source: prepared by the author.

The identified types were then characterised using the indicators previously adopted to show the degree of their internal cohesion regarding the level of economic development, economic structure, demographic processes and the labour market situation. The differences were then subject to the t-test. Based on the results of these tests, capital city macroregions in CEE countries proved to be the only group statistically distinguishable compared to the remaining types of macroregions. This type was characterised by wide disparities in the development level between the metropolis and the region, and also by the rapidly increasing rate of these disparities. The similarity of economic structure in the metropolitan area and the remaining part of the macroregion was relatively small, with considerable differences in terms of the labour market situation and attractiveness of migration. Very probably, this led to intensive backwashing processes from the regional hinterland to the centre, involving primarily the best educated and the most enterprising individuals, and this was bound to negatively affect the endogenous potential for growth in the regional hinterland of the metropolis. Meanwhile, resources offered by the regional hinterland were not attractive for companies based in the capital city, whose cooperation links would, as a rule, bypass the direct regional vicinity of the metropolis.

Table 33. Characteristics of selected types of metropolitan macroregions

| Type (N)<br>'summary<br>names' | Development level<br>disparities<br>(GDP per capita ratio) | Dynamics of development<br>level disparities (change<br>of GDP per capita ratio) | Similarity of demographic<br>processes (difference<br>in migration balance) | Structural dissimilarity<br>(composite index) | Labour market<br>dissimilarity (difference in<br>unemployment rate) |
|--------------------------------|--|--|---|---|---|
| Type 1/3<br>'Monocentric'      | 1.37   | 0.04   | 1.9   | 7.5   | 2.2   |
| Type 1/5<br>'Central'          | 1.40   | 0.01   | 2.0   | 13.5  | 0.5   |
| Type 2/1<br>'Mountain'         | 1.52   | -0.01  | 5.4   | 12.6  | 0.5   |
| Type 3/7<br>'Polycentric'      | 1.32   | 0.04   | 1.7   | 11.1  | 1.2   |
| Type 4/56<br>'Industrial'      | 1.21   | 0.02   | 1.8   | 5.1   | 1.0   |
| Type 5/34<br>'Problem'         | 1.18   | 0.05   | 3.1   | 5.9   | 2.8   |
| Type 6/2<br>'CEE capitals'     | 2.25   | 0.37   | 5.5   | 22.6  | 5.5   |
| Type 7/12<br>'Peripheral'      | 1.29   | 0.09   | 4.0   | 14.0  | 5.8   |

Source: prepared by the author.

Wide disparities in the development level were also characteristic for 'mountain' macroregions, where an outflow of the population from peripheral areas could also be observed. On the other hand, the level of structural similarity was much higher, and the labour market situation comparable, which resulted in the stabilisation of disparities in the level of economic development.

By comparison, 'industrial' and 'problem' macroregions regarding the development level and economic structure were characterised by considerable internal cohesion, which might be proof of well-developed linkages within these macroregions. Nevertheless, development level disparities in the 'problem' macroregions increased quite rapidly, and the scale of differences in the migration balance between the metropolis and the region was high, similarly to disparities in the unemployment rate. In contrast, the situation concerning these aspects in the 'industrial' regions was relatively stable.



The scale of increase in development level disparities was high in the 'peripheral' macroregions, characterised by a low structural similarity between the metropolis and its region. This was expressed as wide disparities regarding the unemployment rate, which was much higher in the peripheral areas, while backwashing processes were similar to those discussed in the example of the 'CEE capital city macroregions'. At the same time, despite a speedy increase, the scale of development level disparities between the metropolis and the region remained relatively low.

Demographic processes relating to migration were similar in highly-developed 'polycentric' and 'monocentric' macroregions. This was coupled with a simultaneous increase of disparities in the development level, with considerable differences in the economic structures but a rather similar situation in the labour markets of both the metropolis and the region.

The labour market situation manifested many similarities in the 'central' macroregions, and the dynamics of disparities in the level of economic development remained stable, despite a relatively low level of structural similarity and a large scale of these disparities, which could mean that metropolitan centres were central places for their regional hinterlands.

## CONCLUSIONS

In summing up, it is important to emphasise the considerable dissimilarity in the correspondence between the directions of change in the component parts of metropolitan macroregions. This makes generalisation difficult and points to a significant role of national and regional contexts, which prove to be a clear *differentia specifica* of each of the surveyed macroregions.

One of the major factors differentiating both metropolises and their regional hinterlands was the modern character of the economic structure, expressed by a large share of services, including specialised services, associated with a high level of economic development. In addition, the disparities in the demographic potential of the macroregions played an important role, as they signalled the size of the local labour pool and sales markets, which in turn would usually foster the development of the service sector. In case of metropolitan areas, their place in the respective national settlement structures was important, with an additional differentiating factor being the degree of integration of the suburban zone with the metropolitan centre, expressed by the disparities in the economic structure and labour productivity. On the other hand, for regional hinterlands of metropolises, the labour market situation was more important; in many cases it was linked to the level of industrialisation of the regional economy.

Furthermore, the level of duality of the economy, expressed by the disparities in labour productivity between agriculture and non-agricultural activity, was another significant factor.

Taking into account the above dimensions of disparities, several main types of conditions were identified, determining the economic relationships between the metropolis and the region in Europe. Most types of conditions could be encountered across Europe and were spatially dispersed. Nonetheless, there were also groups of macroregions with similar conditions which could be found in one or several neighbouring countries, e.g. southern Germany and northern Italy, Austria and Slovenia, as well as the remaining macroregions of large German cities. Meanwhile, the capital city macroregions of Central and Eastern European countries were the most conspicuous of metropolitan macroregions. In this group, the way in which metropolises break ties with their regional hinterlands could be clearly observed. This was probably caused by the rapid pace at which the capital city metropolises joined the mainstream of an open networked economy, with a dominance of traditional functions such as low-productivity agriculture and declining traditional industries in the economies of their regional hinterlands. To some extent, this type was imitated by other, usually smaller cities with peripheral locations, where similar processes took place but with a lower degree of macroregional divergence. At the same time, highly industrialised regions (here referred to as 'industrial' or 'problem' regions) were relatively most internally coherent. However, during the process of adapting their economic structures to the conditions of the global information economy, their intraregional convergence generally decreased. The remaining types of regions were quite varied despite a similar scale of intraregional disparities in economic development level. Divergence could be observed both in highly-developed monocentric and in polycentric regions. Nevertheless, in the former type of region, this process took place in the conditions of an extensive and complex network of flows both regarding migration and local labour market linkages, whereas in monocentric regions the degree of complexity of these relationships was much smaller. In contrast, metropolitan regions situated in Germany, Austria and Slovenia manifested the greatest stability in terms of development disparities between the metropolis and the region, which was largely a result of a similar situation in the macroregional labour markets and could be seen as proof of considerable integration in regional production systems. However, capital city macroregions yielded the least to such attempts at generalisation – particularly those in smaller countries, where the relationships between the metropolis and the region were uniquely distinct.

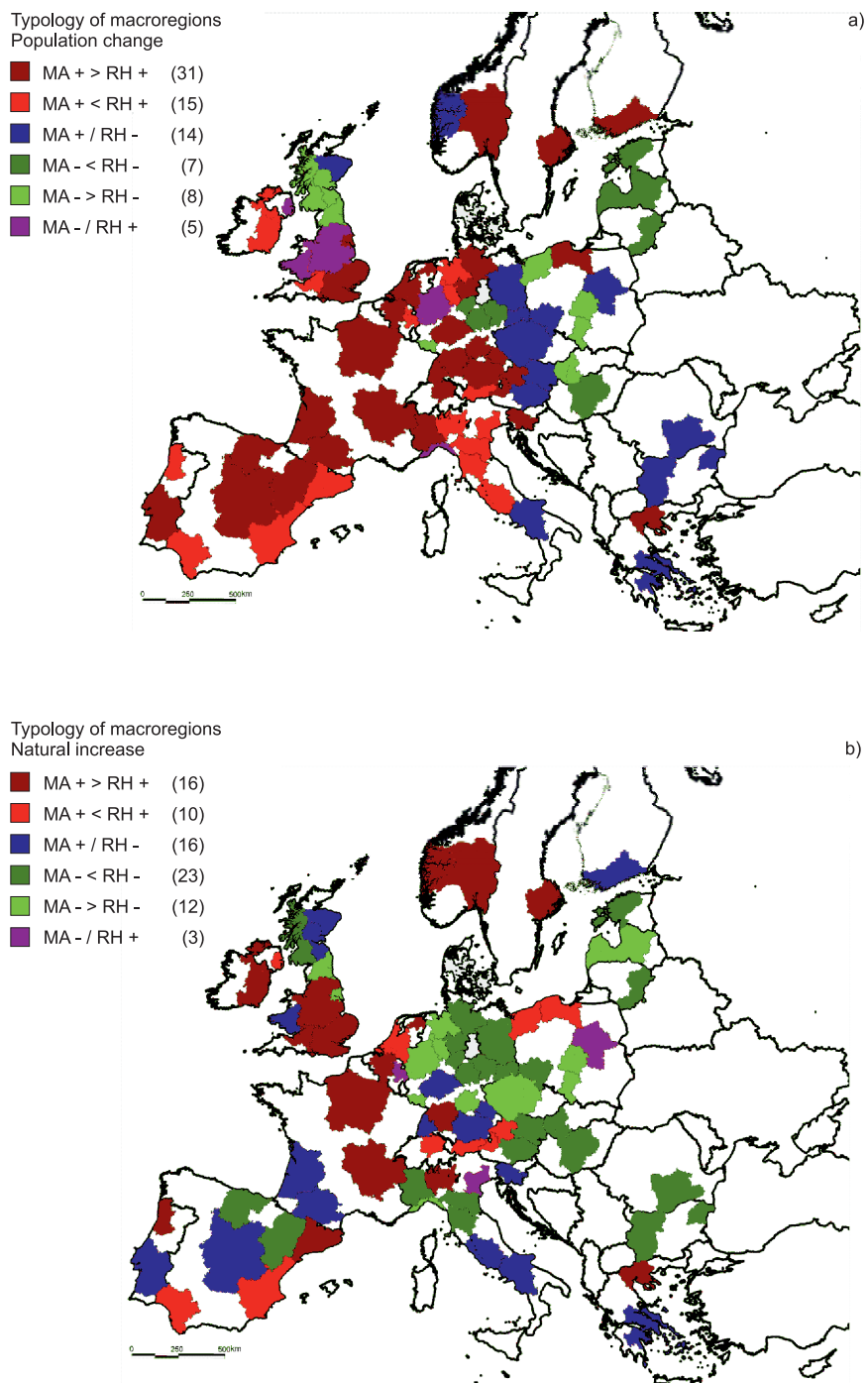


Figure 21. Demographic situation in the metropolis-region context (2000-2005)

Source: prepared by the author.

Typology of macroregions  
Migration balance

c)

- MA + > RH + (27)
- MA + < RH + (29)
- MA + / RH - (12)
- MA - < RH - (5)
- MA - > RH - (4)
- MA - / RH + (3)

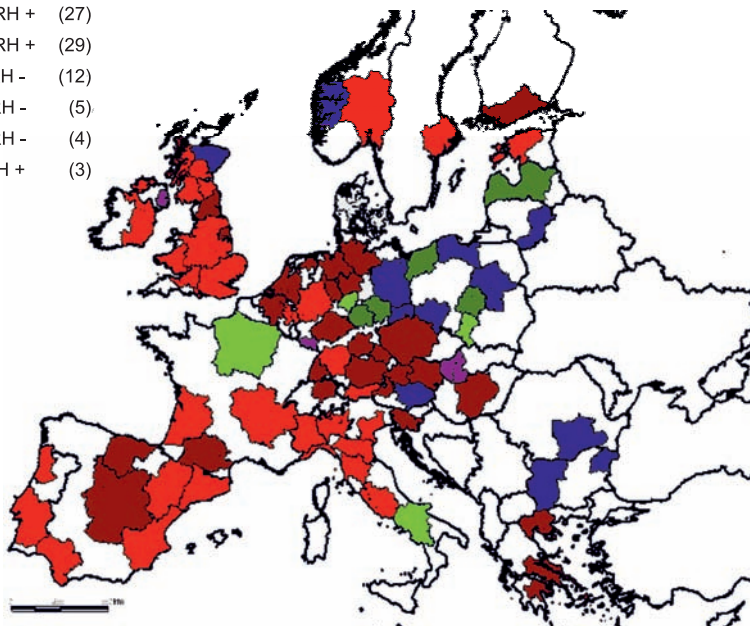
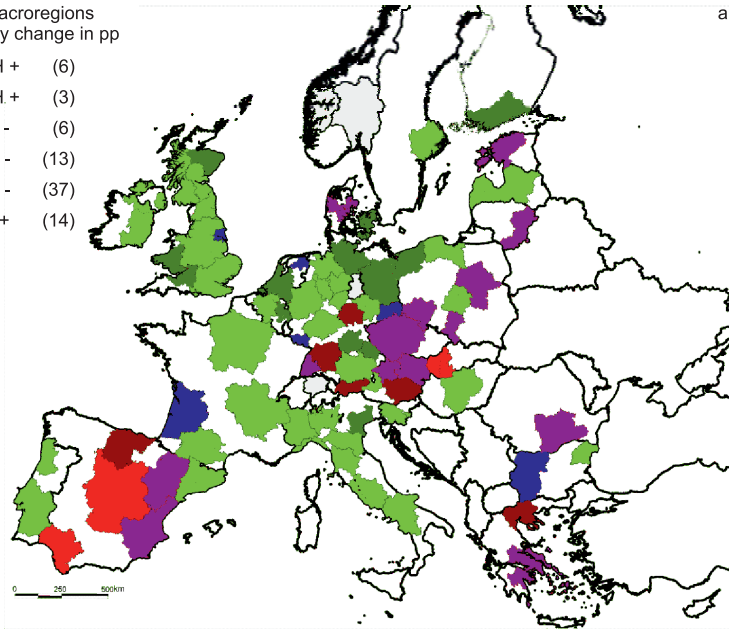


Figure 21. Demographic situation in the metropolis-region context (2000-2005)

Source: prepared by the author.

Typology of macroregions  
GVA in industry change in pp

- MA + > RH + (6)
- MA + < RH + (3)
- MA + / RH - (6)
- MA - < RH - (13)
- MA - > RH - (37)
- MA - / RH + (14)



Typology of macroregions  
GVA in services change in pp

- MA + > RH + (24)
- MA + < RH + (35)
- MA + / RH - (7)
- MA - < RH - (1)
- MA - / RH + (12)

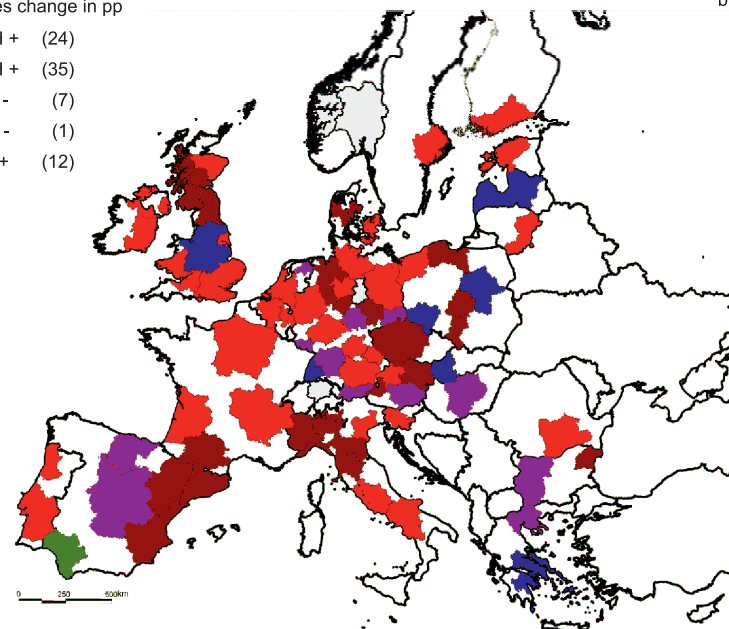
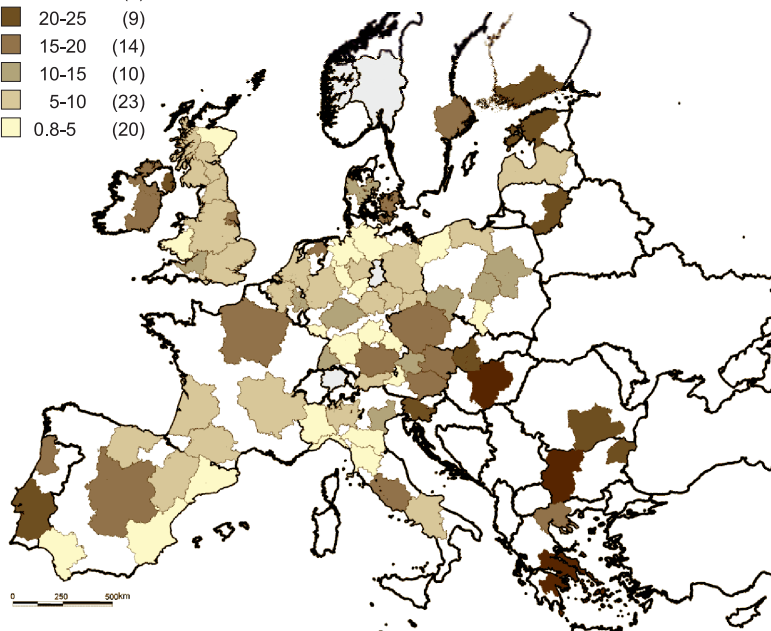
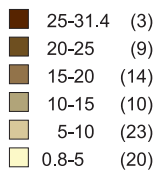


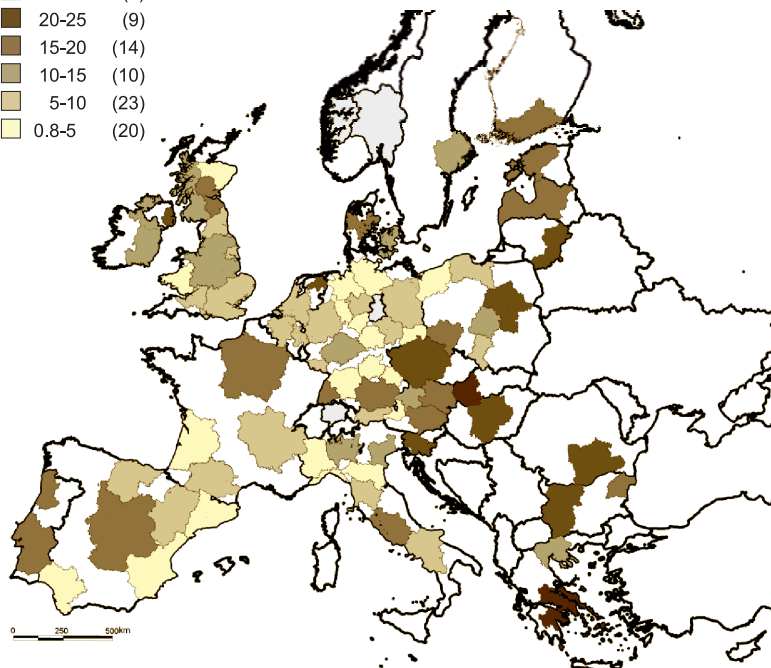
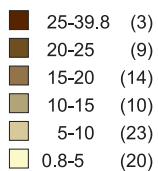
Figure 22. Changes in economic structure in the metropolis-region context (1998-2005)

Source: prepared by the author.

a) Dissimilarity index 1998 (%)



b) Dissimilarity index 2005 (%)



c) Dissimilarity index change  
in pp 1998-2005

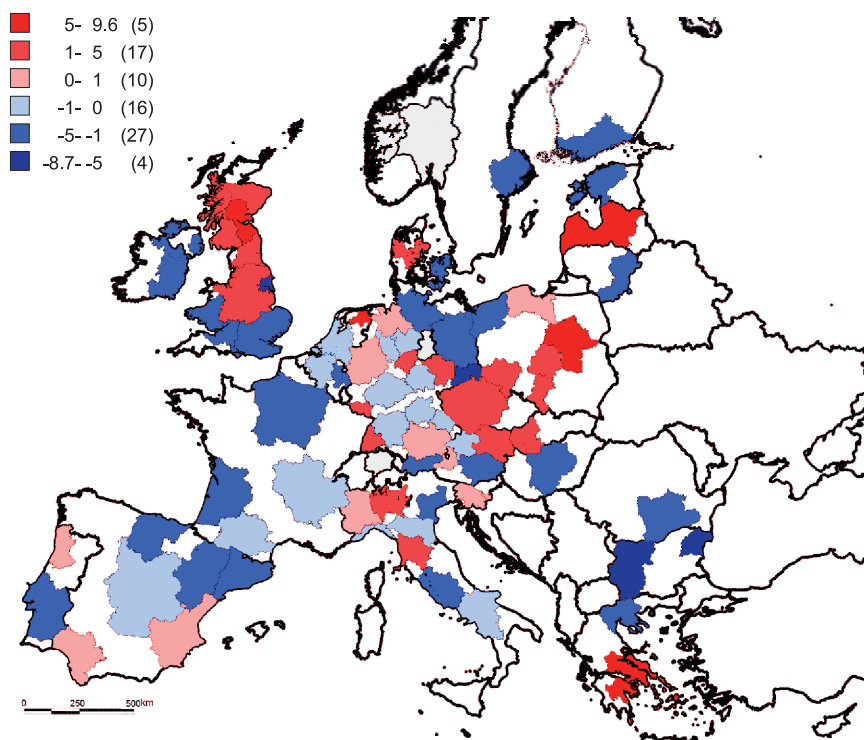


Figure 23. Structural similarity and its changes in the metropolis-region context

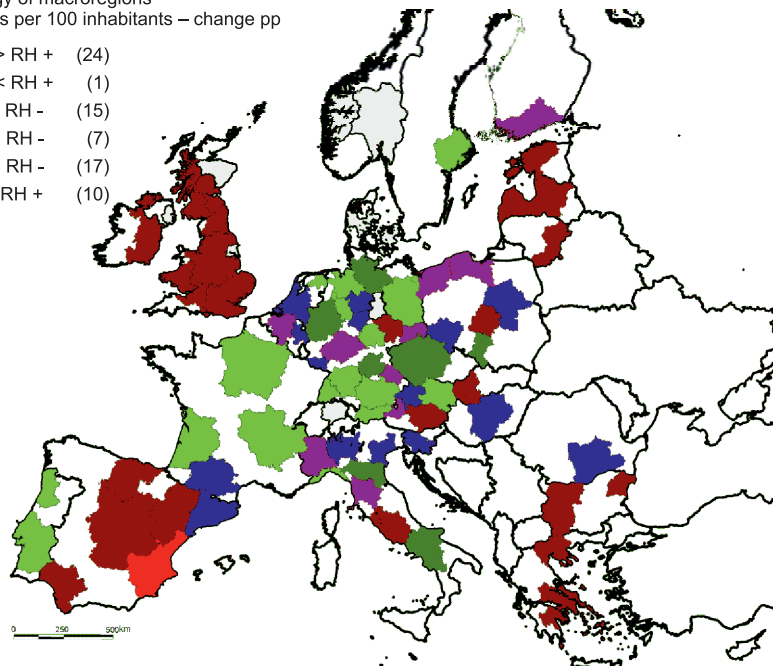
Source: prepared by the author.



## a) Typology of macroregions

Employees per 100 inhabitants – change pp

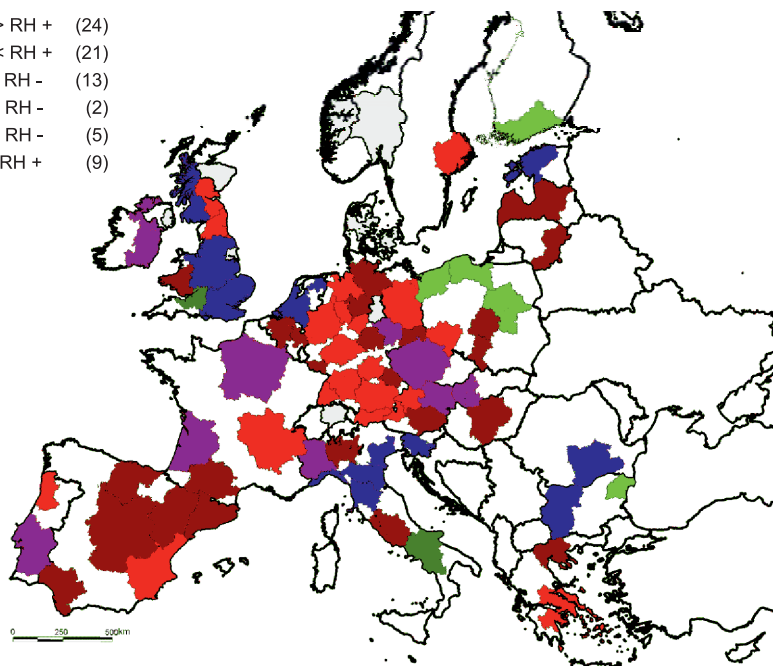
- MA + > RH + (24)
- MA + < RH + (1)
- MA + / RH - (15)
- MA - < RH - (7)
- MA - > RH - (17)
- MA - / RH + (10)



## b) Typology of macroregions

Change of activity rate pp

- MA + > RH + (24)
- MA + < RH + (21)
- MA + / RH - (13)
- MA - < RH - (2)
- MA - > RH - (5)
- MA - / RH + (9)





c) Typology of macroregions  
Unemployment rate – change pp

- MA + > RH + (11)
- MA + < RH + (15)
- MA + / RH - (7)
- MA - < RH - (16)
- MA - > RH - (20)
- MA - / RH + (5)

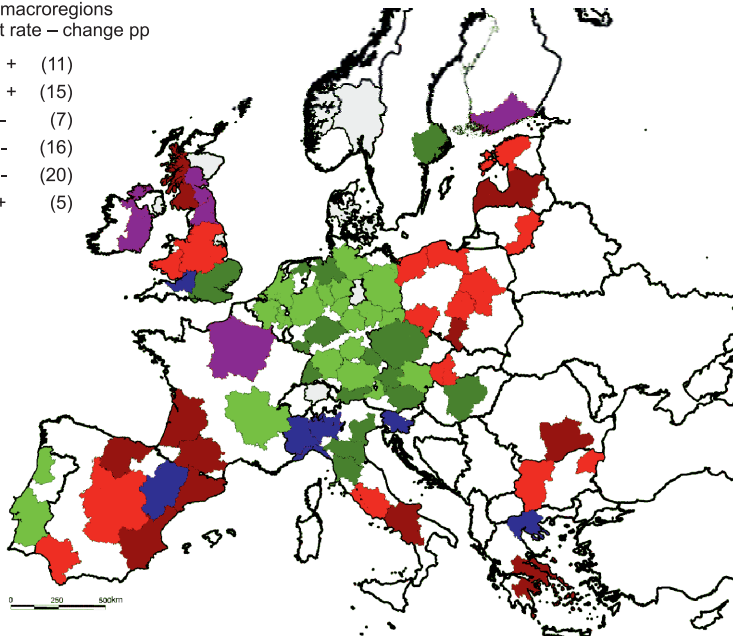
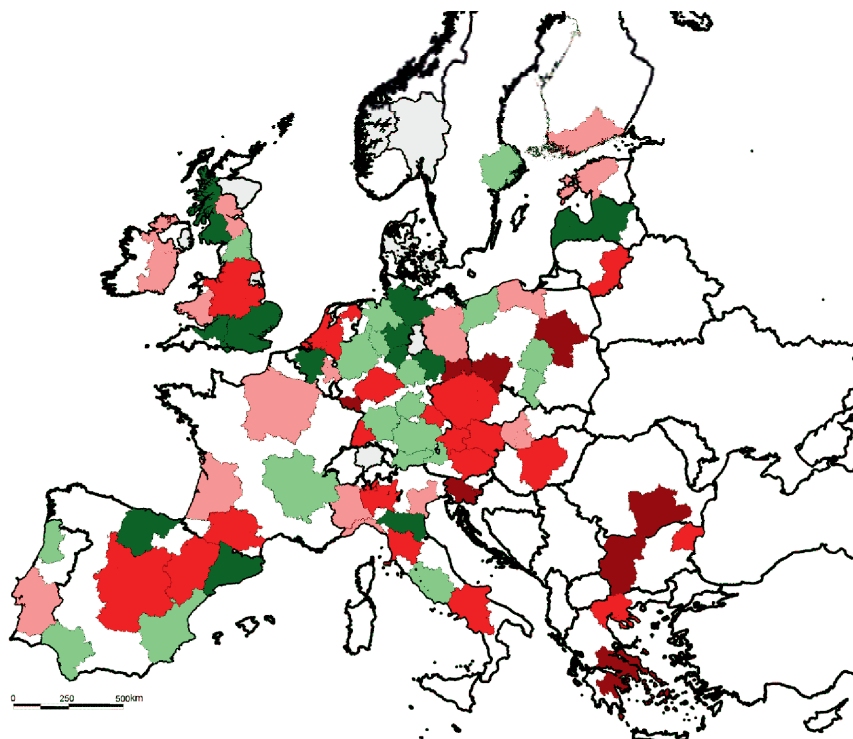


Figure 24. Changes in labour market situation in the metropolis-region context in 2002-2005

Source: prepared by the author.



Typology of macroregions Similarity of sectoral changes

- Similar changes – favourable for MA (12)
- Similar changes – favourable for RH (19)
- Strong dissimilar changes – favourable for MA (8)
- Weak dissimilar changes – favourable for MA (20)
- Weak dissimilar changes – favourable for RH (15)

Figure 25. Types of macroregions based on trend compatibility

Source: prepared by the author.

Metropolitan area – state  
Factor 1

- less than -1 (24)
- -1 - -0.25 (1)
- -0.25- 0.25 (15)
- 0.25- 1 (7)
- over 1 (17)

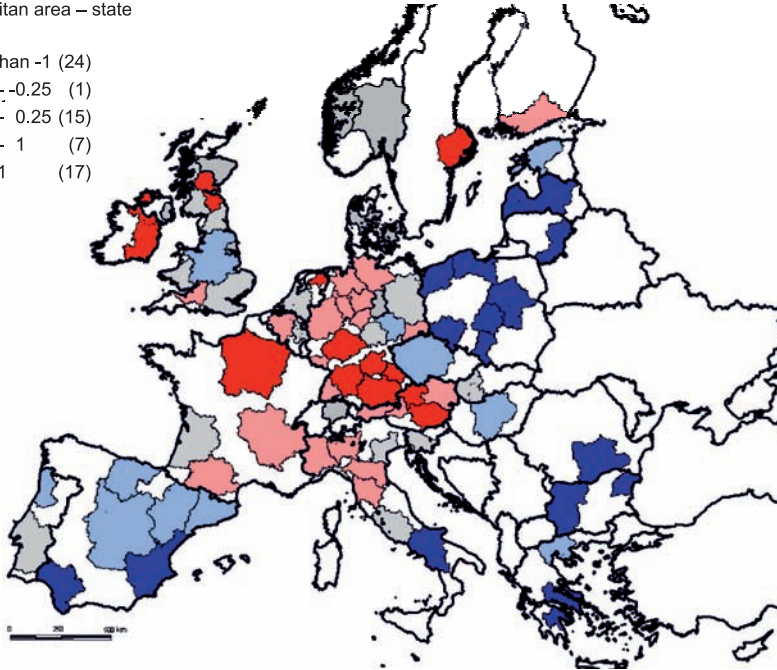


Figure 26a. Component (1) – ‘modern economy’

Metropolitan area – state  
Factor 2

- less than -1 (6)
- -1 - -0.25 (29)
- -0.25- 0.25 (14)
- 0.25- 1 (17)
- over 1 (8)

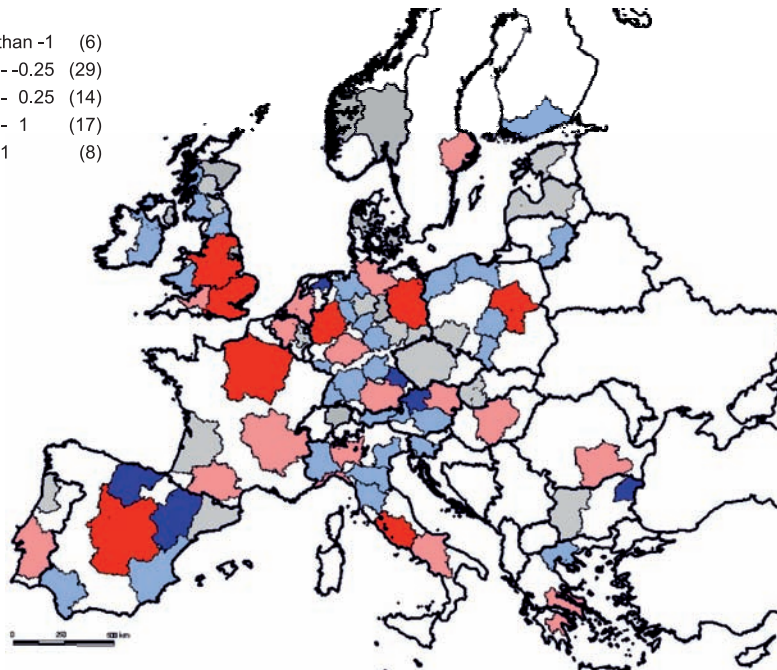


Figure 26b. Component (2) – ‘population potential’

Metropolitan area – state  
Factor 3

- less than -1 (14)
- -1 - -0.25 (9)
- -0.25- 0.25 (20)
- 0.25- 1 (23)
- over 1 (8)

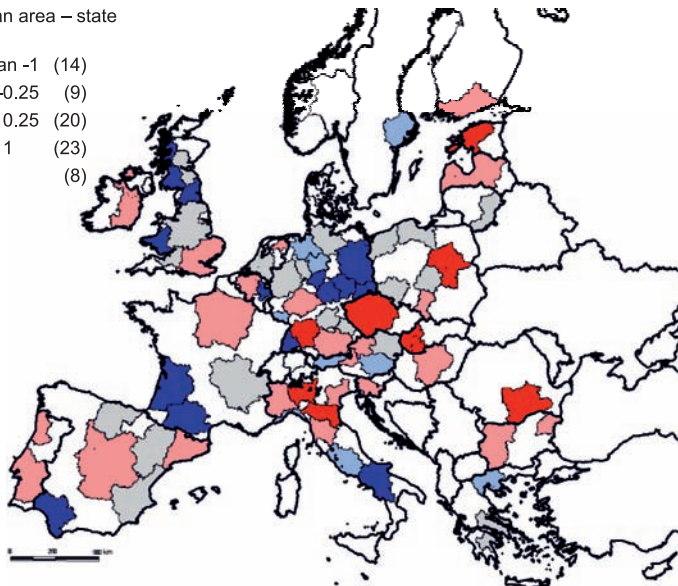


Figure 26c. Component (3) – "national growth poles"

Metropolitan area – state  
Factor 4

- less than -1 (13)
- -1 - -0.25 (15)
- -0.25- 0.25 (16)
- 0.25- 1 (19)
- over 1 (11)

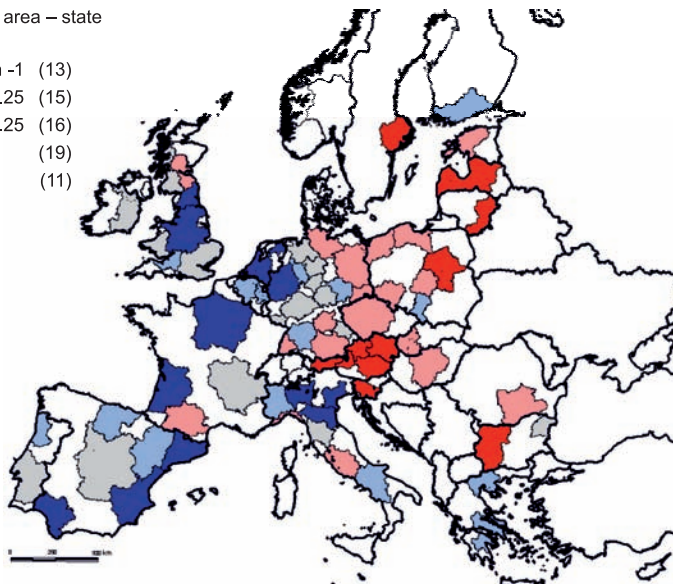


Figure 26d. Component (4) – 'weak suburban zone'

Figure 26. Spatial distribution of principal component values in metropolitan areas

\* Note: the values for metropolitan areas were presented in graphic layer for whole metropolitan macroregions.

Source: prepared by the author.

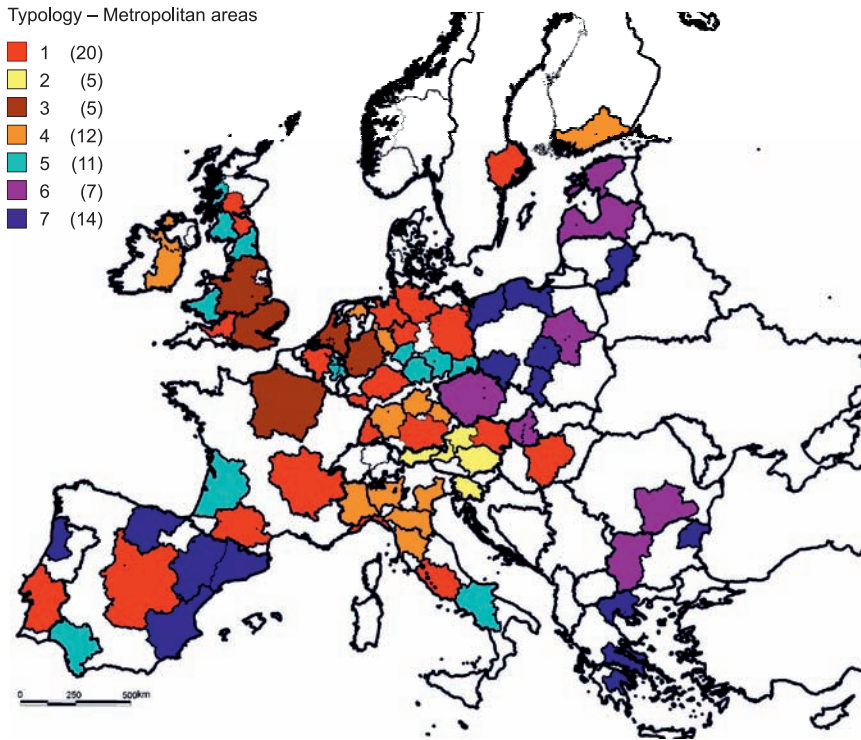


Figure 27. Classification of metropolitan areas – map

\* Note: the values for regional hinterlands were presented in graphic layer for whole metropolitan macroregions.

Source: prepared by the author.



Regional hinterland – state  
Factor 1

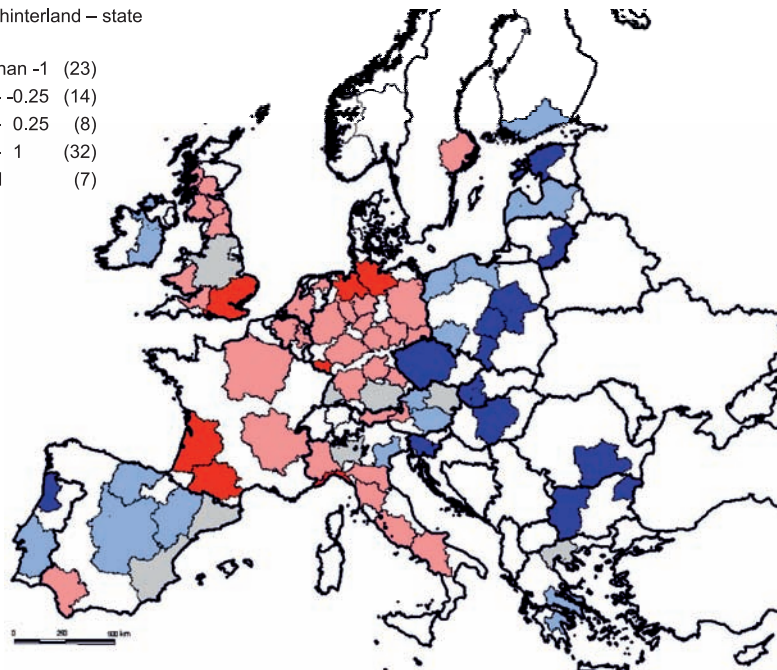
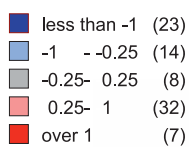


Figure 28a. Component 1 'modern economy'

Regional hinterlands – state  
Factor 2

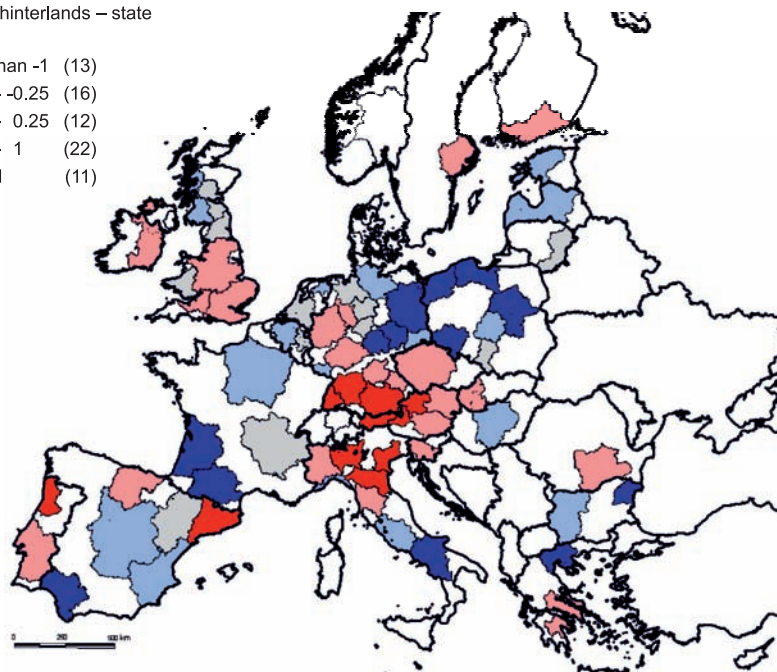
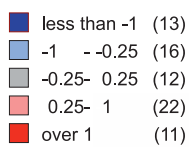


Figure 28b. Component 2 'well-developed labour market'

Regional hinterlands – state  
Factor 3

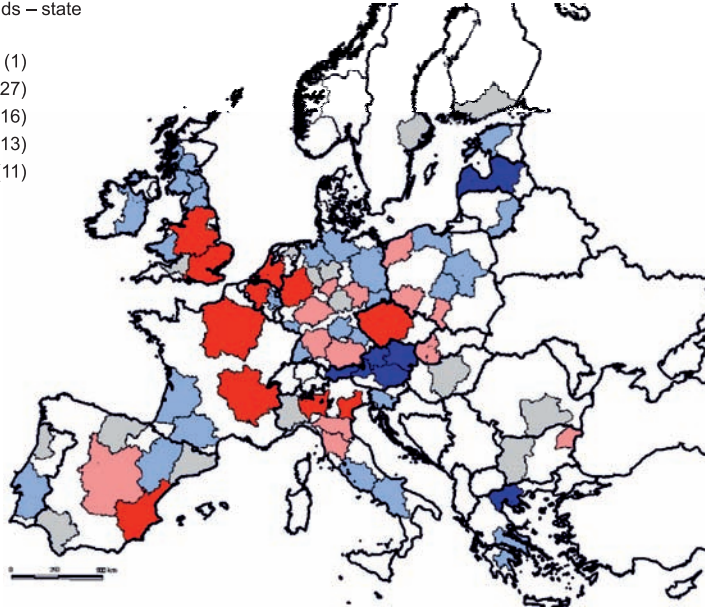
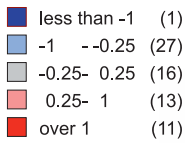


Figure 28c. Component 3 'demographic potential'

Regional hinterlands – state  
Factor 4

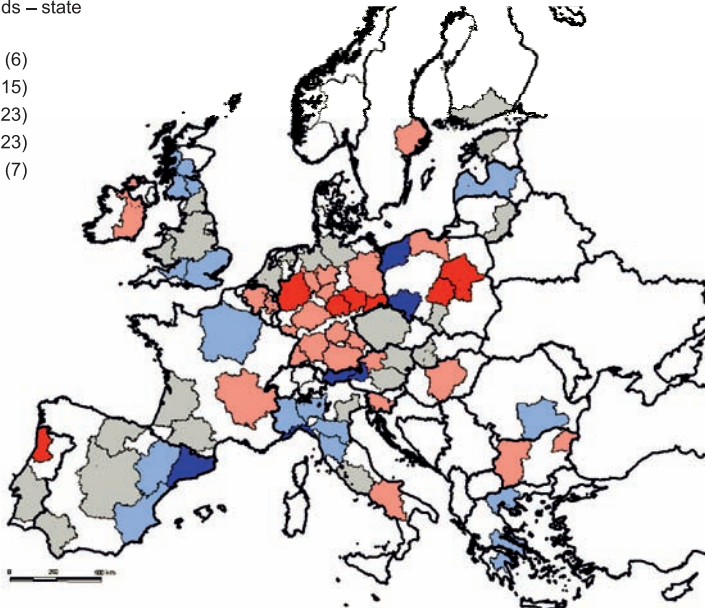
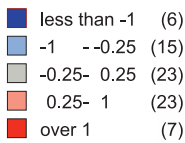


Figure 28d. Component 4 'duality of the economy'

Figure 28. Spatial distribution of principal component values in regional hinterlands

Source: prepared by the author.

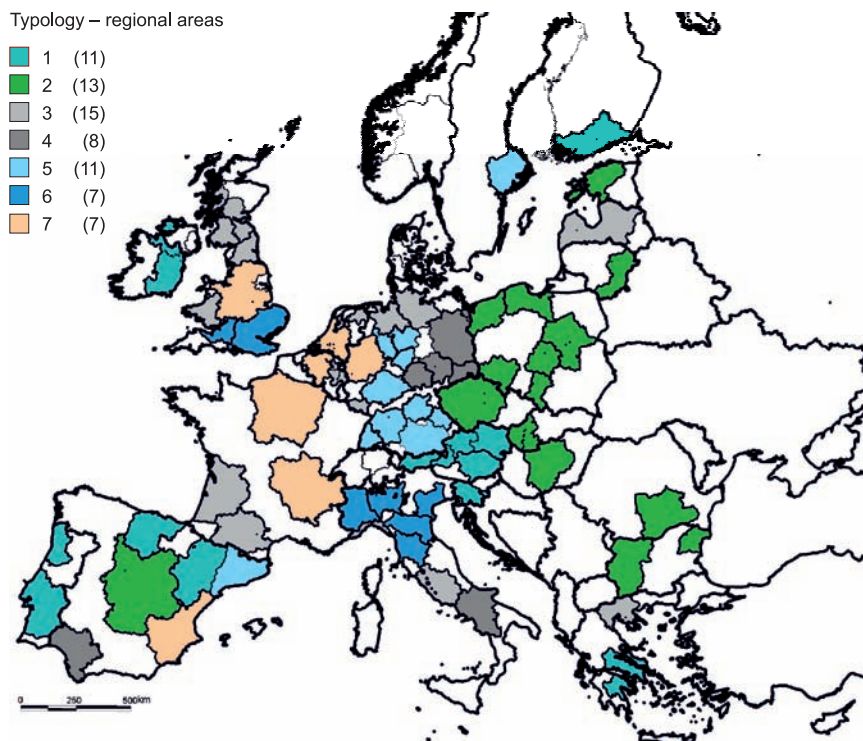
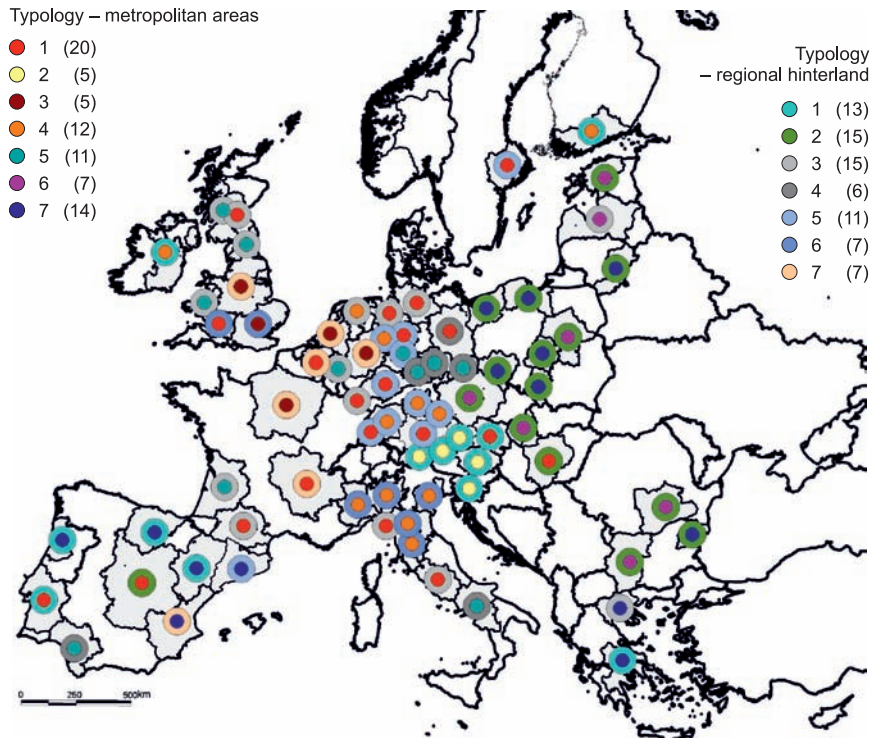


Figure 29. Classification of regional hinterlands – map

Source: prepared by the author.





### Types of metropolitan areas

- (1) Highly-developed large service centres
- (2) Highly-developed small and monocentric metropolitan areas
- (3) Large polycentric metropolitan areas
- (4) Highly-developed small centres with nation-wide functions
- (5) Secondary national metropolitan areas
- (6) Traditional monocentric metropolitan areas with nation-wide functions
- (7) Traditional medium-sized metropolitan areas

### Type of regional hinterland

- (1) Well-developed labour market and considerable industrialisation in regions with small population density
- (2) Traditional economy with underdeveloped service sector
- (3) Labour market problems with considerable duality of economy
- (4) Serious labour market problems
- (5) Well-developed labour market and considerable industrialisation
- (6) Well-developed labour market, considerable industrialisation and demographic potential
- (7) Large demographic potential in polycentric regions

Figure 30. Typology of metropolitan macroregions

Source: prepared by the author.

## **CHAPTER 5**

### **DETERMINANTS OF MACROREGIONAL CONVERGENCE**

As shown above, the analysed metropolitan macroregions showed considerable differences regarding the scale and dynamics of intraregional disparities between the metropolis and the region. Therefore, this section of the book sets out to identify factors which were first and foremost responsible for these disparities. The analysis comprised the indicators discussed in the previous chapter, and highlighted the following issues: the demographic situation and settlement system, the labour market situation, economic structure and labour productivity. The presented data illustrated the situation in 2004/2005 as well as the changes that took place in the period 1998-2004/5.

Undoubtedly, there are many causes underlying both the internal disparities in metropolitan macroregions in terms of the level of economic development measured by GDP per capita as well as their dynamics. The factors responsible for this divergence have been defined in an exploratory manner. To begin with, a correlation matrix was constructed for the quotients of GDP per capita in metropolitan areas and their regional hinterlands (in the case of dynamics, the differences in the quotients were analysed for the years 1998-2005) and for the above groups of indicators. This enabled us to make a preliminary identification of variables which could affect the level of macroregional convergence. Then, we set out to indicate the key factors with the use of the general regression model (the least squares method) – and a supplementary use of forward stepwise regression. Originally, this was intended to help build a model incorporating variables which are strongly correlated with the dependent variable and, at the same time, as weakly as possible intercorrelated with one another.

#### **5.1. DISPARITIES IN DEVELOPMENT LEVEL BETWEEN THE METROPOLIS AND THE REGION**

The scale of disparities in the level of economic development between the metropolitan area and the surrounding region (*degree of macroregional convergence*), which was the dependent variable, was defined as:

$$W_{MC} = \text{GDP per capita}_{MA\ 2004} / \text{GDP per capita}_{RH\ 2004}.$$

Consequently, the more the value of the  $W_{MC}$  coefficient diverged from 1, the stronger the macroregional divergence regarding the level of economic development.

Meanwhile, the independent variables belonged to four basic groups (demographics, economic structure, labour market and labour productivity) and depicted the 2005 situation in the metropolitan areas and in the metropolitan hinterlands, as well as their mutual interrelationships, defined similarly to the degree of macroregional convergence ( $W_{MC}$ ).

### Demographics

Among indicators from the ‘demographics’ category, the share of the largest city (within its administrative boundaries) in the population of the entire metropolitan region had the biggest impact on the level of macroregional convergence (Tab. 34). However, it should be borne in mind that, to some extent, this correlation could result from the differences in the adjustment of the boundaries of individual metropolitan areas to the extent of the metropolitan labour market. Leaving this objection aside, this correlation (upon testing) meant that the surroundings of polycentric metropolitan areas was relatively better developed economically than the surroundings of monocentric metropolises with a clear domination of the centre. What is more, the degree of monocentrism of the metropolitan area was the more significant the greater the polycentrism of the regional hinterland, expressed by the share of the largest urban centre in the population living in the remaining part of the macroregion. As a result, the lack of big urban centres in the regional hinterland in cases where the metropolitan centre had a large population generally signified wider disparities in the level of economic development.

The characteristics of the regional hinterland affected the level of macroregional convergence to a lesser extent (bordering on statistical significance). In particular, this was true for the population density, which was higher in regions with lesser disparities in economic development level. In addition, the migratory balance of the regional hinterland was negatively correlated with the degree of macroregional convergence of the level of economic development. This could mean that, in conditions of more tangible disparities in per capita GDP, an outflow of the population from the regional hinterland to the metropolis will be observed (e.g. to seek employment). In contrast, when the disparities are low, the regional hinterland could be attractive for some metropolitan dwellers (e.g. old age pensioners looking for cheaper real estate and better living conditions).

However, it should be emphasised that although statistically significant, these two correlations were very weak and could be produced by other analysed factors.

Table 34. Correlation coefficients between the level of macroregional convergence and demographic factors

| Index                                      | Metropolitan area | Regional hinterland | MA/RH ratio  |
|--|-------------------|---------------------|--------------|
| Similarity of demographic processes**      |                   | 0.16                |              |
| Population                                 | -0.08             | 0.00                | -0.12        |
| Population density (pp/km <sup>2</sup> )   | -0.02             | <b>-0.28*</b>       | 0.14         |
| Natural increase in ‰ (average 2000-2005)  | -0.09             | -0.18               | 0.11         |
| Migration balance in ‰ (average 2000-2005) | -0.03             | <b>-0.33*</b>       | -0.09        |
| Population of largest city                 | 0.12              | -0.09               | 0.15         |
| Share of largest city in population (%)    | <b>0.47*</b>      | -0.10               | <b>0.34*</b> |

\* significance at the level of 0.05

\*\* sum of absolute differences in natural increase and migration balance in the metropolis and regional hinterland

Source: prepared by the author.

### Economic structure

The similarities between the economic structure of the metropolitan area and its hinterland had a substantial bearing on the degree of macroregional convergence (Tab. 35). This can be clearly seen in the case of the composite dissimilarity index, which was strongly correlated with the macroregional convergence index. Thus, wider disparities in the level of economic development were accompanied by wider disparities in the economic structure. An analysis of partial dissimilarity indices will show whether this could be explained by the disparities in the roles of the agriculture and services sectors between the metropolis and the region. In particular, the more agricultural the nature of the metropolis' regional hinterland, the greater the degree of macroregional divergence in the development level.

In contrast, a well-developed service sector in the regional hinterland was more likely to foster structural similarity, which in turn was manifested by small disparities in the economic development level between the metropolis and the region. At the same time, disparities in the industrialisation level did not affect the level of macroregional convergence, which was probably due to the differences in the stages of restructuring processes in this sector in individual metropolitan macroregions.

Table 35. Correlation coefficients between macroregional convergence level and dissimilarity index

| Indicator   | Metropolitan area    | Regional hinterland  | MA/RH ratio          |
|---|----------------------|----------------------|----------------------|
| Dissimilarity index   |                      | 0.64*                |                      |
| GVA in agriculture (%)  | -0.15                | <b><u>0.48*</u></b>  | <b><u>-0.50*</u></b> |
| GVA in industry (%)   | -0.10                | 0.21                 | -0.23                |
| GVA in services (%)   | 0.12                 | <b><u>-0.42*</u></b> | <b><u>0.50*</u></b>  |
| GVA simple services (sections G-I) (%)                                  | 0.38*                | -0.14                | <b><u>0.51*</u></b>  |
| GVA – specialised services (sections J-K) (%)                           | 0.06                 | <b><u>-0.37*</u></b> | <b><u>0.51*</u></b>  |
| GVA – public services (sections L-O) (%)                                | <b><u>-0.41*</u></b> | -0.18                | -0.22                |
| GVA – specialised services (sections J-K) (% GVA of the service sector) | 0.01                 | -0.23                | <b><u>0.30*</u></b>  |

\* significance at the level of 0.05

Source: prepared by the author.

The role of the service sector for macroregional convergence could also be clearly seen in the analysis of the internal disparities in the sector, broken down into ‘simple’ services which included: trade, hotels and restaurants, as well as transport, storage and communication; ‘specialised’ services such as: financial mediation and real estate and business activities, as well as ‘public’ services such as: public administration, education, healthcare and social assistance. Interestingly, a higher share of simple services in the metropolitan area economy, just as a smaller share of specialised services in the economy of the regional hinterland, signalled a higher level of macroregional economic divergence. This could indicate barriers to the development of simple services in the peripheral areas of regions with strongly developed central functions in the metropolis. This, however, did not apply to public services, as in their case a higher share in the economic structure of the metropolitan area would normally foster a greater macroregional convergence. On the other hand, disparities in the role of specialised services in relation to other types of services only marginally affected the scale of intraregional disparities in the level of economic development.

### Labour market

Similarities in the labour market situation were distinctly related to the scale of disparities in the level of economic development between the metropolis and the region (Tab. 36). This was primarily indicated by

the composite indicator – a sum of absolute differences in the number of employees per 100 inhabitants and the unemployment rate between the metropolis and the region. As the partial indices revealed, this was mostly due to a higher degree of economic activity and a higher number of jobs per 100 inhabitants of the metropolitan area. On the other hand, the smaller the differences in the unemployment rate within the metropolitan macroregion, the greater the degree of macroregional convergence. Nevertheless, it should be pointed out that the above correlations (other than the composite indicator), were very weak.

Table 36. Correlation coefficients between macroregional convergence level and labour market indicators

| Indicator                                  | Metropolitan area | Regional hinterland | MA/RH ratio   |
|--|-------------------|---------------------|---------------|
| Dissimilarity of labour market situation** |                   | 0,48*               |               |
| Employees per 100 inhabitants              | <b>0.35*</b>      | -0.09               | 0.23          |
| Activity rate (%)                          | <b>0.27*</b>      | -0.02               | 0.10          |
| Unemployment rate (%)                      | -0.20             | 0.02                | <b>-0.30*</b> |

\* significance at the level of 0.05

\*\* sum of absolute differences in the number of employees per 100 inhabitants and the unemployment rate

Source: prepared by the author.

### Labour productivity

Another factor directly related to the degree of macroregional convergence was labour productivity, defined as gross value added per

Table 37. Correlation coefficients between macroregional convergence level and productivity indicators

| Indicator                                | Metropolitan area | Regional hinterland | MA/RH ratio   |
|--|-------------------|---------------------|---------------|
| Total productivity (EUR)                 | -0.22             | <b>-0.52*</b>       | <b>0.86*</b>  |
| Productivity in agriculture (EUR)        | <b>-0.33*</b>     | <b>-0.32*</b>       | 0.21          |
| Productivity in industry (EUR)           | -0.04             | <b>-0.43*</b>       | <b>0.51*</b>  |
| Productivity in services (EUR)           | -0.29*            | <b>-0.51*</b>       | <b>0.76*</b>  |
| Productivity in agriculture (total =100) | -0.20             | 0.14                | <b>-0.24*</b> |
| Productivity in industry (total =100)    | 0.05              | 0.12                | -0.04         |
| Productivity in services (total =100)    | 0.04              | <b>0.29*</b>        | <b>-0.25*</b> |

\* significance at the level of 0.05

Source: prepared by the author.

employee (Tab. 37). Quite naturally, the greater the disparities in labour productivity between the metropolitan area and the remaining part of the metropolitan macroregion, the greater the degree of macroregional divergence. This was mostly due to a lower labour productivity in the regional hinterland both in services and in industry. At the same time, in many cases, the relativisation of labour productivity in individual sectors to the average for a given macroregion made the correlation with development disparities very weak or statistically insignificant.

### General regression model – disparities in the development level

The next stage of investigating the determinants of macroregional convergence, involved discarding the variables which were very strongly correlated ( $k > 0.8$ ) (e.g. labour productivity, very strongly linked to per capita GDP), and those with an insignificant correlation ( $p > 0.05$ ). From the resulting correlation matrix, we removed interdependent variables at the correlation level ( $k > 0.6$ ). This produced a set of variables which were then used in a multiple regression analysis. This was aided by a forward stepwise regression method, whereby the most strongly correlated variables were successively added, with the minimum increase threshold of the adjusted determination coefficient ( $r^2$ ) for the model set at a level of 0.05. As a result, the following regression equation was produced ( $r^2 = 0.63$ ) (Tab. 38).

Table 38. Determinants of intraregional economic development disparities

|           | BETA  | ST. ERROR BETA | B     | ST. ERROR B | p      |
|-----------|-------|----------------|-------|-------------|--------|
| Intercept |       |                | 0.609 | 0.091       | 0.0000 |
| DI*       | 0.486 | 0.076          | 0.024 | 0.004       | 0.0000 |
| LMI**     | 0.308 | 0.075          | 0.015 | 0.003       | 0.0001 |
| LP***     | 0.339 | 0.075          | 0.318 | 0.070       | 0.0000 |

\* DI – dissimilarity index (the higher the index value, the smaller the similarity of the economic structure)

\*\* LMI – dissimilarity index for the labour market situation (the higher the index value the smaller the similarity of the labour market situation)

\*\*\* LP – intraregional disparities concerning labour productivity (the higher the index value the higher the labour productivity quotient between the metropolis and the region).

Source: prepared by the author.

On this basis, we can conclude that the level of intraregional disparities was mostly dependent on the structural similarity of the metropolis and its regional hinterland, as well as on the comparability of their labour market situations. In addition, disparities in labour productivity in the industrial



sector played an important part for the macroregional convergence in the level of economic development.

It should be noted that a similar economic structure largely determined the average labour productivity in the three major sectors. The reason for this were substantial disparities in labour productivity between the agricultural sector on the one hand and the industrial and service sectors on the other. The structural similarity could also produce similar responses of the component parts of metropolitan macroregions to trade cycles and development megatrends. In addition, a similar structure most likely fostered the development of linkages between businesses situated in different parts of metropolitan macroregions. On the other hand, the well-developed service sector in the regional hinterland could signify a greater self-sufficiency of the region in this regard, which in effect reduced the role of services provided to its regional hinterland by the metropolitan area.

A similar situation on the labour market could explain lesser disparities in the development level between the metropolis and the region. On the other hand – it could be caused by such disparities. In particular, this applied to the similarities between the metropolis and the region in terms of the number of jobs per 100 inhabitants, which could restrict the flows from the metropolis to the region and vice versa, particularly in case of commuting to work. Secondly, a similar unemployment rate could suggest a similar response of the macroregion's component parts to economic performance or be seen as proof of well-developed cooperation linkages regionally.

The disparities in labour productivity in industry were interesting determinants of the level of macroregional convergence. A similar level of labour productivity in this sector could signify a similar level of capital intensity or of technological advancement. This could naturally generate matching responses in the two macroregional components to economic performance in the industrial sector, although this was probably influenced by the dissimilarities in the sectoral structure. The similarity of both parts of the macroregion in terms of the value of this indicator could also point to a similar stage of restructuring processes in traditional branches of industry.

To sum up, it should be noted that the above determinants were not the sole factors affecting the degree of macroregional convergence of the economic development level, as the adjusted determination coefficient of the regression model was only 0.61. This can undoubtedly be attributed to a strong internal differentiation of the metropolitan regions under analysis, relating to a number of aspects ranging from demographic through economic to social ones. In addition, incorporating additional



variables into the model, mostly those illustrating the differences between the metropolis and the region in terms of the quality of human capital and degree of innovation, would in all likelihood significantly increase the value of that coefficient.

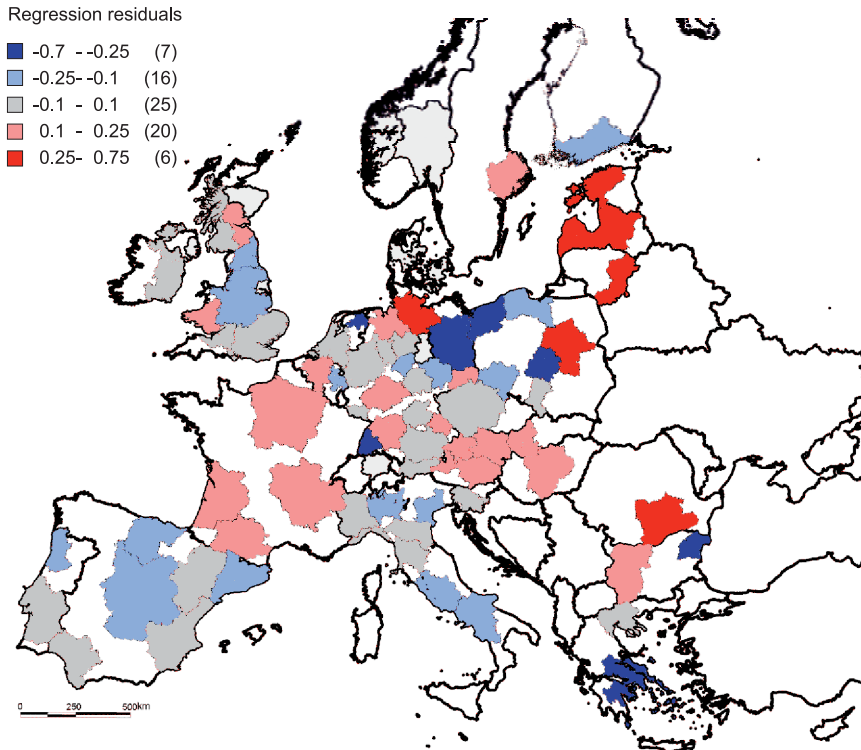


Figure 31. Regression residuals – determinants of intraregional development disparities level

Source: prepared by the author.

To better verify the model summarised above, a residual regression analysis was made and the resultant spatial distribution examined. It should be emphasised that the analysis of regression residuals did not reveal any significant deviations from the normal distribution. The spatial distribution of residuals also corroborates the accuracy of our model, and does not show any disruptions related to the spatial concentration of regression residuals in one or several neighbouring countries. However, based on the analysis of residual distribution, we can indicate those metropolitan macroregions which most strongly diverged from the correlation revealed in the model. Those macroregions primarily included the Central and Eastern European capital city regions of the Baltic countries, Poland and Romania. This

group also included the macroregion of Hamburg, incorporating a part of the former GDR in the vicinity of Schwerin. Regions which appeared at the other extreme, that is, departing from the model, included Berlin and Athens, as well as smaller industrial regions in CEE countries, i.e. Szczecin, Łódź and Varna, as well as Groningen and Freiburg. Meanwhile, German, Italian, British, Dutch, Iberian and Irish regions made the best fit with the presented regression model.

## 5.2. CHANGE IN THE DEVELOPMENT DISPARITIES BETWEEN THE METROPOLIS AND THE REGION

The change in the scale of disparities in the economic development level between the metropolis and the region (*macroregional convergence process*), adopted as the dependent variable, was defined as:

$$\Delta W_{MC} = (\text{GDP per capita}_{MA\ 2004} / \text{GDP per capita}_{RH\ 2004}) - (\text{GDP per capita}_{MA\ 1998} / \text{GDP per capita}_{RH\ 1998})$$

Positive values of this indicator denoted an increase in the macroregional divergence of the development level, and negative ones – a decrease.

Just as before, the independent variables belonged to four groups and illustrated the situation in 1998 and its dynamics in the years 1998-2005<sup>1</sup> both in the metropolitan area and in the regional hinterland. Moreover, the quotients of these indicators and the differences in these quotients between 1998 and 2005 were used in the 2005 analysis.

### Demographics

The juxtaposition of macroregional convergence processes with demographic indicators shows the following weak or very weak correlations (Tab. 39). Firstly, a lower population density in the regional hinterland coincided with a greater increase in economic development disparities. Secondly, the monocentrism of the metropolitan area, expressed by a significant share of the largest city in the population of the metropolis, would have increased the macroregional divergence. Thirdly, the demographic collapse in the metropolis and the region, manifested by a fall in population numbers and a negative natural increase, also coincided with an increase in intraregional

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<sup>1</sup> In case of changes in the labour market structure the data for the years 2002-2005 were used for calculating labour productivity in metropolitan macroregions of: Greece, the Netherlands, Poland and Romania while the data concerning changes in the internal structure of the service in Bulgaria, France, Poland and Italy come from the years 2002-2005.

divergence. In addition, the migratory outflow from the regional hinterland would have tended to take place in conditions where there was a divergence in the development level.

Table 39. Correlation coefficients between the macroregional convergence level and demographic indicators

| Indicator                                   | Value in 1998     |                     |             | Change in 1998-2005 |                     |                              |
|---|-------------------|---------------------|-------------|---------------------|---------------------|------------------------------|
|   | Metropolitan area | Regional hinterland | MA/RH ratio | Metropolitan area   | Regional hinterland | Difference – MA/RH quotients |
| Population                                  | -0.07             | -0.06               | 0.07        | <b>-0.37*</b>       | <b>-0.51*</b>       | <b>0.30</b>                  |
| Population density (pp/km <sup>2</sup> )    | -0.14             | <b>-0.28*</b>       | 0.12        | -                   | -                   | -                            |
| Natural increase in ‰ (average 2000-2005)   | -                 | -                   | -           | <b>-0.41*</b>       | <b>-0.47*</b>       | 0.01                         |
| Migration balance in ‰ (average 2000-2005)  | -                 | -                   | -           | -0.16               | <b>-0.41*</b>       | <b>0.35</b>                  |
| Population of largest city                  | 0.01              | -0.11               | 0.06        | -                   | -                   | -                            |
| Share of largest city in the population (%) | <b>0.37*</b>      | 0.13                | 0.13        | -                   | -                   | -                            |

\* significance at the level of 0.05

Source: prepared by the author.

### Economic structure

The similarity in the economic structure within one metropolitan region determined not only the degree of convergence in the level of economic development but also its change (Tab. 40). In particular, the greater the share of agriculture and the smaller the share of services in the regional hinterland's economy, the greater the increase of macroregional divergence. On the other hand, the analysis of economic structure dynamics points to a certain role of industry in equalising the development levels between the metropolitan area and its hinterland. As a rule, an increased role of industry, especially when accompanied by a simultaneous decrease in the role of agriculture in the regional hinterland, usually led to a decrease in intraregional disparities. This could suggest positive consequences of the industrialisation of agricultural areas (which probably mostly applied to areas situated in transport corridors) for macroregional convergence processes. What is more difficult to explain, however, is the positive correlation between an increase in the macroregional divergence in the level

of economic development and the change in the quotient of agriculture's share in gross value added in the years 1998-2005. Most probably, this is a superficial correlation arising from other factors, such as an extremely low share of agriculture in the economies of metropolitan regions, which could cause some random disruptions (high coefficient of variation values for this indicator).

Table 40. Correlation coefficients between the macroregional convergence level and economic structure indicators

| Indicator   | Value in 1998     |                     |              | Change in 1998-2005 |                     |                            |
|---|-------------------|---------------------|--------------|---------------------|---------------------|----------------------------|
|   | Metropolitan area | Regional hinterland | MA/RH ratio  | Metropolitan area   | Regional hinterland | Difference MA/RH quotients |
| Dissimilarity index   | 0.52*             |                     |              | -0.01               |                     |                            |
| GVA in agriculture (%)  | 0.20              | <u>0.55*</u>        | -0.22        | <b>-0.28*</b>       | <b>-0.46*</b>       | <u>0.45</u>                |
| GVA in industry (%)   | -0.01             | 0.09                | -0.01        | -0.06               | <b>0.26*</b>        | <b>-0.30</b>               |
| GVA in services (%)   | -0.03             | <u>-0.50*</u>       | <u>0.52*</u> | 0.11                | 0.05                | 0.07                       |
| GVA simple services (sections G-I) (%)                                | <u>0.49*</u>      | -0.09               | <u>0.61*</u> | 0.22                | 0.10                | 0.12                       |
| GVA specialised services (sections J-K) (%)                           | <b>-0.30*</b>     | <b>-0.29*</b>       | 0.10         | 0.10                | <b>-0.26*</b>       | <b>0.31</b>                |
| GVA public services (sections L-O) (%)                                | <b>-0.29*</b>     | <b>-0.33*</b>       | 0.12         | -0.19               | 0.03                | -0.23                      |
| GVA specialised services (sections J-K) (% GVA of the service sector) | <b>-0.37*</b>     | -0.10               | -0.10        | v0.12               | <b>-0.26*</b>       | <b>0.37</b>                |

\* significance at the level of 0.05

Source: prepared by the author.

Another determinant of the macroregional divergence process was a high share of simple services in the metropolitan area's economy. This could mean that a high penetration rate of such services in metropolises can restrict the development of such services in the regional hinterland. To a large extent, this is compatible with the central places theory, according to which the metropolitan centre 'services' the regional hinterland. To some extent, this hypothesis has been corroborated by the fact that an average share of simple services in gross value added reached 24.4% in metropolises and only 20.7% in their regional hinterlands. Nevertheless, it should be pointed out that, in the years 1998-2005, no correlation between macroregional convergence processes and the dynamics of the role of simple services in the metropolis and in the region could be observed.

To add further to this picture, a higher share of other types of services, not only those which usually represented the public domain, but also specialised financial and other B2B services, indicated an increased macroregional convergence. It should be noted, however, that specialised services could at least to some extent perform the role of a growth engine for the regional hinterland. This is manifested by the positive correlation between the increase of macroregional convergence and the development of such services in the metropolises' regional hinterlands, particularly in the situation of a relative stagnation with respect to the increasing role of such services in the economy of the metropolitan region.

### Labour market

The linkages between labour market indicators and macroregional convergence processes were to a greater extent associated with the labour market dynamics in the years 1998-2005 than with the initial situation of 1998 (Tab. 41). One exception were disparities in the unemployment rate in 1998. The smaller these differences, the greater the increase of the macroregional convergence in the level of economic development in 1998-2005 and, conversely, a divergence increase could be observed in the conditions of a manifest segmentation of the labour market. The differentiation of the labour market situation was mainly connected with its deterioration in the regional hinterland, which frequently accompanied the macroregional divergence process. On the other hand, increased labour

Table 41. Correlation coefficients between the macroregional convergence process and labour market situation

| Indicator                                | Value in 1998     |                     |               | Change in 1998-2005 |                     |                              |
|--|-------------------|---------------------|---------------|---------------------|---------------------|------------------------------|
|  | Metropolitan area | Regional hinterland | MA/RH ratio   | Metropolitan area   | Regional hinterland | Difference – MA/RH quotients |
| Dissimilarity of labour market situation | 0.01              |                     |               | 0.32*               |                     |                              |
| Employees per 1000 population            | -0.15             | -0.09               | -0.13         | <b>0.64*</b>        | <b>0.44*</b>        | <b>0.58</b>                  |
| Activity rate (%)                        | 0.06              | -0.07               | 0.05          | 0.03                | -0.38*              | 0.27                         |
| Unemployment rate (%)                    | 0.02              | 0.22                | <b>-0.35*</b> | -0.16               | <b>-0.27*</b>       | 0.19                         |

\* significance at the level of 0.05

Source: prepared by the author.

market similarities, particularly in terms of the number of jobs per 100 employees and an increased activity rate in the regional hinterland of the metropolis, fostered the equalising of development disparities between the metropolis and the region.

### Labour productivity

Table 42. Correlation coefficients between the macroregional convergence level and labour market indicators

| Indicator                               | Value in 1998     |                     |             | Change in 1998-2005 |                     |                              |
|---|-------------------|---------------------|-------------|---------------------|---------------------|------------------------------|
|   | Metropolitan area | Regional hinterland | MA/RH ratio | Metropolitan area   | Regional hinterland | Difference – MA/RH quotients |
| Productivity – total (EUR)              | -0.60*            | -0.60*              | 0.46*       | 0.63*               | 0.50*               | 0.60                         |
| Productivity in agriculture (EUR)       | -0.43*            | -0.39*              | 0.14        | 0.54*               | 0.51*               | 0.10                         |
| Productivity in industry (EUR)          | -0.49*            | -0.55*              | 0.14        | 0.71*               | 0.53*               | 0.44                         |
| Productivity in services (EUR)          | -0.61*            | -0.62*              | 0.44*       | 0.58*               | 0.41*               | 0.59                         |
| Productivity in agriculture (Total=100) | 0.01              | 0.13                | -0.12       | 0.06                | 0.20                | -0.10                        |
| Productivity in industry (Total=100)    | -0.19             | 0.07                | -0.21       | 0.01                | 0.11                | -0.08                        |
| Productivity in services (Total=100)    | 0.28*             | 0.24                | -0.06       | -0.02               | -0.26*              | 0.23                         |

\* significance at the level of 0.05

Source: prepared by the author.

Quite naturally, both labour productivity measured in EUR and its change in the analysed period were rather strongly correlated with macroregional convergence processes (Tab. 42). As a rule, a wider disparity in labour productivity between the metropolis and the region in the base year led to an increase in the macroregional divergence of the economic development level, which, first and foremost, was due to the disparities related to labour productivity in the service sector. In addition, an increase of intraregional disparities in labour productivity in industry and services widened the macroregional divergence. This process was mainly fostered by a faster increase in labour productivity in metropolitan areas in the industry sector, although such an increase, albeit on a smaller scale, could

also be observed in the service sector. On the other hand, the relativisation of labour productivity in individual sectors to the average tended to make these correlations statistically insignificant.

### General regression model – change in the development disparities

In the next stage of constructing a regression model, we discarded all variables which were not significantly ( $p < 0.05$ ) correlated with macroregional divergence processes concerning the level of economic development. Then, we removed those variables which were strongly intercorrelated ( $k > 0.6$ ) from the correlation matrix. In effect, we obtained a set of variables to use in the multiple regression analysis. In the process, we used forward stepwise regression whereby we successively added the most strongly correlated variables, with the adopted minimum increase of the adjusted determination coefficient ( $r^2$ ) of 0.05%. This ultimately produced the following regression equation ( $r^2 = 0.57$ ) (Tab. 43).

On this basis, it can be observed that the macroregional convergence process was largely dependent on the similarity of the metropolises' economic structure and their regional hinterlands in the base year. In 1998-2004, the divergence of the development level could be observed mostly in circumstances where there were wide disparities in the economic level between the metropolis and the region. On the other hand, similarities between the metropolis and the region in terms of the share of individual sectors in gross added value fostered convergence, and in any case led to a slower increase of intraregional disparities.

Table 43. Determinants of change in intraregional disparities of economic development level

|  | BETA   | ST. ERROR<br>BETA | B      | ST. ERROR B | p     |
|--|--------|-------------------|--------|-------------|-------|
| Intercept                                |        |                   | -0,001 | 0,021       | 0,940 |
| DI* <sub>(1998)</sub>                    | 0.253  | 0.085             | 0.004  | 0.001       | 0.003 |
| $\Delta$ LI** <sub>MA (1998-2005)</sub>  | 0.477  | 0.084             | 0.026  | 0.004       | 0.000 |
| $\Delta$ AR*** <sub>RH (1998-2005)</sub> | -0.169 | 0.084             | -0.003 | 0.001       | 0.046 |
| MB**** <sub>RH (2000-2005)</sub>         | -0.239 | 0.081             | -0.016 | -0.005      | 0.004 |

\* DI – dissimilarity index

\*\* LI – employees per 100 inhabitants

\*\*\* AR – activity rate in %

\*\*\*\* MB – migratory balance in ‰

and:

MA – metropolitan area

RH – regional hinterland

Source: prepared by the author.

Other factors associated with macroregional convergence processes included the number of employees in the metropolitan area, with a simultaneous fall in the number of people economically active in the regional hinterland and the migratory outflow from the regional hinterland. Most likely, this was proof of the backwashing of development resources from the regional hinterland to the metropolis.

It can be concluded that, while structural disparities point to one of the key reasons for the increase of disparities in the development level between the regional hinterland and the metropolis, the labour market situation and migration flows are consequences of an increase in macroregional divergence. In a nutshell, metropolitan areas with their rapidly increasing share of services (particularly those situated in regions which were still agricultural in character or were dominated by traditional industries) represented the poles of growth ‘draining’ the human capital from their hinterland, which in effect led to a negative feedback related to the shrinking of resources needed for the endogenous development of these areas.

Just as in the case of the degree of macroregional convergence, in order to gain a better understanding of the nature of the model presented above,

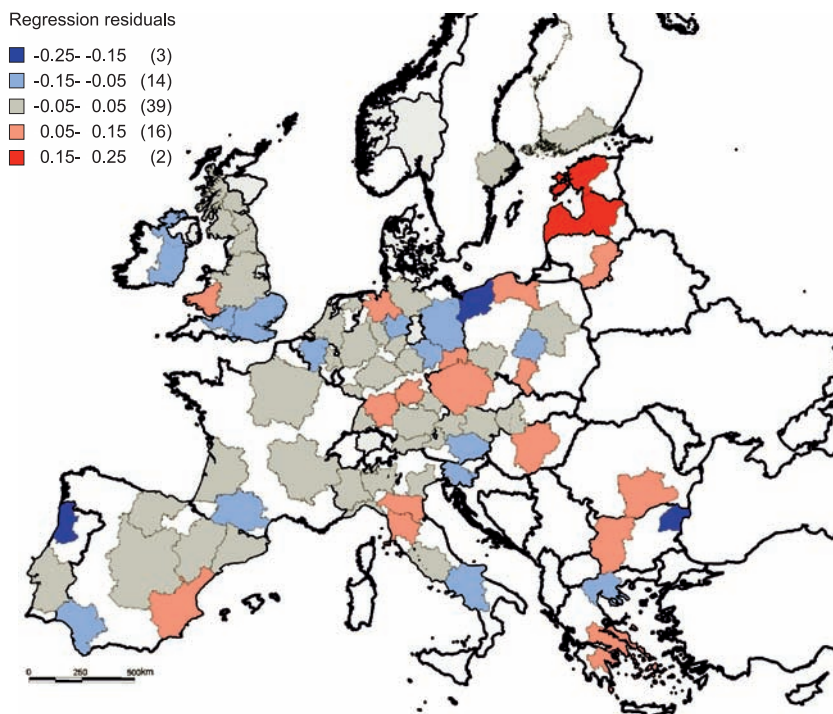


Figure 32. Regression residuals – determinants of intraregional development disparities change

Source: prepared by the author.



we examined the regression residuals and their spatial distribution. The residual analysis did not reveal any significant deviations from the standard distribution; likewise, the spatial distribution of residuals was also very even. Among metropolitan macroregions which diverged the most from the correlation shown in the regression model in question, were: coastal macroregions situated in new Member States (e.g. Tallinn and Riga) Szczecin and Varna. Nevertheless, their distribution was so patchy that it precluded any generalisations concerning their spatial structure.

## CONCLUSIONS

On the basis of the foregoing analysis, the following conclusions can be drawn:

- Both the scale of intraregional disparities and their changes were quite strongly dependent on the national and regional contexts, while the indicators and the regression models used showed only some of the factors that determined them. The incorporation of indicators related to the quality of the human capital and innovation of the enterprise sector would probably help better understand the intraregional disparities that can be observed.
- The key factor affecting disparities in the economic development level and their change was the similarity in economic structures of the component parts of the metropolitan macroregion. A similar economic structure could point to the existence of direct or indirect linkages between metropolitan areas and their regional hinterlands, which lessened the disparities in the development level. Wider structural differences were manifested in dissimilar development paths for the metropolises and their regions and led to macroregional divergence. Nonetheless, the increasing level of similarity between the economic structures of the metropolis and the region was not the key factor underlying macroregional convergence.
- Similarity in the labour market situation was a manifestation of minor intraregional disparities in the level of economic development, which could be seen as proof of linkages within the macroregional labour market. Furthermore, an improved situation in the metropolitan labour market with its simultaneous deterioration in the regional hinterland was the main reason (or consequence) for the macroregional divergence in the development level. Seen together with the migratory outflow from the regional hinterland to the metropolis, this could testify to the backwashing of development resources (mostly human capital), from the periphery to the core.
- Labour productivity was very strongly correlated with the development level (to some extent, this was due to structural disparities), which

was manifested *inter alia* by the fact that the differences in labour productivity in industry (testifying to a varying degree of capital intensity of the sector, and thereby probably to the level of its technological advancement) were an important factor differentiating the development level macroregionally. Nevertheless, the growing similarity of labour productivity figures was not included among the factors employed in the model explaining convergence processes in the analysed macroregions. Among other observable correlations which were not incorporated in our regression models, the following should be mentioned in particular:

- Regarding the disparities in the economic development level:
  - The level of monocentrism of the metropolitan area. This correlation meant that the hinterlands of polycentric metropolitan areas were in relative terms better developed economically than the metropolises with a clear domination of the centre; this could be viewed as proof of stronger intraregional linkages generated by urban centres making up conurbations.
  - The share of simple services in the economy of the metropolitan area. A higher share of simple services in the metropolitan economy generated wider disparities in the development level, just as a smaller share of specialised services in the economy of the regional hinterland. This could point to barriers to the development of services in regions with strongly developed central functions in the metropolitan centre.
- Regarding changes in the disparities in the economic development level:
  - Labour productivity was quite closely connected with macroregional convergence processes. As a rule, the higher the labour productivity the smaller the increase in development disparities, which was basically due to the disparities in labour productivity in the services sector. On the other hand, an increase in macroregional disparities in labour productivity led to macroregional divergence, which was mainly due to a faster increase in labour productivity in the metropolitan area in service and industry sectors.
  - Specialised services performed, to some extent, the role of the growth engine for the regional hinterland, which was primarily due to the fact that a high share of such services in the regional hinterland usually coincided with macroregional convergence processes. Secondly, a decrease in the disparities concerning the role of specialised services in the metropolis and in the region (both with regard to the economy at large and their share in this type of services) signified a smaller increase of macroregional divergence in the development level.

## PART 3

### CITY-REGION RELATIONSHIPS – CASE STUDIES



Metropolitan macroregions selected for detailed analysis were intended to represent a diverse set in order to show both the variety of intraregional linkages and factors which determined them, and their significance for the development of the metropolis and its regional hinterland. In this case, the aim of the study was to show the mechanisms underlying the linkages between the metropolis and the region.

The case studies were selected on the basis of the typologies discussed in Part 2, using data on intraregional development disparities based on per capita GDP. The macroregions were intended to represent extreme cases in terms of the scale of disparities in the level of development between the metropolis and the region, and show changes in these disparities also with regard to the national GDP dynamics (Annex 7). In effect, the following were chosen for further research:

- a) Macroregions with a wide and rapidly growing scale of intraregional disparities: the macroregion of Warsaw (fast development of the metropolis, but also of the regional hinterland in comparison with the national average) and the region of Stockholm (weaker development of the regional hinterland compared to the national average); which allowed also for comparisons between an 'old' EU Member State and a 'new' one;
- b) The macroregion of Toulouse where the considerable level of intraregional disparities are showing signs of diminishing due to the rapid pace of growth of the entire macroregion compared to the national average;
- c) The macroregion of Glasgow where the low level of intraregional disparities is increasing rapidly and the rate of macroregional growth is low compared to the rest of the country;
- d) The macroregion of Barcelona with a very low and stable level of intraregional disparities (a comparable development level of the metropolis and the regional hinterland) with a relatively low rate of economic growth compared to the rest of the country.

Naturally, the above selection cannot be considered as a representative sample, and the conclusions drawn on this basis can hardly be expected to encompass all the situations taking place in the extremely diverse research area covered by the ESPON programme. Nevertheless, it can be expected that the analyses of these cases will improve our understanding of the

relationships between the metropolis and the region in rather extreme situations, which should in turn make it easier to put forward relevant recommendations regarding activities aimed to strengthen the positive aspects of metropolisation processes and reduce negative aspects.

In the case studies, the following spatial ranges were applied (Tab. 44):

- The city within its administrative boundaries;
- The metropolitan area corresponding to the NUTS3 subregion or other national delineation;
- The metropolitan macroregion, corresponding in three cases to the NUTS2 region, and in two other cases being a combination of NUTS3 subregions.

Table 44. Component parts of the analysed metropolitan macroregions

| Spatial ranges                            | Spain  | United Kingdom   | Sweden                               | France                                   | Poland  |
|---|--|--|--------------------------------------|--|---|
| City within its administrative boundaries | Barcelona (1.7 M)  | Glasgow (600 000)  | Stockholm (830 000)                  | Toulouse (440 000)                       | Warsaw (1.7 M)  |
| Metropolitan area                         | Barcelona metropolitan area – UTS3 in approximation (3.2-4.9 M) <sup>1</sup> | Glasgow metropolitan area 9 local council areas (1.75 M) | Stockholm Lan (NUTS2/ NUTS3) (2.0 M) | Aire Urbaine de Toulouse (1.1 M)         | Warsaw metropolitan area - NUTS3 in approximation (2.6 M) |
| Macroregion                               | Catalonia (NUTS2) 7.4 M  | Western Scotland (8 NUTS3) 2.5 M                         | Mälardalen (5 NUTS3) 3.1 M           | Midi-Pyrénées (NUTS2 and 1 NUTS3) 3.25 M | Mazowsze (NUTS2) (5.2 M)                                  |

Source: prepared by the author.

The case studies mostly used the results of qualitative analyses, supplemented by the quantitative results of questionnaires circulated among local governments and enterprises.

Qualitative analyses included study visits of experts, in the course of which a number of in-depth interviews were conducted with representatives of institutions in charge of the development of a given city and region (moreover, in the case of Glasgow, Stockholm and Toulouse, we used analyses prepared by local experts<sup>2</sup>). In each of the macroregions, about 10 interviews were conducted (Annex 7), which focused on the following aspects:

<sup>1</sup> For more information see the case study of Barcelona.

<sup>2</sup> The expert's studies were prepared by: Prof. Iain Docherty and Malcolm Leitch (for Glasgow); Tuija Meisaari-Polsa (for Stockholm); Prof. François Taulelle (for Toulouse).

- The spatial range of the city's influence;
- The key strengths and weaknesses of the metropolis and of the region, and major differences between these territorial systems;
- The crucial socio-economic relationships between the metropolis and the region and factors which determined them, as well as their role in the development of these territorial systems;
- The directions and extent of public intervention concerning linkages between the metropolis and the region;
- The development prospects for the metropolitan macroregion.

As part of quantitative analyses, questionnaires<sup>3</sup> were distributed among local governments located in the analysed metropolitan macroregions (Annex 9), and among enterprises situated in the city's metropolitan area (Annex 10). Altogether, 1500 questionnaires were sent out to local governments, dealing with such issues as: transport accessibility, the impact of the central city on the development of local systems, and cooperation with other local government levels. The rate of return varied from region to region, and ranged from over 30% in the metropolitan macroregion of Stockholm to 3% in the metropolitan macroregion of Glasgow<sup>4</sup> (Tab. 45). Quantitative analyses were carried out using two approaches: for the municipalities situated at a distance of not more than 50 km from the city centre (in broad terms making up the metropolitan area), and for areas located further away, which constituted the external zone of the city's influence. Due to the low rate of return and small sample size (in some cases), the results obtained should be treated with caution, only as a supplementary source of information to the qualitative analyses made on the basis of the interviews.

Table 45. Surveyed sample of local governments in metropolitan macroregions

|                      | <b>Barcelona</b> | <b>Glasgow</b> | <b>Stockholm</b> | <b>Toulouse</b> | <b>Warsaw</b> |
|----------------------|------------------|----------------|------------------|-----------------|---------------|
| Total municipalities | 454              | 239            | 52               | 570             | 356           |
| MA questionnaires*   | 14               | 4              | 9                | 17              | 25            |
| RH questionnaires*   | 20               | 3              | 9                | 11              | 59            |
| Rate of return       | 7.5%             | 2.9%           | 34.6%            | 4.9%            | 23.6%         |

\* The general rule was that municipalities situated within 50 km from the city centre were regarded as being situated within the metropolitan area (MA), and the areas situated further away were treated as the external zone of the city's influence (RH).

Source: prepared by the author.

<sup>3</sup> In the emails sent out in October and November 2009 (stage I) and faxes (stage II), we provided links to the electronic versions of the questionnaires uploaded to a designated server.

<sup>4</sup> Due to the low rate of return and the small sample size, the Glasgow macroregion was not included in the quantitative analyses.

As regards enterprises operating in the metropolitan areas, the total number of questionnaires circulated was about 20 000 (based on the KOMPASS database); they tackled such issues as: spatial linkages; evaluation of the local environment and potential for innovation. The companies selected for the survey represented two sectors of activity, i.e. manufacturing (Section D) and services for enterprises (Section K).

Table 46. Surveyed sample of enterprises in metropolitan macroregions

|                          | <b>Barcelona</b> | <b>Glasgow</b> | <b>Stockholm</b> | <b>Toulouse</b> | <b>Warsaw</b> |
|--------------------------|------------------|----------------|------------------|-----------------|---------------|
| Total sample size        | 2500             | 1583           | 2500             | 2500            | 10 000        |
| Number of questionnaires | 35               | 10             | 73               | 26              | 118           |
| Industry                 | 25               | 3              | 23               | 6               | 19            |
| Services                 | 10               | 7              | 50               | 21              | 109           |
| Rate of return           | 1.4%             | 0.6%           | 2.9%             | 1.0%            | 1.2%          |

Source: prepared by the author.

The resulting qualitative analyses for respective case studies are presented below, followed by synthesis supported by selective use of quantitative analysis.



## **CHAPTER 1**

### **CITY-REGION RELATIONSHIPS: BARCELONA-CATALONIA CASE STUDY**

The introduction offers a general presentation of Catalonia and its main component parts: the Barcelona metropolis and the metropolitan region, that is the remaining Catalanian territory. In the description of this region, the issue of the dissimilarity of its territorial divisions, the so-called old and new ones, or the Spanish and the Catalanian, is extremely important. This will be discussed further in the study. Unfortunately, since the available statistical data refer to differently understood statistical units, caution in their application is recommended. Unless otherwise specified, the data provided concerning the metropolis, alternately referred to as the metropolitan area (and marked as a STAT source), generally refer to the province of Barcelona (a NUTS3 subregion). Despite its deficiencies (the boundaries do not overlap with the functional metropolitan area and they include large rural areas), the NUTS3 unit gives access to comparable statistical data, and – unlike the proposals for the delimitation of the Barcelona metropolitan area discussed below, the province has fixed borders, competences and financial resources. Most of Catalonia's inhabitants live here (Kaczmarek, Mikula 2007: 103). However, numerous analytical works focus on other planning units, thus in-depth interviews with representatives of research centres, consulting companies and public administration (interviews in the body of the text) provided an invaluable source of information<sup>1</sup>.

Catalonia lies in north-eastern Spain on the Mediterranean coast. In the north, the natural boundary of the Pyrénées divides it from France and Andorra (where Catalanian is the official language). It mostly comprises

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<sup>1</sup> I would like to extend special thanks to all those who shared their knowledge and materials with me during my stay in Barcelona in October 2009, in particular to: Mr Camarasa J.A., Mr Canals M.J.M., Mr Domenech R. B., Ms Herrero M., Lopez J., Mr Muñoz i Torrent X., Mr Redondo J.L., Mr Thomas J. T., Mr Ulied A. I would also to thank their associates. Special thanks are also due to Mr Jaume Fons-Esteve.

mountain and upland areas with few lowland valleys along the largest rivers (the Ebro) and some areas along the sea coast. Catalonia occupies an area of 31 700 km<sup>2</sup>, and has 7.4 million inhabitants (2006). Catalonia's capital, Barcelona, has a population of 1.7 million and occupies an area of only 101 km<sup>2</sup> (see below)<sup>2</sup>.

Besides Barcelona, Catalonia's major cities include Hospitalet de Llobregat (250 000 inhabitants, and in fact territorially integrated with Barcelona), Terrasa (202 000 inhabitants), Sebadell (202 000), Tarragona (140 000), Lleida (136 000). Both Catalonia and the city of Barcelona with its metropolitan area (regardless of how it is defined) have a high population density (Annex 11) (cf. Matheu 2003: 43), which for the region is 218 pp/km<sup>2</sup>; for the metropolitan region – 674 pp/km<sup>2</sup>, and for the city of Barcelona – 17 171 pp/km<sup>2</sup> (STAT). The characteristic feature of the metropolis is that there are no large rivers: those which flow through Barcelona (the Besos and the Llobregat) are – especially in dry season – streams rather than rivers and do not satisfy the residents' demand for water.

The very high population density of Barcelona, coupled with exorbitant costs of living and other inconveniences of living in the centre of a large metropolis, leads to continuing suburbanisation, facilitated by the relatively well developed centric transport network connecting it with the surrounding areas and the metropolitan region. In 2005, the metropolitan area had 4.7 million inhabitants, i.e. over 2/3 of Catalonia's population.

Over the last decade, each of these cities – excluding Barcelona – absorbed several thousand immigrants. The region is characterised by a high concentration of the population in the Barcelona metropolitan area: only ca. 1/4 of Catalonia's population inhabit the surrounding metropolitan region.

Catalonia, which accounts for 16% of the population of Spain, generates nearly 1/5 of the country's GDP. In 1995-2004, it recorded 38% real growth in GDP (up to a level of EUR 23 700 per capita in 2004). The EU enlargement in 2004 provided an additional growth stimulus which was only halted by the financial crisis of 2008. What distinguishes Catalonia from the remaining metropolises under analysis is the higher level of per capita income in the metropolitan region than in the metropolitan area. Moreover, this disparity is growing in favour of the metropolitan region: whilst in 1995 the ratio of the area's GDP to the region's GDP was 0.95, in 2004 it was only 0.92 (STAT). In 2004, Catalonia's GDP per capita was EUR 23 741, which accounted for 120.5% of the Spanish average.

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<sup>2</sup> In 1979, it had over 1.9 million inhabitants.

The share of the metropolis in the generation of GDP was prevalent, but – as mentioned above – lower per capita than in other parts of Catalonia, and in 2004 it was EUR 23 276.4 (as compared to EUR 13 967.2 in 1995). However, it meant a relative deterioration of its position against the national average, from 120.5% to 118.2% in 2004.

In 1998, the structure of the metropolitan economy was dominated by services (with a 62.7% share in GVA generation), with a considerable role of industry (36.5% GVA) and an insignificant share of agriculture (0.7% GVA). For obvious reasons, the role of agriculture in other parts of Catalonia was greater (5.7% GVA), but there both services and industry played nearly the same role as in the metropolitan area (60.9% and 33.4%, respectively). The years 1998-2005 were characterised by an increased significance of services both in the metropolitan area (by 3.3pp), and in the metropolitan region (by 2.1pp), mostly achieved at the expense of industry. For many years now, industry has been relocated to the external ring of the metropolis (Fig. 33).

The problem of the positioning of the Barcelona metropolis (and thereby of Catalonia) in Europe and globally (for various reasons, Spain is rarely adopted as a frame of reference for Catalonians) is seen in a new light when we analyse the structure of the service sector. It is commonly acknowledged that Barcelona (the metropolitan area) has made an attempt to become a centre of fashion and related new technologies and services. Coupled with the well-developed sector of culture and tourism, this would make it possible to promote a new image of the city and improve its position in competitiveness rankings, and in this way replace the collapsing industries with new sources of work and income. So far, none of these aspirations has been put into practice. The data for the metropolitan area (for 2002) prove that while the share of simple services in GVA generation was 26.2% and was higher than that of specialised services (22.0%), the latter indicator had worse values than in all the remaining case studies (including Warsaw, where specialised services had a 25.1% share). The year 2002 can probably be regarded as the starting point for the implementation of a new development policy for the metropolis (in 2003 the Metropolitan Plan was adopted). In the years 2002-2005, a considerable increase in the share of advanced services in the service sector GVA could be observed in the metropolitan area (by 1.3pp – it is worth noting that this was a much worse result than in the case of the Glasgow and Warsaw metropolises). In 2002, the Catalanian metropolitan region had a higher share of simple services (28.8%), and a slightly lower share of specialised services (18.0%) than the metropolitan area. The only considerable difference was a small increase in the share of specialised services in the service sector GVA in the years 2002-2005 (by 1.6pp). The share of public services changed only minutely (by 0.5pp).

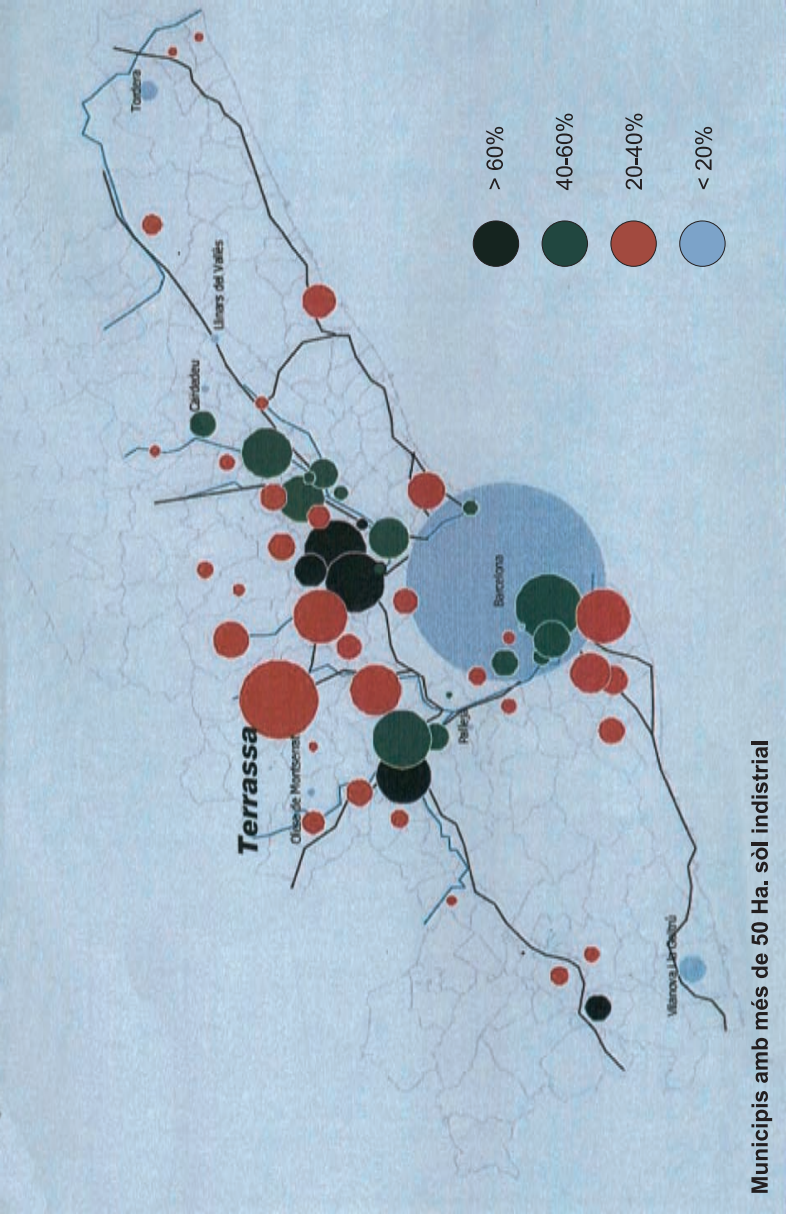


Figure 33. Specialisation levels in the industrial land of the Region Metropolitan of Barcelona municipalities  
Source: Muñoz and Torrent, 2008.

In 2001, 38.3% of all people working in Catalonia were employed in industry and construction, 58.9% in services, and 2.5% in agriculture (AMB 2003: 167). Catalonia's exports accounted for 28% of all Spanish exports and generated 29% of Catalonia's GDP. The share of the MRB in Catalonia's industrial output reached over 70% in medium-tech and over 80% in hi-tech exports, and 69.2% in income (GDP) (*ibidem*: 167). Agriculture is developing in river valleys, and the best developed area with a modern agricultural and food production complex is situated in the west of the region, in the environs of Lleida. Thus, non-metropolitan areas do not play a considerable role in employment and economic activity. This rather uncommon situation is the consequence of many years of development processes. For over 150 years, these processes were underpinned by the industrialisation of Catalonia, which produced a concentration of activity around the capital. The region's relief (mountains) played a part in the physical fragmentation of the area which was bound together by several centripetal transport routes. The success of industrialisation not only resulted in the concentration of the population in the Barcelona metropolitan area, but also led to a considerable depopulation of the region's remaining areas, whose inhabitants migrated to Barcelona and its environs in search of work. The modernisation of agriculture and dynamic development of tourism in weakly-populated areas (or, more broadly – increased functional ties with Barcelona) fostered a rapid increase of incomes in areas which were earlier regarded as peripheral. Today the quality of life and per capita income are higher outside the metropolitan area than within it.

### 1.1. THE METROPOLITAN REGION AND ITS COMPONENT PARTS

The region of Catalonia is one of 17 NUTS2 regions in Spain. Similarly to the Basque Country, it enjoys a greater deal of autonomy than most Spanish regions. In the traditional division, Catalonia has four provinces (*provincias*) (NUTS 3) and 946 municipalities (*municipios*). These structures were determined nationally as early as the 19th century, during the early stages of Catalonia's industrialisation. For instance, the capital province (Barcelona) occupies 7718 km<sup>2</sup>, and has 311 municipalities (Fig. 34). 95% of the province's population live in cities with over 5000 inhabitants, and 80% – in cities with over 20 000 inhabitants. The provinces inter alia distribute funds for investment projects in Catalonia (mainly for municipalities). They are administrative in character and are objects of an ongoing controversy (which is justified as the division into provinces has for a long time been divorced from the Catalan reality, which evolved during the massive industrialisation in the last two centuries). To some



extent, it is also due to separatist ambitions shared by many Catalonians, and the gradual taking over of the duties of state administration by the Catalanian authorities (e.g. tax collection, police). Catalonia's territorial system will be discussed in more detail in the following chapter. The existing and planned territorial divisions are utterly incompatible. P. Strijp (2008) referred to the status quo as 'administrative crowdedness'. In some areas of Catalonia, seven tiers of territorial units can be found.

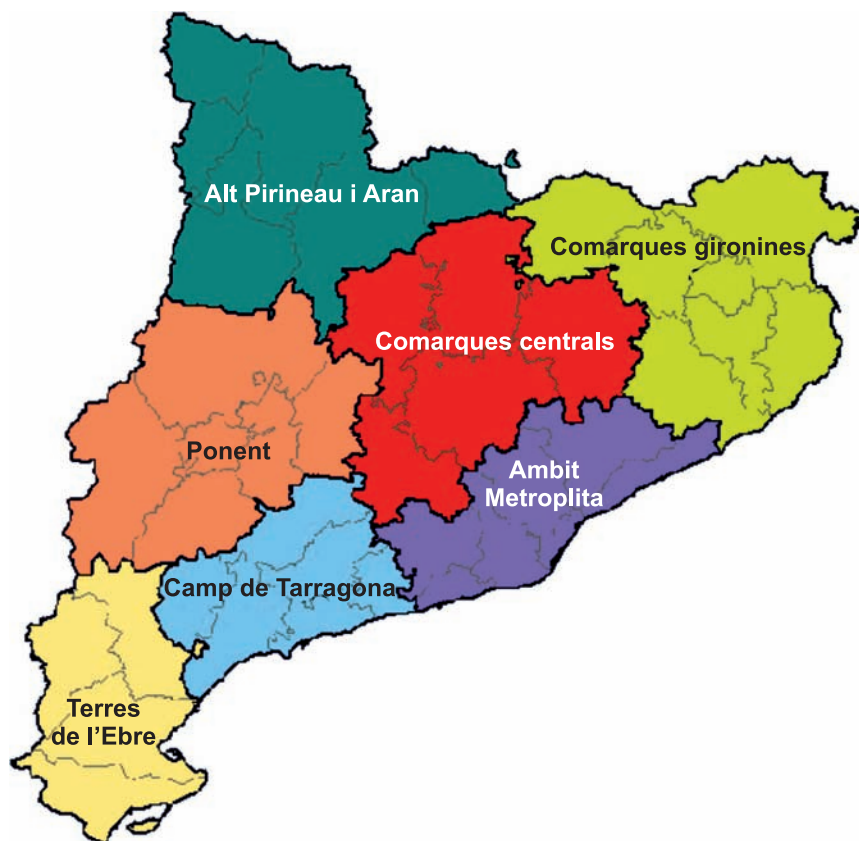


Figure 34. Catalonia, groups of *comarcas* (Regional Spatial Planning Areas). Metropolitan Region of Barcelona marked as 'Ambit Metroplita'

Source: AMB.

Under the statutes accorded to autonomous regions, they had the right to make internal divisions into counties or districts (*comarcas*), but most of them did not exercise this right. Today, Catalonia consists of 41 *comarcas*. On their basis, attempts are being made to form groups of *comarcas* for planning purposes. There are seven such groups, known as the Regional

Spatial Planning Areas (RSPA) (see Fig. 34). Apparently, these groups are to provide an alternative to *provincias*. They are better attuned to the actual settlement reality, which evolved inter alia following the development of Barcelona's satellite cities and the dynamic urban sprawl, than the 19th century provinces. However, neither *comarcas* nor their associations, nor forms of cooperation listed below, are furnished with sufficient powers or funds to replace the now compulsory nation-wide division into regions, provinces and municipalities. Through various institutional forums and communities (academic, territorial associations), Catalonia propagates its own proposed divisions, which are however merely planning-related in character, and only exceptionally stipulate some real forms of cooperation such as inter-municipal associations in Poland. Therefore, while Catalonia has its own concept of separate territorial structures, their actual role in steering development is limited mainly to analytical and planning functions. Just as every territorial system drawn on the map, this one does not fully correspond to the description of the metropolis. For example, in Fig. 28, the area of the metropolis should in fact also be delineated in the area of *Comarques Central*, especially along the main transport routes. It goes without saying that planners have every right to mark the boundaries using their own criteria.

In addition, the Barcelona metropolitan area is demarcated for planning purposes (*Metropolita de Barcelona*; or MRB, i.e. the Metropolitan Region of Barcelona) which is purely planning-related in character (as one of the *comarcas* groups with 163 municipalities and 4.9 million inhabitants, spanning an area of 3200 km<sup>2</sup>). Moreover, the literature of the subject distinguishes the Metropolitan Agglomeration of Barcelona (MAB; 93 municipalities over an area of 1578 km<sup>2</sup>, with a total population of 4.1 million). The criteria for the identification of the MAB and the underlying definition were the following: 'a grouping of contiguous Urban municipalities situated around a central city (with over 100 000 inhabitants and a density greater than 1500 pp/km<sup>2</sup>) and which make up an urban unit with a population greater than 250 000 inhabitants and with average density of over 1500 pp/km<sup>2</sup>.' (AMB, 2003: 151). To sum up, we can say that there is no single uniform definition of the Barcelona metropolitan area (Kaczmarek, Mikuła 2007: 103)

Other than the division into provinces, groups (associations) of municipalities or organisations in the Barcelona metropolitan area (more precisely: in a part of this area) operate on the ground, in a much smaller area, viz.:

- (a) 33 municipalities with competences in environmental protection (*Entitat Metropolitana del Medi Ambient*);





- (b) 18 municipalities (including Barcelona) which co-manage the transport in the metropolis (*Entitat Metropolitana del Transport*);
- (c) The area of *Mancomunitat de Municipis de l'Àrea Metropolitana de Barcelona*, which connects the city of Barcelona plus 30 neighbouring municipalities, intended to carry out tasks other than transport and environment (Fig. 35).

Groups (a) and (b) were established by the Parliament of Catalonia following the liquidation of the Metropolitan Corporation of Barcelona, and deal with specific tasks (environmental protection, transport) in the metropolitan area, and it is commonly believed that they perform their tasks satisfactorily. Group (c) is a voluntary association of municipalities with practically no influence on real activities. The city of Barcelona plays a key role in the work (and financing) of this group (Kaczmarek, Miłkoła 2007). It is also widely believed in Catalonia that the existing municipal associations prove that there exists a need to establish anew a territorial unit that would cover the entire metropolitan area and would administer its development.<sup>3</sup>

These main groups of municipalities and the Strategic Plan association are regarded as exponents of the opinions and interests of metropolitan municipalities. Additionally, an initiative involving cooperation networks (the Arc<sup>4</sup>) between the mainly industrial satellite cities that form an arc around Barcelona, and which are currently undergoing deindustrialisation and difficult transformation processes (from Villanova in the south-west through Terrassa in the north to Mataró in the east) has lately become more active. The network of cities (Arc) lies beyond the zone of influence of the three previous groups of municipalities, and remains slightly in opposition to the city of Barcelona, with a strong sense of the unique nature of many of its problems and an awareness that this uniqueness forces them to cooperate regardless of Barcelona. Terrassa and Sabadell were among the key textile industry centres in Europe, whereas the remaining Arc cities also evolved on the basis of traditional industries. Most of these cities have strong ties with Barcelona (which is within a distance of not more than one hour's journey), but also, in their majority, they represent labour markets independent of Barcelona.

Why is there no metropolitan structure with some tangible powers (e.g. within the boundaries of the group of *comarcas* of *Metropolita de Barcelona*, the MRB)? The answer is: because of Catalonia's structure and

<sup>3</sup> In addition, there is an association with the aim of developing the Strategic Plan for the Barcelona Metropolitan area comprising solely the area of 31+5 metropolitan municipalities. Such a plan was devised in 1999 and 2003 (AMB 2003).

<sup>4</sup> Some publications refer to it as the 'ring', which is less accurate because the Arc cities do not surround Barcelona from all directions.

conflicts of interests. The Barcelona metropolitan area with its specific institution (Metropolitan Corporation de Barcelona<sup>5</sup>) was established in 1974, but was disbanded by a decision of the regional Parliament in 1987. The reasons for this should be sought in politics: its existence was not favourable either for the city of Barcelona, or for the Catalanian authorities, because the metropolitan authorities were the strongest player in Catalonia, threatening the status of the authorities of Barcelona and of the region. At that time, a similar situation existed in several other areas of Spain (Valencia, Bilbao) (Kaczmarek, Mikula 2007). Political conflicts divided (and still do) individual areas making up the metropolitan area. This was compounded by the local traditions and identities of historic cities which, as a result of urban sprawl processes, were surrounded by the metropolis (Garcia 2003).

Owing to the role that it plays in the regional economy, its metropolitan functions, strong European linkages and a well-developed culture and tourism sector, Barcelona in fact extends its influence not only over the metropolitan area but also – as many researchers point out – over the whole of Catalonia. However, despite the importance that Catalonia (the metropolitan area) still enjoys in the Spanish economy and culture, there can be little doubt that in the recent years Barcelona lost in the competition for dominance with Madrid (Strijp 2008; interviews 2009). This is manifested by the outflow of great transnational corporations which more frequently opt for Madrid as their seat, and by visible difficulties in completing the economic restructuring process whereby traditional industries are to be replaced by hi-tech sectors. The collapsing industry and increasing unemployment are acutely felt in the cities of the Arc surrounding Barcelona from the north-west, where many groups of recent migrants, with low vocational qualifications and poor cultural roots (unassimilated) still remain unemployed. The case of the old industrial district of Barcelona – Poblenou – is very symptomatic; there, extensive investments were made with a view to creating 120 000 to 130 000 new jobs in the IT and media sectors (the so-called 22@ project, covering an area east of *Placa de les Glories* and in the vicinity of the new high-speed railway station)<sup>6</sup>. So far, the results of the exercise have been partially satisfactory. Even though Barcelona's industry plays a limited role, it still remains an important sector in the metropolitan area (particularly textiles, car manufacturing, chemical, pharmaceutical, electronic, printing and other industries). Attempts were also made to introduce new sectors into

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<sup>5</sup> Its initial name was: *Entitat Municipal Metropolitana de Barcelona*.

<sup>6</sup> For the presentation of the project, see: The 22@ Barcelona Project, <http://www.insyncbv.nl/pdf/22aBarcelona.pdf>; October 2009.

the metropolitan area (e.g. Terrassa: The Audio-Visual Park of Catalonia; in the former hospital) (Muñoz i Torrent 2008).

The characteristic feature of Barcelona is its long tradition of arts, crafts and trade. Together with highly-developed tourism which draws on its unique cultural assets, this makes Barcelona one of the major tourism and conference centres, one of few cities which can organise the largest conference or congress events in the world.

It is virtually impossible to evaluate the role of Barcelona as a separate city because it is wholly functionally integrated with the surrounding municipalities, and neither its functioning nor its planning and development management would be possible as a self-standing entity. This is true not only for transport or water management and environmental protection. We should remember that Barcelona occupies an area of a mere 101 km<sup>2</sup> and has a population of some 1.67 million. Many important institutions are located outside the city (which not in all cases is fortunate, for example the *Universidad Autonoma de Barcelona*, which had to start its own bus service for students and staff).

The metropolitan area comprising Barcelona exerts its influence far beyond Catalonia. This role is primarily the result of its metropolitan functions. In the social and political aspect, the still stimulating idea of Catalanian national identity (though according to some only ethnic) remains a characteristic feature of such influence. Economically, this area is the principal centre of services, relatively modern industry and tourism as well as cultural industries; it also shows a great deal of changeability: while traditional industries in Barcelona have practically disappeared; in the city's external areas (the Arc cities and the second line of satellite cities), traditional industries are undergoing a painful restructuring stage.

Barcelona's labour market is among the most versatile, open and attractive in Spain. Especially during the last decade, it has drawn thousands of immigrants who – depending on their education – sought better life opportunities in Barcelona, in the industrial centres of the metropolis or in peripheral metropolitan areas. However, experts emphasise that due to the slower than expected development of hi-tech sectors, many of the best qualified graduates and employees move to Madrid, which is being transformed into a dynamic and modern metropolis, dominating Spain (even though the Barcelona metropolis is larger).

Due to the high living costs in Barcelona, and problems related to living in the central zone which has quite good transport links with the surrounding areas, many people working in Barcelona live in the outer cities (municipalities) making up the metropolitan area, or even beyond. And, while the residents of the metropolitan area usually commute to work

on a daily basis, those living at a further distance opt to travel to work at weekly intervals.

Catalonia is a region with a strong sense of togetherness which goes beyond today's borders and draws on the land of the former Kingdom of Aragon. An interesting feature of Catalanian society is its openness to migrants, based on a repudiation of blood ties in ethnic identity. Everybody who considers himself a Catalanian and accepts the social values is one. The metropolitan area has strong functional linkages with the metropolitan region, which is similar to the former in terms of generated income (which is even fractionally higher in the region than in Barcelona). Some researchers even claim that Catalonia's metropolitan regions should be treated as an integral part of the metropolitan area (Kaczmarek, Miłkowska 2007; Interviews 2009).

In the opinion of many Catalonians, including development specialists, the boundaries of today's Catalonia do not correspond to the historical range of the Catalanian population (who inhabited the area from Perpignan in France to Valencia in the west and Saragossa in the north). The present boundaries of the Spanish regions (NUTS2) and provinces (NUTS3) were delineated in the 1830s. The real impact of the Barcelona metropolitan area – although dwindling according to some – still reaches beyond the region's borders (for instance, extremely strong cooperation ties link Barcelona with nearby Valencia). The functional metropolitan area (this does not refer to the administrative boundaries of the province of Barcelona) comprises areas lying at a distance of even more than 100 km from Barcelona (in areas situated along the five main transport routes).

The strengths of the Barcelona metropolitan region include mainly its highly-developed tourism and cultural sectors as well as supra-regional services. Despite the still existing enclaves of traditional industry, the metropolitan area is characterised by a high percentage of people with higher education. It is an important supra-regional transport hub, a major sea harbour and a trade centre in the western part of the Mediterranean. Barcelona has a well-developed transport network connecting it with the rest of the region and with the Spanish capital.

The weaknesses of Barcelona include its competitiveness, which in the last decade or so has deteriorated compared with Madrid and other growth centres in Western Europe. Likewise, Catalonia's income is on the decrease. The attempt to replace jobs lost in the collapsing industry (the deindustrialisation process has not as yet been completed in the satellite cities of the metropolis) by new jobs in hi-tech sectors or in financial services has not been successful. In effect, well-educated professionals more and more frequently move to Madrid in search of work, whereas lowest-qualified employees, who are frequently foreigners

poorly assimilated with Catalonia, start to live on unemployment benefit. Development is also hampered by the prevalent, centric linkages within the metropolitan area, with Barcelona as the hub of the system. Another obstacle is posed by the exorbitant costs of housing in the centre of the metropolitan area (Barcelona), which leads to a steady decrease in the number of Barcelona's inhabitants and a growing urban sprawl. A long-term problem in the metropolis is a clear deficit of water, which is provisionally resolved by the water desalination plant in Prat de Llobregat and water supply systems supplying water from remote rivers (such as the Ebro). There are no new quality investors; meanwhile old investors are leaving the metropolis, which can be viewed as proof of the deteriorating competitive advantage of Barcelona and its environs. In the conflict around water, the neighbouring regions of Spain suffering from water shortages are also involved. However, the main dimension of the conflict pertains to intraregional relations: non-metropolitan agriculture which employs less than 10% of the region's human resources and generates ca. 2% of Catalonia's GDP uses nearly 80% of the water resources (Stasiński 2008).

The regional hinterland of the metropolis has well-developed functional linkages with Barcelona. Most of the region has good access owing to a number of major transport routes. High productivity in agriculture and well-developed food processing as well as the tourist sector in the mountains and historic cities (Tarragona, Girona and others), coupled with low population density, have contributed to the fact that the level of income is slightly higher in the regional hinterland than in the Barcelona area.

Other weaknesses of the region include the prevalence of centric transport links connecting it with Barcelona. Transport routes bypassing Barcelona are poorly developed, which is regarded as an impediment to the stimulation of the peripheral centres. In addition, difficulties in the development of non-tourist related functions in cities situated outside the Barcelona metropolitan centre can be viewed as a weakness. One example here is the not very successful attempt at making Tarragona a congress centre: the city's central area is poorly developed and cannot compete with Barcelona. The endogenous resources of the regional centres prove too weak (excluding certain forms of tourism) to move out of Barcelona's shadow.

A review of statistical data and the strengths and weaknesses of Catalonia reveals the unquestionable domination of the Barcelona metropolitan area over the region. This refers not only to demographic domination but also to human capital and attractiveness for investors and tourists. On the other hand, owing to their relatively well-developed industries (food and tourism), the weakly-populated areas of Catalonia reach per capita incomes several percentage points higher than is the case in the metropolitan region.

They also often offer a better quality of life and – at least along the main transport routes – easy access to the country's capital. Catalonia as a region may serve as an example of well-developed, functional linkages which foster development. Nevertheless, it is now experiencing development problems, objectively expressed in the relative GDP decrease.

## **1.2. RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

### **Commuting to work**

Commuting to work is concentrated in time and in space. On weekdays, we can observe three rush hour periods: in the morning and in the afternoon (mostly related to travelling to and from work), and in the evening, which is unrelated to work. The characteristic feature of Catalonia and its metropolitan area is that most commuting is enclosed within this area, particularly the *Comarcas Central* group. As many as 91.6% of commuting done by the residents of the *Comarcas Central* begins and ends in the region (Cebollada, Riera 2008: 180). A very small proportion of work-related journeys goes beyond this area, which is to a large extent explained by the concentration of the population in the metropolis. In the metropolitan area, commuting is mostly done using means of public transport, whereas most journeys from outside the metropolitan area are made by car (*ibidem*). Journeys to and from the non-metropolitan area primarily originate in the largest urban centres lying some distance from Barcelona: Girona, Tarragona and Lleida.

### **Migrations**

Migration flows are frequently connected with commuting to work. Also, migrations in the Catalanian region are bi-segmental in character. The first segment refers to the outflow of residents from the central city, which has been in progress for some time now, underpinned by a considerable increase in the costs of living and greater inconvenience associated with living in the centre of the metropolis – the extremely densely populated Barcelona. Those who leave Barcelona to live elsewhere include people who work in the city but cannot afford to live there, and wealthy people who wish to live in the suburbs. In effect, Barcelona is constantly losing inhabitants while the nearby municipalities making up the metropolis absorb them. The extended transport system which allows for commuting to work even from distant locations makes this much easier. Thus the majority of traffic moves in a very large metropolitan area where the definite majority of Catalonia's

inhabitants live. The growth of the population observable during the last decade was mainly limited to the Barcelona metropolitan area and was produced by immigrants. Owing to the high costs of living in Barcelona, migrants settled mainly in the outskirts of the metropolis. Coastal cities also recorded a significant population increase. In general terms, only the large influx of foreign migrants (mostly from South America) more than made up for the decrease in the metropolitan area's population, lasting for over a decade (Redondo 2009).

### **Trade exchange between enterprises**

For over 1700 industrial estates identified in Catalonia, nearly 1/3 are located in Barcelona. They cover areas located along the main exit routes (Miralles-Guasch, Donat, 2007). Most of the trade exchange is conducted within the boundaries of the metropolitan region or with the European or global environments. This is driven by supra-regional trade and a well-developed tourism and cultural sector. Trade with the metropolitan region is insignificant in volume, save for two exceptions: the agriculture and food sector (the environs of Lleida in particular) and the tourist sector (excluding the coastal belt, mountain resorts and cities which abound in historic and culture monuments).

### **Higher-order services for individuals**

Barcelona and its immediate surroundings is an important centre of higher-order services. Taking account of the very high degree of population density in the metropolis in any of its delimited borders, Barcelona is definitely its dominant centre. This applies both to higher education and other services (administration, business, financial, tourism, information, media, technology). The very high place occupied by Barcelona (and Spain) on the map of European and global tourist attractions promotes the internalisation of the metropolis. A modern sea harbour and the recently enlarged international airport facilitate this process. Studying in Barcelona is attractive not only to students from Catalonia, but also – through exchange programmes – from other regions of Europe. However, there is also an observable tendency for the outflow of the most ambitious youth to study in Madrid, which in the future can offer better employment prospects in attractive occupations. The internationalisation of Barcelona only marginally affects economic development not connected with tourism: the long-term processes of relocating industrial activity to the outskirts of the metropolis and offshoring over the last decade have dented Barcelona's competitive advantage. Interestingly, the neighbouring regions of Va-



lencia and Aragon (Interviews 2009) are regarded as Catalonia's main competitors in attracting investors (Interviews 2009). The advantage of the the metropolis over the remaining centres is so great that their offer may only be supplementary.

None of the Catalan cities and only few in Europe can match the quality of cultural services offered by Barcelona.

Barcelona is the seat of the Union for the Mediterranean.

### **Entertainment and leisure**

In terms of tourism and recreation, Catalonia is one of the most attractive regions of Europe, with an offer that combines cultural and natural assets (the sea and the mountains). Recreational, tourist, weekend and holiday journeys play an important role in the mobility of Catalonians. In this context, two issues command special attention. Firstly, the residents of Catalonia – similarly to many Mediterranean regions (in France, Italy, Greece, etc.) – leave for holidays outside their region relatively seldom, and even more seldom go abroad. For obvious reasons (the concentration of the population at the seaside), most journeys, especially short-term ones, are limited to the coastal area, the major part of which is located in the metropolitan area. The accessibility of leisure destinations, and a well-developed tourist infrastructure means there is less pressure to own holiday homes than is the case e.g. in northern European countries. Cultural factors also seem to play a certain role in this regard: Catalan society is much less atomised.

### **Relationships with public authorities**

As mentioned earlier, public authorities at different levels have strongly divergent views on many matters, from the territorial division of Catalonia, to institutional arrangements to the division of competences. Here, both the attitude to the degree of autonomy (independence?) of Catalonia, and division of influences in the region come into play. The establishment and subsequent liquidation of a joint metropolitan institution is proof of the intensity of internal conflicts. Various coalitions are created, which are frequently limited to specific spheres, e.g. water management, transport, etc. However, due to voluntary participation, even the very core of the metropolitan area resembles a patchwork rather than an area managed in a uniform way.

From the developmental perspective, two interesting divisions exist. The first is metropolitan in character: the external areas where industry was relocated from Barcelona felt a lack of support and so initiated



cooperation to construct a transport bypass, connecting the cities in the so-called Arc and overcoming the centric layout of the current connections with the centre of the metropolis. Secondly, there is a growing conflict over water resources in the region, which still awaits a permanent solution. The metropolis lies on two small rivers which cannot satisfy its needs, and its population faces severe restrictions in this regard. Meanwhile, most of Catalonia's water is consumed by agriculture.

The division of public funds among territorial units is an obvious subject of controversy; the usual practice being to concentrate the funds in the hands of the regional and provincial administration (NUTS2 and NUTS3). The planning units, consistently developed using support from many Catalan institutions, have very limited means and powers accorded to them.

### **1.3. FACTORS SHAPING THE RELATIONSHIPS BETWEEN THE METROPOLIS AND ITS REGION**

The functional ties between the metropolis and the region are of key significance in the description of Catalonia. The metropolis is a modern city which, however, is undergoing a difficult stage associated with a gradual loss of the competitive advantage it enjoyed during the industrial era. Similarly to many metropolises built around industry, the process of transition to a knowledge-based economy proved more difficult than expected. The highly developed sector of culture and tourism represents a significant resource, yet one which is insufficient to build a new image and competitive advantage for the city. The metropolitan region is too weak (from human resources to the economy) to make any pertinent contribution to new solutions. Its potential is far too low. At the same time, the metropolitan region makes very efficient use of the metropolis' potential to promote its own development.

Political differences manifested in a variety of aspects represent an important factor defining the relationships between the region and the metropolis. Whilst the conflict for the control and use of water resources clearly has a territorial dimension, other bones of contention do not. The issue of the autonomy, underpinning Catalonia's political life, is an important factor differentiating the regional community.

The ties linking the metropolis with the region evolved many decades ago and today are mature and based on functional adaptations (Interviews 2009). The economic activity of the metropolis, where for some time relocation from the central districts to the outskirts of the metropolitan region could be observed, is absolutely dominant. The metropolitan region is not involved in these processes in any serious way: the industry there has

always been overshadowed by the metropolis and has been mostly local in significance. Adaptation processes ultimately led to the development of centres of agriculture and the food industry as well as tourism.

Consequently, the region has a relatively small share in economic development and in migrations: the greatest influx of migrants was recorded in the external areas of the metropolis, where both the economic structure and costs of living met the demands and expectations of migrants. The proximity of Barcelona is and has been the main factor of attraction. For this reason, the diffusion of development processes in the metropolis has been possible on a relatively limited scale and is restricted to the relocation of economic activity towards the edges of the metropolis, but not to the region as such. Due to its scale, commuting to work, mostly enclosed within the metropolitan region, has little influence on financial transfers from the metropolis to the region and vice versa. The process of urbanisation of the coastal belt is under way; among its many attractions, it also has good transport connections with Barcelona.

In the present day, there is no room for backwashing in Catalonia as it ended with the last stage of industrialisation. The depopulated areas outside the Barcelona metropolis show a very small influx of inhabitants, usually in waves and mostly from outside Catalonia. Thanks to improved transport connections, the number of people who spend weekends in the region is growing. As a rule, however, journeys in the metropolitan area start and end there. The metropolis seems to be nearly self-sufficient, which does not mean that it is not subject to internal territorial transformations. The depopulation process in Barcelona (which is the core of the agglomeration) is a specific type of backwashing. This process, affecting over 100 000 people over the last three decades, involved moves of the population within the metropolitan boundaries.

#### **1.4. MUTUAL RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

After nearly two hundred years of industrial development, we can say that the metropolis and the metropolitan region still maintain strong functional ties, rarely encountered in European regions. In view of the fact that 2/3 to 3/4 of Catalonia's population is concentrated in the metropolis (the actual number depends on the definition of the metropolitan boundaries used), depopulation of the region is no longer possible. Much more likely is the continuation of a relatively moderate suburbanisation process in the immediate surroundings of the metropolis. Further improvements of transport links, not only the centre-oriented ones but also those directly connecting more peripheral centres with each other, with Barcelona and

with the largest centres of the neighbouring regions (Valencia, Saragossa) should stabilise the population of the region as the supplier of relatively simple services, foodstuffs and medium-tech industry. The provision of tourist services to the metropolis' inhabitants, which were complementary to rather than competitive with metropolitan tourism, also played an important role.

### **1.5. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT**

In recent years, we have seen considerable increase of activity related to development studies and development planning. Attention is mostly focused on a development strategy in which the metropolis figures as the dominant growth centre in Catalonia. Many units of regional and local authorities, self-governing associations and research institutes take part in the organisation and financing of these efforts. Despite the plethora of works diagnosing the situation of the metropolis in the context of the region, it can hardly escape attention that one of the limitations concerning the usefulness of these efforts is that they are carried out in isolation from the formally binding territorial division of Spain into autonomous regions and provinces. The administrative and planning units do not overlap territorially and, without making some changes, both the effectiveness and efficiency of the research and planning efforts will be limited.

#### **Financial instruments**

Owing to the high development level of the metropolis and the region, EU funds do not play such a significant role as they do in Objective 1 regions (Convergence). Efforts were made to ensure the co-financing of the development of new, innovative economic sectors in the metropolis, mostly in connection with the 22@ Project, and of transport projects. Generally speaking, development activities in the metropolitan area are financed from the constituent municipalities' own funds. The city of Barcelona plays a special role in this regard, owing to its dominant share in the financing of joint projects. The current financial crisis has negatively affected the region's income, although, due to growing unemployment, it has called for an increase in public expenditure, including social. This problem mainly affects the more peripheral areas of the metropolis.

Budgetary subsidies to development projects, transferred from the state budget via provincial administration (NUTS 3), represent an important source of public funding supporting development. In the metropolitan area understood as a *provincia*, this function is discharged by the Barcelona-

based *Diputacio de Barcelona* (DIBA). The mission of DIBA is: ‘to ensure adequate provision of the services that form part of municipal responsibilities and powers, guaranteeing a high level of quality and equality of access for all our citizens’ (DIBA 2009). The needs observatory (a list of projects submitted by the local authorities) provides the basis for intervention, in addition to contracts for specific projects approved by DIBA. The scale of intervention is shown in Fig. 36.

The Map clearly shows that municipalities lying at a distance from the core and rural in character receive preferential treatment in the selection of projects for financing.

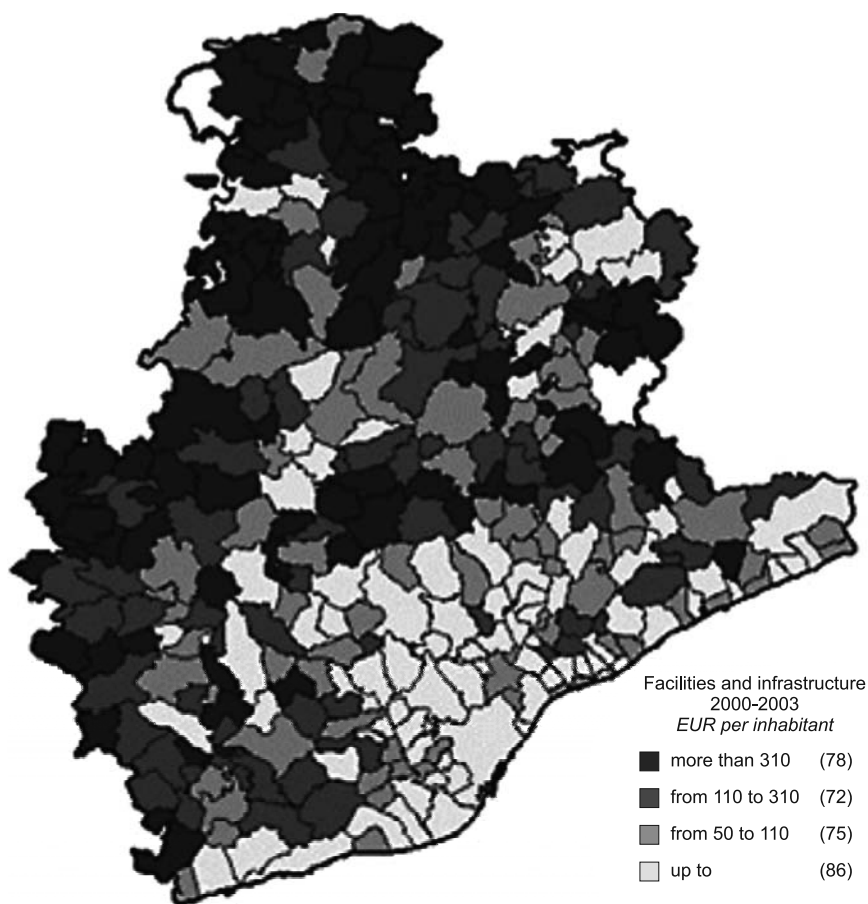


Figure 36. Co-financing facilities and infrastructure within DIBA activities in *provincia de Barcelona* (NUTS3), by municipalities, in EUR per capita, 2000-2003

Source: DIBA 2009.

### **Infrastructure investments**

The development of the transport infrastructure is largely dispersed territorially. The local and regional authorities pursue independent development policies, in addition to central investments related to motorways and high-speed railways. Despite these circumstances, the road and railways transport network is well-developed; the main problem is the shortage of connections which bypass Barcelona, the core of the metropolis. The great number of carriers running services mainly in the metropolitan area may seem an inconvenience for customers, but this is a typical situation in the majority of metropolises.

Major efforts to adapt infrastructural investments to revitalise and develop post-industrial areas include investments made in preparation to the Olympic Games and the 22@ Project. However, time is required to see the synergy achieved by these efforts<sup>7</sup>.

### **Education**

Similarly to other EU countries and regions, European funds are used to provide support to the development of human resources in addition to local funds. Due to the high level of regional development (which in Spain is only surpassed by Madrid), these funds are decreasing, but are now more focused on projects related to the fostering of competitiveness and a knowledge-based economy. However, to achieve the desirable results, it is necessary not only to educate top-quality specialists but also to create relevant jobs for them in Catalonia. The fact that many graduates and specialists leave for the Spanish capital proves that there is no synergy in this regard.

### **Summary**

The results of the activities discussed above are not spectacular, and the degree of their coordination may only be evaluated as moderate. In consequence, they have not significantly fostered the development of linkages between the metropolitan centre and the remaining part of the metropolitan region. It should be remembered however, than many plans and projects have not as yet been implemented or finalised. We should also take account of the fact that the incoherence of the administrative and

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<sup>7</sup> In the case of the 1992 Olympic Games, it is commonly acknowledged that despite promises and circulated opinions, the Games led to a temporary collapse of tourism in Barcelona, which was to the advantage of the tourist resorts on the Mediterranean Sea competing with the city (Kozak 2009).

planning divisions, or even institutional territorial chaos, is certainly an obstacle. It so happens that funds for investments and other developmental activities are controlled by traditional division units (regional government, provinces and municipalities), whereas planning activity is apparently being developed at the level of units furnished with small competences and means (*comarcas*, groups of *comarcas*).

### 1.6. GOVERNANCE OF THE METROPOLITAN AREA

The debate on the establishment of metropolitan areas has been going on in Spain for a long time, and the changing fortunes of the Barcelona metropolis have spurred an extraordinary mobilisation of efforts on the definition and delimitation of the metropolitan area in Catalonia. The results achieved so far are less than satisfactory, but they have produced many studies and analyses which have significantly expanded knowledge about this part of Catalonia. To date, no agreement has been reached regarding either the definition (and thereby the delimitation of the boundaries), or a uniform mechanism for managing metropolitan development. Political conflicts over the implementation of any new territorial division (whether only in Catalonia, or in Spain as such), as well as inter-municipal, inter-institutional and party conflicts within the metropolis have effectively blocked changes in the status quo. There is a widespread opinion that the national authorities will hamper the process of replacing the traditional division into regions, provinces and municipalities by other territorial divisions (although the creation of *comarcas* was allowed, they have not been furnished with significant funds). For the time being, the new divisions will not have influence outside planning. The real funds and competences will still be connected with the traditional, official, nation-wide divisions. It is difficult to predict what conditions must be fulfilled to enable change. There is little doubt that the adaptation of the administrative and competence-related divisions to the actual development of Catalonia in territorial terms would be a move that could be politically difficult but certainly rational. However, difficulties encountered in the setting up of voluntary associations of municipalities show that these problems have a strong inter-Catalonian and even intra-metropolitan dimension. This is not merely a question of relations with the national authorities.

As stressed above, despite some chaotic features, Catalonia is nevertheless trying to delineate the boundaries of the metropolis on the basis of studies and analyses, using the combined efforts of many institutions and decision-making bodies. These could provide the basis for the building of institutions which would manage development and successfully implement strategies.

Conflicts of interests have so far proved less acute at the stage of research, but where the recommendations refer to real issues ‘on the ground’, particularly distribution of funds and competences, these differences of opinion gain in significance. Controversies regarding the scope of Catalonia’s autonomy provide a background that is certainly not conducive to working out shared opinions or solutions. But can things be different if nearly every proposal is examined insofar as it may affect the political standing of Catalonia in Spain? For this reason (and due to common conflicts of interest in the region, and in the metropolis), there has been little progress in the development of a mechanism for managing metropolitan development. The plethora of ideas concerning the delimitation of the metropolitan area illustrates the degree of Catalanian impossibility. Although positive examples exist, in particular cooperation in public transport in the metropolitan area (or rather part of it), this does not satisfy all needs related to metropolitan management, especially in view of the fact that the metropolis faces many long-term development problems (water provision being one of them).

### **1.7. DEVELOPMENT PROSPECTS**

Catalonia is not a typical region, not so much because of its ambitions for autonomy as because of the very strong position of the metropolis in the region and strong ties with the surrounding metropolitan region. The role played by the metropolis is crucial to understanding the situation of Catalonia as a whole. And Catalonia is visibly at the crossroads. The general improvement in the economic climate after 2002 led to a considerable influx of inhabitants, which offset the fall in the Catalanian population leaving the region in search of a better life. The main reason for the propensity to migrate is the collapse of traditional industry, relocation and offshoring, which phenomena – despite the efforts undertaken by the authorities – have not been compensated by new jobs created in new, modern economy sectors. The prospect of curtailing jobs to the medium-tech sector e.g. in the car industry and tourism has turned out to be a stimulus propelling increased migration. The competitive advantage of the metropolis has diminished perceptibly, and the efforts made to re-work the image and create thousands of new jobs in new sectors (such as the 22@ Project) has not produced the anticipated results. In the time of the crisis, the factor which initially helped improve the situation, that is the influx of employees from outside the region and mostly from outside Spain, became a source of problems, particularly in more peripheral parts of the metropolis, burdened with traditional industries (the so-called Arc). Immigrants, who frequently had low qualifications, a poor command of



the language and poor knowledge of the local culture, suddenly began to exert pressure on the local budgets.

In the present situation, two broad scenarios are feasible.

The first envisages further deterioration of the competitive advantage of the metropolis, and thereby of Catalonia as a whole. Migrations of top specialists out of the region (to Madrid and other European countries), which has been taking place for many years now; the outflow of investors, a process, lack of political stability in internal relations and at the national level – all these factors are detrimental to endogenous development and to attracting inward investment. The leading industries of culture and tourism industry will sustain the prosperity of the metropolis, but will this apply to the metropolis as a whole? This is not so certain. The attempts made so far to revert this trend (1992 Olympic Games, global fashion events<sup>8</sup>, the 22@ Project) can be regarded as spectacular if not quite successful strategically.

The intensive analyses and planning efforts made in recent years could underpin the development of a new strategy and restructuring of the Catalanian economy in tune with the new development paradigm of a knowledge-based economy. However, the political context of these efforts, lack of coherence between territorial units, uncertainty concerning powers and competences as well as local and regional ambitions pose serious threats. Nevertheless, it can be hoped that further aggravation of the situation will finally force a consensus, enabling consistent reforms and re-opening the way to Catalonia's development. However, global trends must be taken into account, and these are not favourable for Europe. Will they prove favourable for Catalonia? From today's perspective, this does not seem very likely. Building the region's future around a strong sense of community and Catalanian identity may not be enough to ensure success against international competition. Investors rarely base their decisions on such criteria.

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<sup>8</sup> The prestigious Bread&Butter fashion event (which happens to be a German brand), after being held for several years in Barcelona, in 2009 was moved to Berlin, to the former Tempelhof airport location.



## **CHAPTER 2**

### **CITY-REGION RELATIONSHIPS: GLASGOW-WESTERN SCOTLAND CASE STUDY**

Glasgow is located in the southern part of Scotland, in the so-called Central Belt area which stretches from Glasgow in the west to Edinburgh and Dundee in the east. This area has the largest population in Scotland and the highest urbanisation rate (all Scotland's major cities except Aberdeen are located in this area), and is characterised by the greatest economic potential.

Initially, the power of Glasgow was built around trade and later, in the time of the Industrial Revolution, around the shipbuilding, textile and machine-building industries. The processes taking place at the time in the city had a strong bearing on its hinterland: Glasgow provided employment not only to citizens of Scotland but also to Irish workers. Towards the end of the 19th century, the city's population exceeded one million, which made Glasgow the third largest agglomeration after London and Paris. This situation continued for over half a century. However, the problem of overcrowding caused by the city's increasing population was not solved through the construction of new housing estates with multi-family residential buildings. The 1960s saw the introduction of a policy which relocated residents to new cities (the so-called 'overspill' plan). Coupled with significant changes in the administrative boundaries of Glasgow, this led to a substantial decrease in the population living within the city's boundaries (Rae, Brown 1966). Today, Glasgow, as the largest urban centre of Scotland, has only 584 240 inhabitants (i.e. 11% of Scotland's overall population).

In addition to Glasgow, there are only three cities in Scotland with a population of over 100 000 inhabitants. These are: Edinburgh (471 650), Aberdeen (210 400) and Dundee (142 470). The cities with the greatest significance within the area of Glasgow's dominant influence include: Paisley (74 000), East Kilbride (73 000), Hamilton (49 000), Cumbernauld (49 000), Ayr (46 000), Greenock (44 000), Kilmarnock (44 000), Irvine

(39 000), Motherwell (30 000), Clydebank (29 000), Bearsden (28 000), and Dumbarton (20 000)<sup>1</sup>.

Following the 1997 reform, the administrative structures in Scotland were changed yet again: nine higher-order administrative units (regional councils) were abolished, and their tasks taken over by 32 council areas, governed by elected councils. At that time, the area corresponding to the functional extent of Glasgow's influence (Strathclyde Regional Council) was abolished, to be replaced by 12 councils: Argyll and Bute, Renfrewshire, East Ayrshire, East Dunbartonshire, East Renfrewshire, Glasgow City, Inverclyde, North Ayrshire, North Lanarkshire, South Ayrshire, South Lanarkshire, and West Dunbartonshire.

## **2.1. THE METROPOLITAN REGION AND ITS COMPONENT PARTS**

The administrative areas of Glasgow City do not encompass all processes and functional ties which connect entities located in Glasgow with entities of its broadly understood hinterland. The spatial extent of the influence of the Glasgow metropolitan centre on its hinterland does not yield easily to clear-cut definitions and varies depending on a given aspect of such impact. The studies which were carried out to delimit the zones of influence of the largest Scottish cities (Glasgow, Edinburgh, Dundee, Aberdeen) confirm a broad spatial extent of Glasgow's influence (*The City Region...* 2002). An analysis of the housing market, commuting to work, strategic transport linkages and the retail market suggests that the impact of Glasgow reaches much further than the council areas making up the metropolitan area. The influence of Glasgow in different spheres of life, particularly regarding commuting to work and education, reaches as far as: North, South, East Ayrshire, Argyll and Bute, and Stirling (*Metropolitan Glasgow...* 2008). Moreover, the Glasgow metropolis performs a very important role for the Highlands and Islands region, notably with regard to its educational base and healthcare services.

The relationships of Glasgow with its internal hinterland are marked by the proximity of another large urban centre – Edinburgh. Glasgow exerts influence not only on Edinburgh but also on the council areas located outside Edinburgh (albeit to a lesser degree), e.g. the Lothians, Fife and the Scottish Borders (*Glasgow and the Clyde...* 2006). Due to the small distance between Glasgow and Edinburgh, their zones of influence penetrate each other. Nevertheless, the mutual impact of these cities is much smaller than might be expected considering the short distance between them, and good

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<sup>1</sup> <http://www.gro-scotland.gov.uk>.

transport connections. The reasons for this are historical, and are associated with the divergent sense of regional identity of the residents of these two cities. Making use of the proximity of Glasgow and Edinburgh is currently perceived as a development challenge and an opportunity for Scotland, and cooperation between these cities is believed to be indispensable for the development of Scotland at large (*National Planning...* 2009). However, strengthening the linkages between the two cities and generating synergy calls for additional cooperation and coordination of activities on the part of their authorities.

It should be emphasised that, at present, neither the metropolitan area nor the metropolitan region of Glasgow are reflected in Scotland's current administrative structure. In 1975, a two-tier system of local government was introduced in Scotland, with nine regional councils. The largest of them, the Strathclyde Regional Council, indicated the zones of Glasgow's functional ties and corresponded in size to the Glasgow metropolitan area. In addition to Glasgow, it covered 11 other units of the lowest administrative level. The regional authorities were in charge of providing a framework for the area's operation in the sphere of strategic planning and of service provision for the population in the spheres of education, social assistance, police and fire services, sewerage, roads and passenger transport.

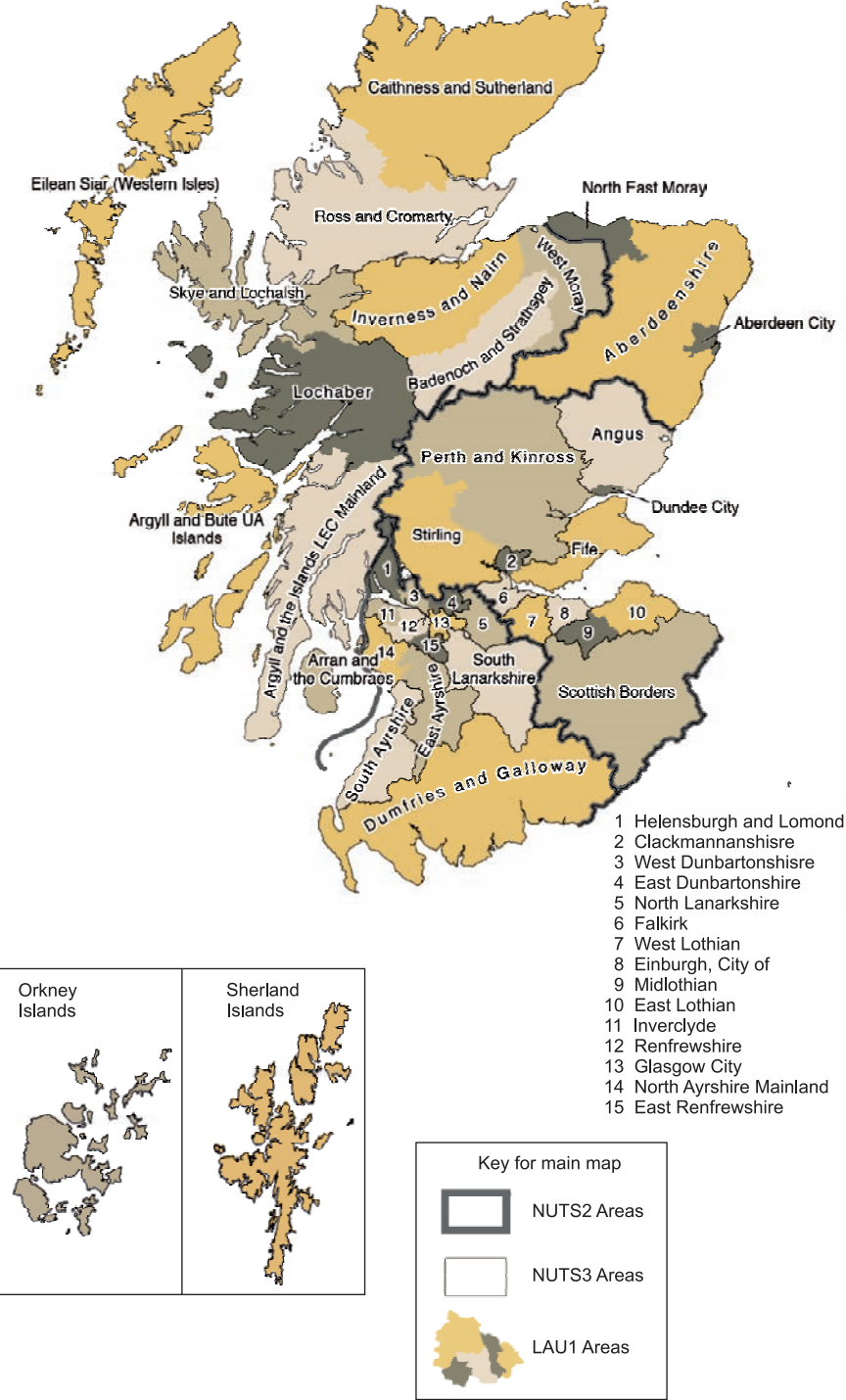
In 1996, this system was replaced by a network of 32 'unitary' authorities. The reasons for abolishing the regional management level include inter alia the blurred powers of individual authorities caused by the system's operation, its low degree of acceptance and mismatches between the spatial extent of the services provided. However, regional experts emphasise that political interests played an important role in this process, and the 1996 reform was not an optimum solution for Western Scotland (Carmichael, Midwinter 2000). Currently, many local administration tasks are coordinated as joint undertakings, e.g. Police and Fire services are still organised at the level of the now nonexistent Strathclyde region, whilst the responsibility for Water and Sewerage services was delegated to three regional water authorities, which merged in 2002 to form Scottish Water.

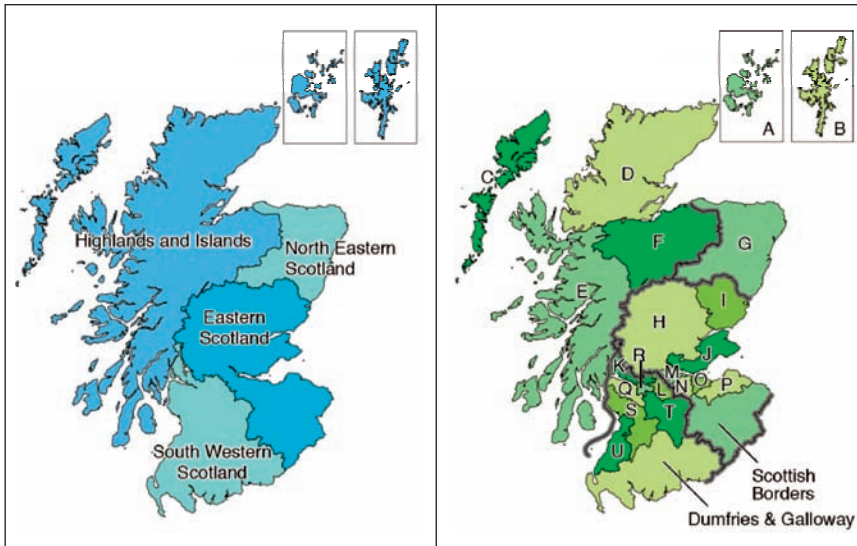
The currently used notion of the Glasgow metropolitan area, comprising: Glasgow City, Renfrewshire, East Renfrewshire, South Lanarkshire, North Lanarkshire, East Dunbartonshire and West Dunbartonshire councils, and Inverclyde, was first used in 2003, when the political leaders of the eight local authorities (mentioned above and comprised by the Glasgow and Clyde Valley Structure Plan) established the Glasgow and Clyde Valley Structure Plan Joint Committee (GCVSPJC) in response to a Scottish Government initiative named the Cities Growth Fund<sup>2</sup>. In February 2009, under the new

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<sup>2</sup> <http://www.gcvcore.gov.uk>.

LAU1 Areas





- A Orkney Islands
- B Shetland Islands
- C Eilean Siar (Western Isles)
- D Caithness & Sutherland and Ross & Cromarty
- E Lochaber, Skye & Lochalsh, Arran & Cumbrae and Argyll & Bute
- F Inverness & Nairn, West Moray and Badenoch & Strathspey
- G Aberdeen City, Aberdeenshire and North East Moray
- H Perth & Kinross and Stirling
- I Angus and Dundee City
- J Clackmannanshire and Fife
- K East Dunbartonshire West Dunbartonshire and Helensburgh & Lomond
- L North Lanarkshire
- O Edinburgh, City of
- P East Lothian and Midlothian
- Q Inverclyde, East Renfrewshire and Renfrewshire
- R Glasgow City
- S East Ayrshire and North Ayrshire mainland
- T South Lanarkshire
- U South Ayrshire

Figure 37. Scotland NUTS regions and LAU1 areas

Source: maps received from Malcolm Leitch, Glasgow City Council.

regulations of the Scottish Government (*Town and Country...* 2008), the tasks of the GCVSPJC associated with the preparation of development plans for the metropolitan area were formally taken over by the Glasgow and the Clyde Valley Strategic Development Planning Authority (GCVSDPA).

The criteria for the delimitation of this area are basically historical as they refer to the Strathclyde region; at the same time, they reflect the strong linkages existing between the city and the surrounding area in terms of family ties, education, transport, recreation and culture. The Glasgow metropolitan area delimited in this way has 1.75 million inhabitants, which represents 34% of the entire population of Scotland.

The current NTS2 area (South Western Scotland) where the Glasgow metropolitan area is located has only minor significance from the point of view of public administration because it is not furnished with any powers or competences. Likewise, it cannot be regarded as an area which closely corresponds to the area of metropolitan influence, for the following reasons: firstly, South West Scotland comprises the vast farming areas of Dumfries and Galloway which have very few economic, social or political ties with the Glasgow metropolis. Secondly, South Western Scotland does not comprise areas with stronger or weaker ties with the Glasgow metropolis, as do areas such as Lomond, Argyll and Western Highlands, which have always traditionally leaned towards Glasgow (rather than Inverness), particularly for the provision of higher-order services. Moreover, as part of the NTS, there is South and East Ayrshire, which emphasise their autonomy despite their linkages with the Glasgow metropolis through the use of its service functions.

There are distinct differences between the so-called Central Belt of Scotland, in which the Glasgow metropolis is located, and the rest of the area regarding population size, population density, sources of income and lifestyles. Therefore, the metropolis and the surrounding region are characterised by different sets of strengths and weaknesses. The metropolis is primarily an urban area with a considerable population density, which distinguishes it significantly from the sparsely populated areas of the regional hinterland. The perception of the Glasgow metropolis was determined by the gradual reworking of the city's image which involved overcoming the negative consequences of the decline in traditional branches of industry. At present, efforts are aimed at fostering development in eight strategic sectors (life sciences, energy, financial services – back office and contact functions, tourism, creative industries, food and drink and electronic markets), which is expected to foster transformation towards a knowledge-based metropolis. Compared to the metropolis, the regional hinterland of Glasgow has only a few strengths, and is building its potential on limited endogenous resources. These are mostly natural environmental assets, which underpin the development of tourism, agriculture and renewable energy generation based e.g. on biomass. To some extent, the development of the metropolitan hinterland is also based on the stimuli generated by the metropolis regarding employment opportunities, as well as tourism and recreation for the metropolitan inhabitants (Turok, Doherty 2003; *Metropolitan Glasgow...* 2008; *Lowlands & Uplands...* 2008; *Highlands & Islands* 2008.).

Differences in demographic and economic structure also have a bearing on the social dimensions of disparities. The metropolis faces different types of challenges to the region; they are mostly connected with the industrial past and the negative consequences of restructuring processes. Major



challenges include both the adverse social consequences of structural and long-term unemployment, i.e. poverty, weak family structures, low incomes, health problems, and the environmental consequences of the industrial past such as contaminated soils or derelict and undeveloped land. The metropolis is also a region with a higher level of deprivation and crime. All these factors still define the negative external image of the city, which is undoubtedly one of the reasons for the scant presence of international corporations. Meanwhile, the metropolitan hinterland is struggling with completely different problems, such as insufficient accessibility, depopulation processes, and the outflow of educated youth to Glasgow or other areas of Scotland (Turok, Doherty 2003; *Metropolitan Glasgow...* 2008; *Lowlands & Uplands...* 2008; *Highlands & Islands* 2008.).

One example of the interdependence between the strengths and weaknesses of the metropolitan area and the metropolitan region is the sector of tourism, in which the attractiveness of the Glasgow metropolis as a cultural and conference centre adds to the touristic appeal of Scotland's rural areas, creating an all-round offer. Meanwhile, the shortcomings in educational provision in the West Highlands and Islands are compensated by the educational potential of the Glasgow metropolis.

## **2.2. RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

The Glasgow metropolitan area is largely self-sufficient as the economic interactions take place mostly between the metropolitan city and its immediate hinterland. Interactions with the more distant hinterland are much less important. The major types of flows include: commuting to work, higher-order services (education, healthcare) and flows related to consumption, while the trade linkages of enterprises, relocation of business activity and migrations of the population play a lesser role.

### **Commuting to work**

Commuting to work constitutes a basic economic link between the metropolis and the region. The city of Glasgow is the main magnet attracting employees, the majority of new jobs being created there owing to an expansion of the financial services sector. According to the 2001 Census data, out of 331 000 employees working in the metropolitan city, 52% live in the city, 40% in the metropolitan area, and the remaining 8% outside it, with half living in the former Strathclyde area<sup>3</sup>. The spatial

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<sup>3</sup> <http://www.gro-scotland.gov.uk/census/censushm/index.html>.

range of commuting reaches 50-70 km, and covers Ayrshire, South Lanarkshire and even Dumfries and Galloway in the south, with Stirling, Falkirk and the Lothians in the north and east. The radial-shape road and railway infrastructure investments undertaken over the past 20 years are an important factor facilitating daily commuting to work in the metropolitan region.

Table 47. Commuting to work/studies in selected areas of the metropolitan area (2001) (%)

| City council area         | Residents working/<br>studying outside place<br>of residence | Employees/students<br>living outside place<br>of residence |
|---------------------------|--|--|
| Argyll & Bute             | 16   | 14   |
| East Ayrshire             | 36   | 22   |
| East Dunbartonshire       | 64   | 36   |
| East Renfrewshire         | 70   | 36   |
| Glasgow                   | 19   | 48   |
| Inverclyde                | 27   | 23   |
| North Ayrshire            | 34   | 20   |
| North Lanarkshire         | 40   | 28   |
| Renfrewshire              | 40   | 38   |
| South Ayrshire            | 26   | 27   |
| South Lanarkshire         | 40   | 28   |
| West Dunbartonshire       | 48   | 32   |
| West Region (Strathclyde) | 4  | 3  |

Source: *West Region Economic Review*, Scottish Enterprise, p. 36, based on: *Census 2001*, General Register Office for Scotland.

Daily commuting related to higher education is equally important, and is most intensive also within the metropolitan area. The directions and intensity of flows associated with studying outside the place of residence are similar to those related to commuting to work and result from the expansion of the higher education sector.

Interestingly, the area of the former Strathclyde region enjoys a high degree of self-sufficiency with regard to the labour market and education: only 4% of the region's residents work or live outside their place of residence, and 3% of the workforce/students come from outside this area. At the same time, significant processes involving individuals take place within Western Scotland; they are strongest in the metropolitan region, and somewhat weaker in the regions of Ayrshire, Argyll and Bute (cf. Tab. 47). The values of indicators for the Highlands and Dumfries and Galloway



are much lower (below 10%)<sup>4</sup>. The highest percentage of employees commute to work to Glasgow (48% of employees from outside the city); shuttle commuting to work is observable on the largest scale in the East Renfrewshire and East Dunbartonshire regions (respectively, 70% and 64% of the residents of these council areas outside the region).

Glasgow is also the key retail trade centre in Western Scotland. Owing to a substantial concentration of shopping centres, the city is called the second destination for shoppers in Britain (after the West End in London).

Other types of services which are important for the external hinterland of the metropolis are related to healthcare. Even though local healthcare and social assistance centres are found across the whole of Western Scotland, the advantage of the metropolis, and the city of Glasgow in particular, is that it has specialised hospitals. In this regard, Glasgow has no real competitors and its specialised healthcare services attract patients from distant areas, particularly regions located north of the Central Belt.

As regards recreation and leisure, mutual interrelationships exist between the metropolis and the surrounding region. Although valuable areas for recreation can be found within the boundaries of the metropolitan area, external locations also enjoy a great deal of popularity, e.g. the Loch Lomond National Park, Ayrshire golf courses, the coastal cities or the highlands. The hinterland offers a tourist base for residents of the metropolis, which leads to increased incomes in some local communities. Meanwhile, the metropolis, especially the city of Glasgow, is a magnet attracting tourists from the region for its cultural facilities and artistic events.

It is difficult to evaluate trade linkages between enterprises located in the metropolitan area and in the broader region owing to insufficient sources of data and the complexity of this type of interaction. It is evident, however, that such interactions evade any administrative boundaries and enterprises, but rather follow the principle of effectiveness. In addition, every sector has different needs concerning trade ties, and a different distribution pattern of both suppliers and recipients. The majority of flows in this regard occur within the metropolitan region, and relationships with the broader environment matter less; 41% of all corporate transactions from the Glasgow area are made with companies situated in the Glasgow metropolitan region (Turok, Doherty 2003).

The relationships between the metropolitan area and the hinterland as regards relocation of enterprises or opening corporate branches (industry, trade, higher-order services) are associated with changes in the profile of the Glasgow metropolis which has taken place over recent decades. As the

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<sup>4</sup> Calculated by the author based on the above sources.

Glasgow region lost in significance as an industrial centre, efforts were made to attract new types of activity. By the 1970s, new investments in the electronics industry were located in areas with available 'greenfield' industrial sites, particularly in the so-called New Towns. Three of them: East Kilbride, Cumbernauld and Irvine, were located within the metropolis or in the metropolitan area. However, starting from the 1980s, efforts have been made to develop 'brownfield' areas, mostly located in Glasgow, for housing and industrial purposes. The region's weakness in this regard is the relative shortage of headquarters of major British or foreign corporations, which restricts the possibilities of expansion into the metropolitan region.

Currently, migration plays a relatively small role compared to other types of interactions between the metropolis and the region. The 2001 Census data indicate that the largest number of people in the metropolitan region who changed their place of residence in Scotland in the years 2000-2001 came from the city of Glasgow (63 000 people). The main waves of migration took place within the conurbation as most people settled in the counties bordering the city, including South Lanarkshire (ca. 2500) (Jones, Leihman 2006). The scale of migration from the remaining regions was not as significant owing to the smaller numbers of people involved. Nevertheless, the prevalent direction of migration for people from all the non-metropolitan councils was the city of Glasgow (Dumfries and Galloway, Highlands, Argyll and Bute). The only exception was Ayrshire, whose population preferred to move within this particular part of Scotland than migrate to Glasgow, which was much less common (Fleming 2005). This confirms the relative autonomy of the area, discussed above. In recent years, many activities were undertaken to revert the outflow of the population from Glasgow to the surrounding councils areas, e.g. by the construction of new residential estates or the initiatives launched by Scottish Enterprise encouraging people to settle in Scotland. In the years 2002-2007, the influx of people (mostly from CEE countries) was higher than the outflow of the Scottish population; as a result, the city recorded a small population increase (0.3% average annual increase) for the first time in 50 years.

### **Relationships with the local authorities**

The Glasgow metropolitan area has a long history of regional planning and partner cooperation. We can find many examples of formal cooperation between the local authorities and/or other public administration bodies in the region. It should be borne in mind that public management in the region is extremely complex, and individual strands of public policy are

characterised by dissimilar spatial ranges and legal status. The primary areas of cooperation are the following:

- The Glasgow and Clyde Valley Strategic Planning Authority prepares plans for the Glasgow metropolitan area understood as eight local authorities / council areas;
- The Strathclyde Partnership for Transport (SPT) is a body responsible for strategic planning in transport in 12 local authorities / council areas;
- The Greater Glasgow and Clyde Health Board (NHSGGC) provides medical services in the Glasgow conurbation and is the largest such entity in Scotland – its activities cover six local councils and two cities in one of the council areas;
- The Strathclyde Police and Strathclyde Fire and Rescue is the most formal of the agreements signed in the Glasgow metropolitan area, and covers the former area of Strathclyde (12 councils).

The recent and very interesting Glasgow Edinburgh Collaboration Initiative strives to strengthen cooperation between the two cities in the hope of producing synergy in business and infrastructure development; it is also hoped to consolidate Scotland's cultural offer.

Despite the existence of partner agreements, each council area within the metropolitan region is autonomous, and therefore the council areas also compete in spheres such as jobs and residents. A particularly strong rivalry within the Glasgow metropolis can be observed between Glasgow city and the two Lanarkshire authorities regarding new jobs and housing. Likewise, there is competition in attracting domestic and foreign investments.

### **2.3. FACTORS SHAPING THE RELATIONSHIPS BETWEEN THE METROPOLIS AND ITS REGION**

The Glasgow metropolitan area is extremely varied in terms of the structure of sources and level of income, accessibility, level of educational services and healthcare. As a result, the complementarity of the economic structures within the Glasgow metropolitan area is manifested only to a limited extent, and the division between rural and urban areas is noticeable. For instance, Glasgow mostly hosts the financial and business services sector and the public sector, while plants and enterprises connected with transport and logistics are located in other urbanised parts of the region (*West Region...* 2009). However, due to the restructuring of the Glasgow metropolis towards a service economy, the ties arising from complementarity are becoming weaker, and are certainly not as strong today as they were in the times of industry-based development. At the same time, the endogenous resources of the rural areas of Western Scotland can supplement the metropolis' offer regarding tourism, food provision, and labour.

In this context, the mutually reinforcing relationships (although still relatively weak due to historical considerations and dissimilar identities) between Glasgow and Edinburgh are particularly interesting. Among other aspects, the complementarity of both cities in the financial sector is worth noting: while the back office and contact functions prevail in Glasgow, high quality functions dominate in Edinburgh (Turok, Doherty 2003). Cultural services are another example of cooperation, as both cities have initiated cooperation in order to benefit from an agreed agenda of major cultural events. In addition, the number of people commuting between Glasgow and Edinburgh in both directions is growing slowly but steadily. It is clear that business and economic linkages are gaining in significance, which has a bearing on the migration between these two cities. Although commuting to work affects only 5% labour force flows, 15% companies from Edinburgh and 11% companies from Glasgow have revealed that their major business partners are, respectively, enterprises from Glasgow and Edinburgh (Turok, Bailey 2004).

To sum up, there still exist strong stimuli from the regional hinterland towards Glasgow, whereas stimuli generated by the metropolis are directed to the supra-regional and international environments.

The Glasgow metropolis unquestionably serves as the growth engine for Western Scotland. We can distinguish several aspects showing how the metropolis positively affects the surrounding region. First and foremost, the metropolis provides jobs, including to the residents of the broader region. This is possible owing to a well-developed network of road and railway connections in the region, and the prospects for its further extension and modernisation. Although new residential estates are being built in the metropolis, they will not be sufficient to satisfy the housing needs of all those who commute there daily to work. Furthermore, the metropolis offers high-quality higher-order services (in healthcare and higher education) for the metropolitan hinterland, as well as catering to the cultural and consumer needs of its residents.

Another aspect is associated with the tourist sector, in which positive stimuli are diffused from the metropolis to the wider hinterland in the form of incomes expended by the metropolitan residents in attractive tourist destinations. At the same time, owing to its well thought-out strategy, the city of Glasgow is a magnet attracting many tourists to Scotland, mainly for so-called business tourism (business visitors account for 28% of all visitors to the city). This offers an excellent opportunity to visit attractive and easily-accessible tourist regions situated in the metropolitan area. Glasgow's tourism offers are based on the organisation of major events (such as the Glasgow Garden Festival in 1988, the designation as European

Capital of Culture in 1990 and the UK City of Architecture and Design 1999), organisation of business conferences and weekend urban tourism.

To some extent, the negative impact of the metropolis on the regional hinterland is the opposite of the positive impact. The transformation that was carried out in Glasgow required substantial investment outlays in the long term. Compared to other councils, the city absorbed substantial financing from Scottish, national and European funds. Some of the resources allocated to the city's development may have been used for the development of other locations in the wider hinterland of the metropolis and thus have brought benefits for local communities. Therefore, jobs provided by the metropolis produce positive effects, although this may be at the cost of other locations. The retail trade sector can serve as an example: it has been substantially enhanced in the Glasgow and Clyde Valley area, but this has led to the degradation of smaller city centres, as a result of which their residents must look for alternative sources of income. In addition, a new restructuring strategy for city centres is needed to furnish them with new functions (*Metropolitan Glasgow...* 2008).

The negative impact of Glasgow on the wider hinterland is also associated with its being perceived as a city associated with economic collapse, declining industries, widespread poverty, high levels of crime and a low standard of housing. Such a reputation may affect not only the tourism sector but also potential investors. It should be emphasised that the regional authorities are aware of this threat and have initiated numerous activities aimed at changing the image of the city, and thereby of the region.

#### **2.4. MUTUAL RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

Due to the difference in potential between the metropolis and the region discussed above, the region needs the metropolis much more than vice versa, even though both component parts need each other. The greater part of Western Scotland has a peripheral location and is relatively poor, and therefore needs the higher-order services provided by the metropolis, the spreading of the effects generated by it, and the incomes of its residents (e.g. in the form of tourism and recreation). Glasgow drives the region's growth and determines the shape that this growth will take.

On the other hand, we can identify several areas in which the metropolis needs the region. These include: supplementing the labour market offer and providing a place of residence for those who work in Glasgow (due to insufficient housing facilities), access to tourist areas for the metropolitan residents (e.g. the Green Network), food provision and valuable additions

to Glasgow's tourism offer (e.g. Loch Lomond National Park, Ayrshire's golf courses).

## **2.5. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT**

In Scotland, the local level is the key competence level in public administration<sup>5</sup>. The individual areas of the Glasgow macroregion are looking for ways to unlock their endogenous potential. Most frequently, such activities are associated with investments in tourism facilities and renewable energy projects. Some other initiatives are more specific; for instance, the predominantly farming area of Dumfries and Galloway south of Glasgow undertakes activities jointly with the Scottish Border region located in the influence zone of Edinburgh relating to possible applications of modern design in the textile industry, which has had a traditionally strong presence in the region.

However, as mentioned in the earlier chapters, many activities of public administration are coordinated at the level of the metropolitan region. We cannot speak of a coherent strategy whereby the metropolis affects the surrounding region, although we can list examples of initiatives which can potentially strengthen the diffusion of positive stimuli from the metropolis to the regional hinterland. This includes transport system projects, such as the development of regional airports (Prestwick Airport), or the construction of new road connections within the metropolis. Other projects are aimed at creating new jobs, for example through the development of business or technological parks across the metropolis; still others target education, for instance a project intended to raise skills in the building industry (Construction Skills Action Plan). Efforts have also been made to create jobs outside the metropolitan area; for instance, sites have been prepared for potential investments around the cities: Ayr, Irvine, Kilmarnock; transport connections between Prestwick Airport and harbours: Ayr, Troon, Hunterston, with the cities of the Glasgow metropolis in order to secure solid foundations for the development of clusters of export-oriented industries or services. Many projects are intended to strengthen the region's potential for tourism, e.g. initiatives for the regeneration of downtown Glasgow and centres of the regional cities, or activities related to the development of Loch Lomond for tourism purposes.

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<sup>5</sup> It is pointed out that following the 1997 reforms and the establishment of the Scottish Parliament with its seat in Edinburgh, the local authorities in Scotland have become more independent of the central government, although not to such a degree as was expected (McConnell 2006).

Measures to weaken the negative influence of the metropolis have been undertaken via projects aimed at enhancing the external image of the metropolis, inter alia the Clyde Waterfront project, which involves the regeneration of the former shipbuilding-dependent communities along the River Clyde, the redevelopment of the former Ravenscraig steelwork (North Lanarkshire) or the restructuring of Motherwell and Wishaw. Other activities included the construction of new residential estates in the metropolis, regeneration of the centres of regional cities, development programmes for derelict and vacant areas (Derelict and Vacant Land Programme), as well as the development of a network of recreation and leisure sites in the metropolitan area (the Green Network).

It is difficult to prove the thesis that coordination of public activities in the macroregion aim to strengthen the influence of the metropolis on the hinterland. Many activities which are important for Western Scotland are coordinated at the level of the Scottish Government, e.g. those intended to: enhance transport accessibility (including the construction of a high-speed railway between the Central Belt and London), improve railway connections in Renfrewshire, Inverclyde and Ayrshire, develop recreation and leisure areas (as part of the Green Network) or develop infrastructure associated with the 2014 Commonwealth Games. An example of a nation-wide instrument has been the Government Relocation Programme, intended to relocate some of the public services from London and the South-East. As part of this programme, the NHS Central Register has been relocated to Dumfries.

## 2.6. GOVERNANCE OF THE METROPOLITAN AREA

Recent years saw a substantial policy change concerning urban development in Scotland. Cities are to be no longer perceived as sources of problems; from now on, they are to be looked upon as drivers of growth, places where important development resources – economic, social and cultural – are generated. This is visible in strategic actions which provide support to the resources of the city-regions. These activities are anchored in the idea that strong metropolitan regions will produce welfare and prosperity for the whole of Scotland (Turok 2007).

The most important body which coordinates the functioning of Glasgow metropolitan area is the Clyde Valley Strategic Planning Authority (GCVSPA), established in 2008 to replace the Clyde Valley Structure Plan Joint Committee (GCVSPJC), in existence since 1998<sup>6</sup>. This change was formal in character, and followed the changes made in the strategic planning

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<sup>6</sup> <http://www.gcvcore.gov.uk>.



legislation in Scotland. In February 2009, the *Town and Country Planning Regulations (Scotland) 2008* came into force. This instrument introduced mandatory Strategic Development Plans and Local Development Plans for four city-regions of Scotland (including Glasgow), and Local Development Plans for the areas of outlying city-regions. The GCVSPA continues the tasks performed by its predecessor regarding a similar area. The main task is preparing the publication of, and submitting to the Scottish authorities, strategic development plans for the Glasgow metropolitan area understood as eight local authorities. The GCVSPJC and its successor have a fine reputation for preparing high-quality strategic plans for the Glasgow metropolitan region. The works of the organisation is based on consensus, i.e. each of nine local councils has the same number of votes in making strategic decisions, despite their dissimilar ‘weight’ with regard to surface area, population and economic potential. This, in addition to the shortage of funds needed for implementation and insufficient impact on the key institutions, is identified as the main factor playing down the role of this institution (Turok, Doherty 2003).

Despite an unquestionable need to coordinate public activities at the level of the Glasgow metropolitan area, today there is a lack of political and social willingness to return to the earlier organisation of regional government, i.e. restoring the second tier of public administration in the Glasgow region. However, less radical changes in metropolitan region management would be preferable with a view to decreasing fragmentation and reducing efforts needed to ensure communication and political cooperation between different organisations. Such changes could involve harmonisation of the territorial scopes of local cooperation agreements and special-purpose organisations. According to regional experts, the reform could define the areas for their joint activities in e.g. healthcare, police and fire services, spatial planning and transport. A different alternative to the formalised form of organisation within the metropolis could be a system whereby management of specific functions within the metropolitan area would be entrusted to one local authority belonging to the metropolitan area<sup>7</sup>.

## 2.7. DEVELOPMENT PROSPECTS

There is not enough evidence to prove that the metropolis and the surrounding region are becoming unified in terms of economic and/or

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<sup>7</sup> Such solutions are already being introduced, e.g. Renfrewshire’s administrative support of the metropolitan-wide strategic planning function, and the second Metropolitan Glasgow economic strategy (2008).



social structure. The region of Western Scotland is extremely varied, and disparities both in the level of, and access to education are difficult to reduce. The strategic decisions on investing mainly in Glasgow and several selected locations have resulted in creating a considerable competitive advantage of the metropolis. By contrast, building the potential in peripheral locations has been less successful, and the stimuli generated by the metropolis have been insufficient. If the current development trends relating to a knowledge-based economy continue in the future, it can be expected that the disparities between the city and the surrounding region will increase, perhaps significantly. The authorities of the metropolitan area are aware of these processes, and therefore development strategies for this area look for development opportunities in strengthening the cooperation with the Edinburgh metropolis or linkages with British cities rather than with the regional hinterland. It can be expected that more proposals will be submitted for tightening the coordination of activities in the Central Belt, where economic relations are important, and which are gaining in significance also in the east-west context (Turok, Bailey 2001).

Naturally, the prospects for the future concerning the disparities between the metropolis and the region depend on many factors, but first and foremost they depend on which sectors will gain advantage in the future, and this – as recent history shows beyond doubt – can change very rapidly. As few as 10 years ago, the role of Glasgow decreased and that of the region increased, owing to the development of the electronic industry and establishment of new (greenfield) enterprises outside the city. At present, the situation has changed radically in view of a robust development of the financial business services sector. Other factors which can have a potentially strong bearing on the future development of Western Scotland include: development trends in public transport, policies implemented by the Scottish Government and dissemination of technological changes (e.g. teleworking).

## **CHAPTER 3**

### **CITY-REGION RELATIONSHIPS: STOCKHOLM-MÄLAR REGION CASE STUDY**

The Stockholm Mälars region is located in eastern Sweden, stretches across 27.2 thousand km<sup>2</sup> and is populated by 2.7 million inhabitants. The region is of monocentric character, with Stockholm, the capital city of Sweden, being the core of the metropolitan area. The city is populated by 830 000 people and the metropolis has around two million inhabitants. The metropolitan area is clearly separated from the rest of the region by the difference in population density. Stockholm does not have any significant counterpart, although a few other cities act as regional centres: Uppsala (140 000 people), Västerås (132 000 people), Örebro (125 000 people), Norrköping (83 000 people) and Eskilstuna (60 000 people).

Stockholm region is one of the most competitive regions in the world and ranks very high in terms of innovation, knowledge-based economy, quality of life and sustainable development solutions. After the transition in Central-Eastern Europe it managed to position itself in the new geopolitical context and adjust its economy to a new growth paradigm even before the globalisation and internationalisation of the world economy became broadly acknowledged. Therefore, having significant competitive advantages the region experienced two decades of constant growth characterised by the importance of research and development activities, the concentration of advanced business, rapid growth of high-tech sectors such as biotechnology and ICT and the creative economy – music industry, fashion and design. The dynamics of these processes varied for the core metropolitan area and the surrounding hinterland, which over time led to a significant development gap (OECD 2006).

#### **3.1. THE METROPOLITAN REGION AND ITS COMPONENT PARTS**

Stockholm is one of the most important cities in Scandinavia and, besides being the capital city of Sweden, its influences range further across the Baltic Sea macroregion. The main role of Stockholm City is

derived from its metropolitan functions. The city hosts the headquarters and offices of many multinational companies, especially those of Swedish origin. Furthermore, it is the biggest financial market in Scandinavia, concentrating more than 50% of the country's employees working in the sector. Stockholm is also a very important transport hub in both the national and Scandinavian context, with a strategic location in the centre of road, train and sea transport networks. The city is also an important research and development centre with a lot of prestigious academic institutions, research institutes and technology parks. It is therefore one of the most attractive labour markets in the region, offering a diversified range of jobs in high, middle and lower segments. In this sense, the city is attractive to foreign immigrants, who, during the last two decades, were the group that most significantly contributed to the city's population growth.

The range of the metropolitan region (macroregion) is mainly defined by the labour market area and consequently by the range and capacity of the commuting transport system. This is the most popular definition of the region used for the purpose of spatial planning and business activities. Taking this into consideration, the metropolitan region includes Stockholm County, Uppsala County, and eastern parts of Södermanlands and Västmanlands Counties. The working definition of the metropolitan region is the one-hour long travelling distance from Stockholm City. Within this definition, the metropolitan region ranges along the main transport routes and includes secondary poles such as: Norrtälje, Uppsala, Bålsta, Enköping, Västerås, Strängnäs, Eskilstuna, Gnesta, Flen, Oxelösund and Nyköping (with Skavsta airport) (Regionplaneämnden 2010).

A more formal definition of the metropolitan region can be found in RUFS 2010 – Regional Development Plan for the Östra Mellansverige with a time range to 2050. The spatial definition is broader and includes Stockholm, Uppsala, Sörmlands, Västmanlands, Örebro, Gävleborgs and Östergötlands Counties (Regionplaneämnden 2010).

The definition of the functional metropolitan region mentioned in RUFS 2010 includes the whole of Stockholm County and Uppsala County together with the Gnesta, Strängnäs and Trosa municipalities in Sörmlands County (Regionplaneämnden 2010).

Another definition of the Stockholm Mälar region reflects the political will to make the region one of the most competitive regions in Europe. The concept, or rather initiative, is based on bottom-up cooperation between various municipalities and county-level administration from five counties (Stockholm, Uppsala, Södermanland, Örebro and Västmanland). Despite not yet being functionally integrated, the definition of the 'aspirational' Stockholm Mälar region can be justified by the current trends in commuter flows and labour market expansion (OECD 2006).

Other factors, such as access to public services, business links between enterprises, migration and regional identity play a secondary role in determining the range of the metropolitan region or are simply related to the influence of the labour market and commuting factors. Since there is a free choice of high quality public services in most of the municipalities in the area, this factor cannot be deemed crucial in terms of the spatial range of the metropolitan region and using this definition would make it difficult to generalize about the spatial range (SLL 2009).

Business activities, especially biotech, financial, automobile, ICT and R&D clusters, are still concentrated in Stockholm City, although their functional links are constantly expanding to other parts of the Stockholm Mälars region, probably as a result of cooperation between companies and research institutions (OECD 2006).

Regional migration does not seem to explain the spatial range of the metropolitan region, as external migration to the city (immigrants from abroad) exceeds interregional migration. There are visible suburbanisation processes motivated by education, jobs and self-realisation. Suburbanisation ranges up to 30 km outside the central city. On the other hand, despite higher real estate prices, some people are staying in Stockholm, as the number of households with children has grown in the last 10 years. This can probably be explained by: deindustrialisation of the inner city and housing developments (with larger apartments, as earlier there was a tendency to build only studios).

The least important is the regional identity factor, as it is not as important as local identity vs. national identity. There is no such thing as a Stockholm Mälars region identity. An interesting observation however, is the broad range of the 'Stockholm' logo accepted as a regional branding strategy by the local administration representatives of municipalities located in Stockholm, Uppsala, Södermanlands, Västmanlands and Örebro counties.

Regardless of the adapted definition, it is acknowledged that, mainly due to the regional labour market demands, the spatial range of the metropolitan region of Stockholm has been constantly and rapidly expanding since the 1970s (Regionplaneämnden 2010).

The range of the metropolis is usually defined by the administrative borders of Stockholm County (both NUTS3 and NUTS2 level), although this definition doesn't fully reflect the functional metropolitan area. Therefore, there are several alternative definitions of the Stockholm metropolitan area. One of the criteria used for the purpose of planning is the population density which includes Stockholm City, Solna and Sundbyberg municipalities. Another definition, based on the range of the labour market and commuting intensity, includes Stockholm and Uppsala counties and the northern parts of Södermanland county (RTK 2009a).

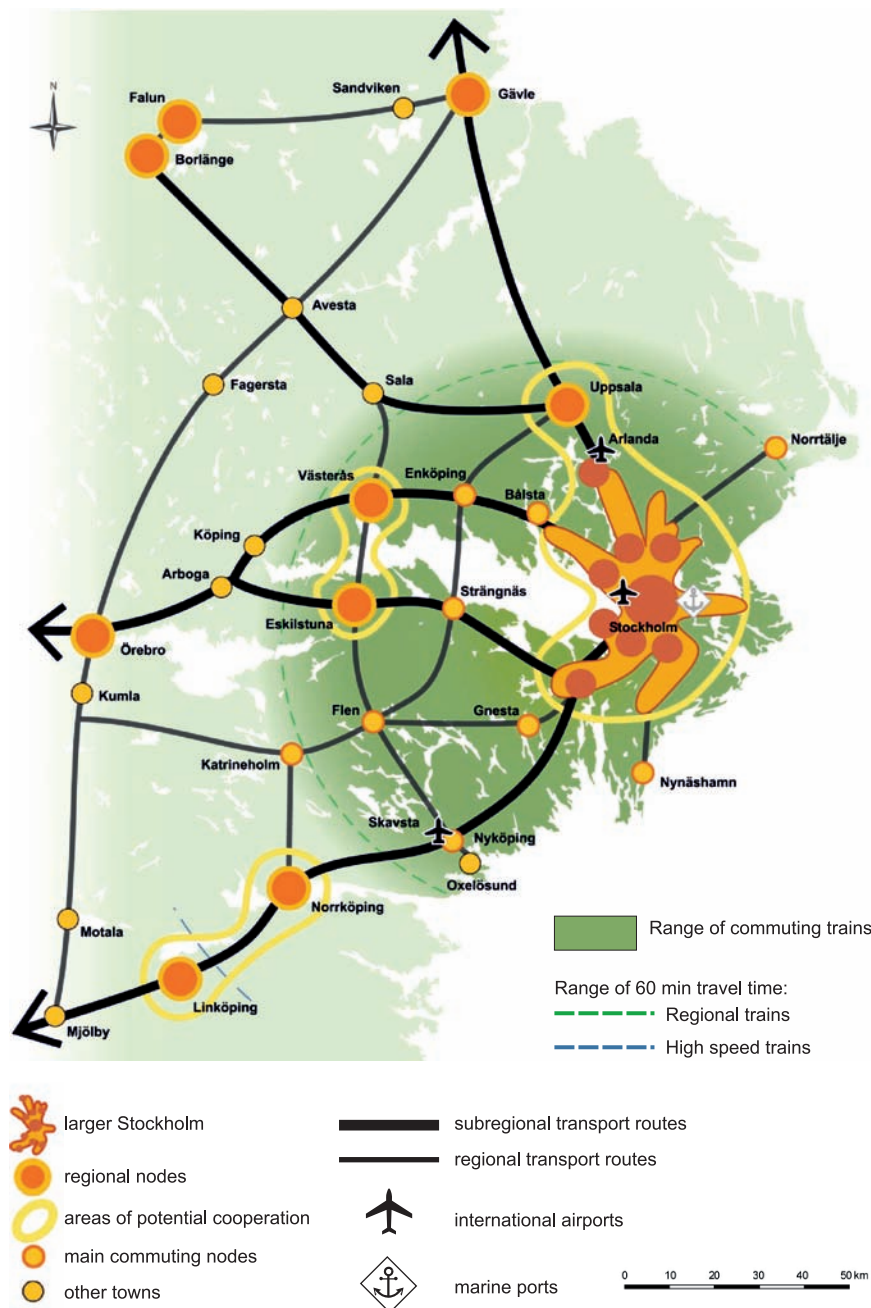


Figure 38. The functional metropolitan Stockholm Mälars region

Source: Regionplaneämnden 2010.

The most important strength of the Stockholm metropolitan area is its highly competitive, innovative and internationalised economy with numerous multinational companies, a diverse structure of knowledge-based branches, high levels of FDI and an acknowledged position in the globalised economy. This is a result of a long period of successful performance in global competition based on the model of an open, if relatively small, export-based economy which was developed even before these factors became crucial in international competition. Another important strength of Stockholm is the top-quality human capital with the highest ratio of inhabitants with a higher education, a strong tradition of lifelong learning and a practically bilingual population (English as a second language). Moreover, Stockholm is located near to growing markets in the Baltic region. Finally, the urban structure of the city offers a high quality of life with plentiful recreation areas, high quality of air, water and landscape, but also high a density of dwellings and excellent public transport system within the metropolitan area, which allows easy access to institutions and retail centres.

Among the weaknesses of Stockholm, the most important include high real estate prices and housing shortage due to which the city is losing its appeal. As a consequence, there is a growing problem of spatial and social segregation, which is especially problematic in the case of immigrants from non-EU countries. Another weakness of the Stockholm metropolitan area is its peripheral location with regard to the Pentagon area. Moreover, due to ongoing globalisation and lack of critical mass in terms of population size, the city is losing its importance in the global financial market and trade. Finally, the structure of the knowledge economy sector is based on big companies without the expected spin-off effect that would encourage small and medium-sized enterprises to appear.

The strengths of the region surrounding the Stockholm metropolis include high quality of life with lower real estate prices when compared to more central locations. Another strength is the awareness of the decision makers in using the proximity of Stockholm to aid local development, reflected by close cooperation with the city. Furthermore, the workforce is characterised by a high working culture and efficiency even in the low-skilled and manufacturing sectors. Finally, the social structure is more homogenous, which causes less social tension when compared to the metropolis.

Weaknesses of the region surrounding the Stockholm metropolitan area are connected with the economic dependency of the metropolitan economy on typical hinterland economic sectors such as industry, manufacturing, logistics and basic services. Furthermore, local human capital is subject to brain drain and the most talented people tend to move to the city area,



leaving a less skilled and educated workforce structure. Due to the lower population density and underdeveloped transport network, only several areas of the region have good access to the inner city. Finally, the region does not fully benefit from its assets, since the functional roles of regional nodes such as Västerås or Eskilstuna are not fully defined or agreed on.

The relationships between the strengths and weaknesses of the metropolitan area and the metropolitan region are of complementary character, especially in terms of the economic structure and real estate market. The main differences include work productivity and human capital, access to specialised services and culture, labour market diversity as well as income level and social structure. The side effect of the complementary structure of strengths and weaknesses is the asymmetrical relation between the metropolis and the region, in which the region is economically and functionally dependent on the city. The current situation poses new challenges to the region's economy which was to a large extent based on manufacturing (automobile, machinery, printing) as this sector has been declining over time due to offshoring. In order to sustain the competitiveness of the regional economy, more focus has been put on encouraging subcontractors to cooperate with companies located in the city and developing the wholesale and logistics sectors (SBR 2007). Another idea is to encourage spin-off companies in advanced sectors to be established in more remote areas of the region. This, however, demands more comprehensive solutions. Recent trends show growing awareness among local and regional decision makers in both areas of the necessity to cooperate. There is general political consensus that the region's municipalities and Stockholm need to cooperate in order to maintain and strengthen the region's position in global competition.

### **3.2. RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

The industrial, economic and social links between Stockholm and its surrounding region are of historical character and were determined by its formation as a series of islands and waterways. The settlement structure of the region was determined by the location of early medieval church towns such as Sigtuna, Västerås and Eskilstuna. Meanwhile, the north-west part of the region was rich in raw materials such as iron ore, which attracted both skilled labour force, craftsmen and capital to develop the mining industry. The towns located along Lake Mälaren such as Västerås, Eskilstuna and Örebro took up manufacturing. The development of the manufacturing industry contributed to the social and economic progress of the whole region, became a source of a significant shift in regional

gross product and created industrial, economic and social links between different parts of the region, which became functionally more dependent on each other. The main communication arteries were lakes, rivers and the sea. Stockholm, as a separate city, was established 200 years later as a result of the functional division of branches in the region, to play the role of market, warehousing, trade and other business services. Meanwhile, the growing demand for knowledge and sophisticated workers led to the foundation of Uppsala University in 1477. Another significant period which had a big influence on the settlement and functional structure of the Stockholm Mälars region was industrialisation in the late 19th century, which established Stockholm as a macroregional financial market and communication centre (with a dense telephone network provided by LM Ericsson) (Högberg 2009).

### **Commuting to work**

The population of Stockholm County has increased by almost 400 000 during the last three decades. The main source of this growth has been foreign migration, with internal migrations being minor in comparison. Due to housing shortages, commuting became a crucial factor in creating and widening the range of the functional metropolitan region. The map below illustrates the increase of commuting in the metropolitan region of Stockholm during the last 20 years. About 80-85% of commuting to Stockholm takes place across the county borders. The overall number of commuters travelling to Stockholm is about 85 000, of which 60% are inhabitants of the Mälars region, that is Uppsala, Västmanland, Södermanland and Örebro counties. During the last decade the number of commuters has increased by 50%, especially in case of Uppsala and Södermanland counties (Regionplaneämnden 2010).

The most important factor behind commuting is the broad and diversified labour market of Stockholm. Furthermore, it is also the most important transport connection hub on the national scale. Today, the metropolitan labour market comprises Stockholm and Uppsala Counties, Strängnäs, Gnesta and Trosa in Södermanland County, and Västerås and Eskilstuna. A travelling time of 45-60 minutes has been achieved from most of the regional nodes located within a radius of 100 km. The biggest growth in commuting results from the development of railway connections, although car journeys still constitute the biggest share (60%) of total traffic capacity in the region (SLL 2009).

When analysing the main purposes of commuting within the metropolitan area, the most important include everyday journeys to work and for shopping. Due to a high quality of education, school-related journeys by



pupils are of lesser importance. When it comes to the whole metropolitan region, the structure is similar, with everyday journeys to work and for shopping as the main purposes of commuting. Weekly commuting appears to be more typical for workers who live in the municipalities located outside the 100km radius from the city centre.

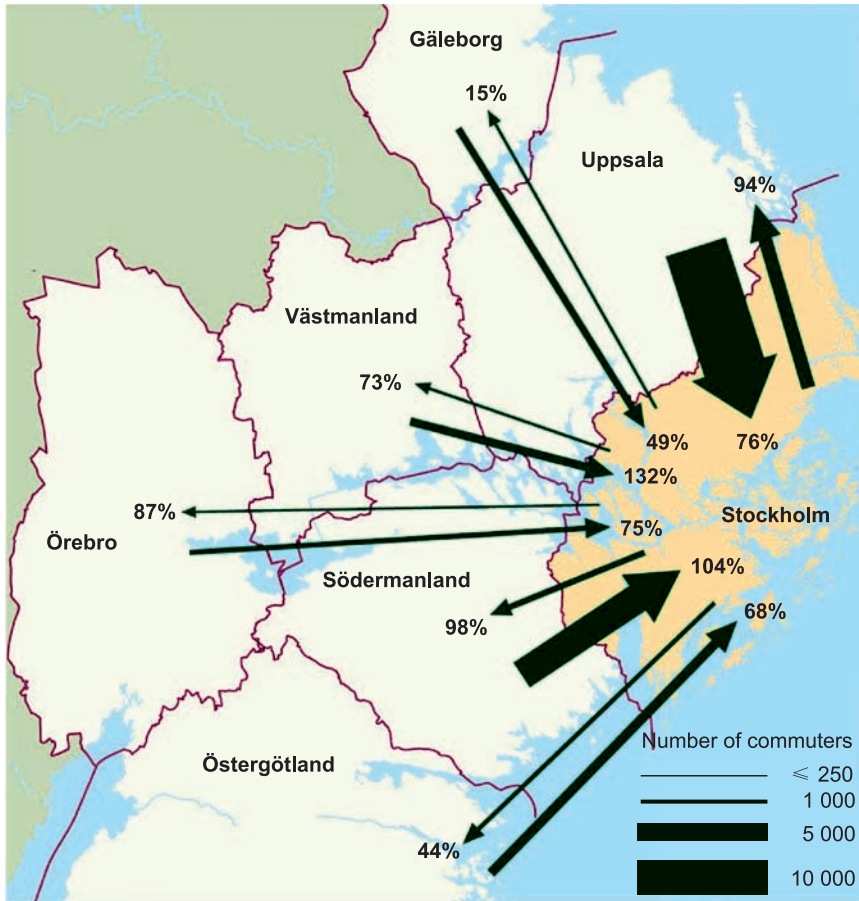


Figure 39. Commuting trends in the Stockholm Mälaren region 1985-2006

Source: *Regionplaneämnden* 2010.

The most important goal concerning commuting in the region is to shorten travelling time in order to attract potential employees to utilise the commuting network in order to supply the metropolitan labour market. This goal applies mainly to the regional railway network. The most important routes from the Stockholm perspective connect Stockholm with other parts of the region as well as the two biggest airports:

- Stockholm/Arlanda–Malmö/Göteborg, via Nyköping/Skavsta, Norrköping, Linköping;
- Stockholm/Arlanda–Oslo, via Strängnäs, Eskilstuna, Örebro;
- Stockholm/Arlanda–Oslo, via Enköping, Västerås, Örebro;
- Stockholm–Arlanda–Uppsala–Gävle.

### **Migrations**

The most important growth factor in the Stockholm region is the meeting the economic and structural challenges posed by globalisation. The regional economy is therefore highly dependent on a skilled and well-educated labour force. Because of the relatively low level of internal migrations to the region and low birth rate, the labour market has to rely on foreign migration. The share of inhabitants of foreign origin has been constantly growing, to reach a level of around 25% of the population. A side effect of this situation is the problem of integrating immigrants in the labour market, which has led to lower income levels among this group. It has also resulted in spatial segregation of the immigrant population, who tend to be concentrated in the lowest quality neighbourhoods built between the 1960s-1970s as part of the so-called ‘million project’ (Stadsledningskontoret 2005).

### **Trade exchange between businesses**

As in the rest of the country, the economy of the Stockholm Mälars region is highly dependent on export and foreign direct investments. This is especially typical of the metropolitan area in which more than 40% of workforce employed in the private sector works for export companies involved in commerce, manufacturing and business consulting. The largest of this group of companies are in the branch of finance and communications. In general, more than half of foreign-owned companies in Sweden reside in the Stockholm Mälars region and are concentrated within the metropolitan area. In this context, the most important role of the regional surroundings is logistics and transport connections between the suppliers of goods and services and customers (Tidestav, Zetterberg 2008).

Another platform of business links between the metropolis and the region results from the functional and spatial localisation of economic clusters. Business activities, especially biotech, financial, automobile, ICT and R&D clusters are still concentrated in the Stockholm city, while their functional links are constantly expanding to other parts of the region:

- The biotech cluster: ranges across the whole region with Uppsala, Stockholm as main creative centres and Strängnäs and Sigtuna as main industrial basis for the cluster;

- The financial cluster: concentrated in the Stockholm City;
- The automobile and robotic cluster: located in the south-western part of the region, includes Södertälje, Västerås, Eskilstuna and Örebro;
- ICT industry: located longitudinally between Uppsala, Kista and Stockholm;

### **Higher-order services for individuals**

Academic institutions located in Stockholm have an excellent reputation and are recognised for their quality of teaching and R&D activities and are therefore an important factor of commuting. The intensity of commuting to universities has been constantly growing and now ranges across the whole metropolitan region. This situation is a result of the binary higher education model in Sweden with visible division into universities and colleges. While universities are targeted at the most talented and competitive students, their recruitment area is of national scale, whereas colleges are more accessible, but offer less prestigious education programs (RTK 2009b).

The cultural and entertainment offer of Stockholm City together with the creative cluster are also a significant factor of human flows across the region. The intensity of commuting related to cultural and entertainment activities is comparable to the flows motivated by education. In comparison to the metropolis, the regional cultural offer is poor and less diversified. It should be emphasised that the cultural sector of Stockholm is one of the most innovative and renowned on the European scale and, in case of the music scene, is the third biggest market in the world (after the USA and the UK) with the highest number of recording studios per capita in the world.

Other services, such as healthcare, do not have any significant impact on regional flows. The reason behind this is probably the welfare state policy which assures every citizen equal access to high quality public services regardless of their place of residence.

### **Entertainment and leisure**

The quality and availability of leisure and recreation facilities in the area surrounding the Stockholm metropolis play an important role in raising the quality of life and the attractiveness of the whole region. The main assets for leisure and recreation offer are the seaside location, unique landscape of the skerries and the area where Lake Mälaren merges with the Baltic Sea. The most popular recreational area is therefore the coastal area, where a significant number of city inhabitants traditionally have their summer holiday homes. Another popular area is the northern part of the Södermanland County, which is famous for its numerous castles and

other historic buildings. The main tourist and leisure attractions include activities based on the natural heritage of the region such as National Parks and nature reserves, but also recreation such as golf, sailing, cycling, horse riding. Leisure and recreation in the Stockholm Mälaren region is characterised by a high quality tourist infrastructure and excellent management of natural heritage (Regionplaneämnden 2010).

### **Relationships of public authorities**

The most significant feature of the relations between different representatives of public authorities in the Stockholm Mälaren region is the bottom-up form of cooperation. It is driven by the common conviction that in order to remain competitive globally, the local authorities need to cooperate and come up with development-oriented solutions that benefit the whole metropolitan region.

The formal range of power on the regional level is relatively limited. The division of competences can be described as an hourglass model in which the state is powerful, the region is weak and the municipality is powerful. With the lack of powerful authority on the regional level, there is a bottom-up initiative concerning the coordination of planning and development activities, and coordinating these processes between different local authorities representing the formal power structures and various associations of municipalities and counties. This process is facilitated by the fact that representatives of most of the institutions responsible for local and regional planning are located in the same building (Berggren, Hermansson 2008).

In this configuration, the Regional Planning Office (Regionplanekontoret) acts as a research and development unit that collects, processes, analyses and publishes social and economic data concerning regional development. The quality of the analytical capacity of this institution is very high and the analytical support is of a constant and comprehensive character. The Regional Planning Office is therefore responsible for formulating recommendations and suggestions concerning the overall region. It also coordinates the cooperation between representatives of the city of Stockholm and 36 municipalities which have formal competences in terms of spatial planning, transport and infrastructure, housing and labour market policy and support for enterprises (SALAR 2009).

A good example of such an initiative, which illustrates the mutual trust and dominance of cooperation rather than competition between local authorities, is the 'En Bättre Sitts – On the Right Track' project. The aim of the project is to improve the accessibility, quality and capacity of the transport infrastructure in the region. One of the reasons behind the

initiative was the fact that the specific demands of the spatial structure and relations of the Mälär region were not incorporated accurately in the plans prepared on the state level. The project is a communication platform uniting local and regional authorities as well as representatives of national institutions and agencies responsible for transport and infrastructure. The main goal of the project was to work out consensus concerning investment priorities and incorporate the interests and demands of all participants (local authorities, entrepreneurs, local communities and environment protection bodies) as well as the overall development interest of the whole area (Högberg 2009).

However, there are some examples of competition between the smaller towns around Stockholm. The main subject of competition are the public-funded infrastructural investments, the location of knowledge-intensive sectors, universities and the schedule of investments. At the same time, leaders in smaller municipalities understand the necessity of investments in Stockholm City. A good example of this initiative is the fact that several municipalities located further away from Stockholm helped finance the construction of the city tunnel, which will improve the communication in the whole metropolitan region.

### **3.3. FACTORS SHAPING THE RELATIONSHIPS BETWEEN METROPOLIS AND ITS REGION**

The most important factor affecting the links between the metropolis and the region is the complementarity of the economic structure of the metropolis and subregional centres that results from the traditional and historic division of regional production functions. The western part of the region, which used to be a mining and industrial area, still plays a significant role in the manufacturing sector. Today, this sector is based on hi-tech and knowledge-intensive production. Meanwhile, the eastern part of the region was traditionally shaped according to its transport and commerce functions, and thus its share of specialised services and more diversified economic structure was always the case (SBR 2007).

Another factor contributing to links between the metropolis and the surrounding region is the developed transport network. This is especially crucial in terms of labour market demand and housing shortages in the metropolitan area. However, a significant part of the region is not well connected to the city centre, since the density of population in the most peripheral areas makes infrastructural investments economically inefficient.

Despite the bottom-up cooperation initiatives between various local authorities, the decision-making processes are very slow and driven by

a consensus culture. Territorial planning on the regional scale is also affected by procedures which consider the competences and logic behind constructing development plans. Unlike in many other countries, this process is of a bottom-up character, which means that initial planning takes place at the local level and only then particular local plans are integrated into a regional development plan. With a negotiated regional development plan, each municipality has the autonomy not to conform to the compromise solutions made on the regional level (SALAR 2009).

The most important spillover effect is caused by the improvement in the transport network and housing shortages in the inner-city of Stockholm. Dynamic economic growth of the metropolitan area has been accompanied by a lack of housing and a relatively slow delivery of new dwellings compared to the growing demand. This situation has been negatively influenced by formal restrictions concerning the construction of new housing areas as well as real estate regulations that oblige landlords to register apartments for rent. The waiting list for renting an apartment in the city exceeds 100 000 people. As a result, real estate prices and rents have shifted to the level that makes Stockholm one of the most expensive cities to live in and where the share of housing expenses in household budgets is among the highest in the EU (OECD 2006). This phenomenon decreases the quality and standard of living in the metropolis, despite Stockholm being characterised by the highest personal income levels in European cities. This phenomenon is also contributing to the spatial expansion of the metropolitan area and growing suburbanisation. With significant improvements in public transport, access to neighbouring municipalities and housing in more remote areas has become available, which has contributed to suburbanisation processes. However, the central city remains dominant in terms of the concentration of jobs. This has contributed to growing financial transfers, especially in the form of local taxes, to the municipalities located conveniently along main transport routes within a radius of 75-100 km from the city.

Meanwhile, municipalities located away from the main transport routes have experienced a significant backwash effect, which has manifested itself mainly in the form of brain drain and outflow of the well-educated, highly skilled labour force. The western part of the region has been especially affected by these processes, with adverse net internal migration evident in all age groups. In eastern parts of the region and especially in the coastal area, the net migration values varied according to age groups, with significant outflows of people between 15-30 and inflows of people aged 30-55. The municipalities experiencing the biggest population outflows are characterised by a peripheral location, low population density and fewer job opportunities (RTK 2009c).



### **3.4. MUTUAL RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

The metropolis and the region are mutually dependent on each other and this is related to their functional and structural complementarity. There exists however a certain asymmetry in this relation. The main aspects in which the metropolis is to a certain extent dependent on its surroundings include the supply of labour and the limited housing capacity of the city. The regional surroundings have experienced minor relocation of companies, mainly in the logistics and wholesale sectors offering only less attractive employment opportunities. The expected appearance of spin-off companies or subcontractors in more advanced sectors, like ICT, R&D and creative sectors was not the case, even in regional nodes.

Meanwhile, the region is economically and functionally dependent on the metropolis to a much larger extent. The metropolitan area offers high quality jobs and a diversified labour market, high-order services and cultural activities. However, the potential and opportunities are not fully utilised by the municipalities located in the region. The spillover effect is also highly dependent on the accessibility of a particular area and its placement within the regional transport network. Moreover, most of the industries and sectors creating the economy of the region are of a subordinate role to the high-order activities in the centre, which makes them prone to economic shifts in more advanced sectors. This is reflected by the deindustrialisation of some parts of the region, which used to be part of the automobile cluster and are now losing competitiveness due to the offshoring of manufacturing. Another factor that makes the region dependent on Stockholm is its ability to attract foreign capital. Because of its excellent reputation, Stockholm is a trademark in itself and therefore attracts companies and investors into the region. The significance of this factor is reflected by the fact, that the whole Mälars region promotes itself under the slogan ‘Stockholm, the capital of Scandinavia’.

### **3.5. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT**

In formal planning, Sweden divides most competences between the state and the municipality, with little power remaining at the regional level. The state is responsible, for setting up the standards and the main development priorities, while the municipalities implement the policies proposed at the state level. Local authorities have significant autonomy concerning the ways, fields and financial resources devoted to implementation of policies (Berggren, Hermansson 2008; Åkerlund, Legerius 2009).

### **Infrastructural investments and polycentric development**

One of the main strategies to assure spillover effects and more polycentric development is to constantly improve the transport network in terms of quality, speed and capacity. This applies not only to improving the connections between the metropolitan area and the rest of the region, but also to improving the connections between various regional nodes such as Norrtälje, Uppsala, Bålsta, Enköping, Västerås, Strängnäs, Eskilstuna, Gnesta, Flen, Oxelösund and Nyköping. Furthermore, the tools of polycentric development include strengthening of regional nodes by location of technology parks, logistic centres, and retail centres as well as new housing areas. Finally, certain municipalities such as Eskilstuna and Västerås are encouraged to strengthen their cooperation and become quasi twin-cities.

### **Education**

Sweden is an example of the binary model of higher education which means that there is a co-existence of two types of academic institutions, namely universities and colleges. The universities located in the Stockholm city and Uppsala such as the Royal Institute of Technology (KTH), Stockholm School of Economics, Stockholm University, Karolinska Institute and Uppsala University are the most prestigious in the country. The colleges (*högskolan*) offer mainly bachelor's and master's degree courses and therefore attract a significant number of mature students as part of the life-long learning policy. In the Stockholm Mälars region, there are 26 academic institutions, which employ 40% of all Swedish academic teachers. The most prestigious universities are located centrally and aim at research, development and technology studies and to a lesser extent teaching and education. In contrast, the main function of the colleges, which are mainly located outside the city centre in the metropolitan area and macroregion, is teaching and education. One of the strategies to develop the regional surroundings of Stockholm was to invest in the second type of academic institutions. As a result, these institutions have noted the highest increase in student numbers, of which the most significant were Södertörn University located south of Stockholm, and Mälardalen University located in the twin city of Eskilstuna-Västerås (OECD 2006).

### **3.6. GOVERNANCE OF THE METROPOLITAN AREA**

As previously mentioned, regional planning in the region is of a bottom-up character and is strongly affected by the consensus culture of decision-



making processes. Despite fewer competencies at the regional level, the Swedish legal framework offers a variety of solutions encouraging cooperation between local authorities. These include the ordinary contract, which applies to a very specific object of cooperation; local government federation, which is a form of cooperation between institutions representing various levels of local, regional and national authorities which can be additionally subsidised from the central budget; joint ownership, which is a tool of rationalising the supply of public services such as education or healthcare. In this context a very interesting initiative has emerged in the Stockholm-Mälars Region (OECD 2006). The main activities concerning strategic regional planning are handled by the The Council for the Mälars Region, which is a non-profit special-interest organisation for municipalities and county councils in the Stockholm-Mälars Region. It consists of the five counties of Stockholm, Uppsala, Västmanland, Södermanland and Örebro. The activities of this organisation are focused on three areas such as infrastructure, benchmarking and education. The objective of the Council for the Mälars Region is to promote the development of the Stockholm-Mälars Region as an attractive, future-oriented region within an integrated Europe (Högborg 2009).

One of the results of this cooperation is a very comprehensive and broad Regional Development Plan for the Stockholm Region 2010 (RUF 2010), which unlike previous documents of this sort, includes diagnosis, recommendations and proposals for the whole metropolitan region (Regionplanen 2010).

The main effects of these policy tools are visible especially in labour market related issues, with constantly growing commuting demand and intensity as well as growing suburbanisation processes and spatial expansion of the metropolitan area. Meanwhile, attempts to diversify the structure of the regional economy and attract companies from more advanced sectors into the more remote areas of the region have not yet brought any visible results.

### 3.7. DEVELOPMENT PROSPECTS

The current trends suggest further growth of the disproportions between the metropolitan area of Stockholm and its region in economic development. One of the main arguments behind this forecast is based on the differences in economic structure, with a significant share of manufacturing and basic services in the region and highly internationalised, innovative and advanced branches in the metropolitan area. Currently, the remote parts of the region are faced with competition from the manufacturing sector of developing countries and are undergoing restructuring due to its

earlier monofunctional structure. Meanwhile, the metropolis is constantly strengthening its position in the international context due to its competitive advantages resulting from the metropolitan functions of Stockholm.

There are three possible scenarios that include both the structural conditions of the region and intended strategic approaches and policy tools declared by public authorities and proposed in strategic documents.

The first scenario, 'The Growing Monopoly of the City', is based on the assumption that the ongoing processes will continue and the backwash effects will be dominant and will prevent the integration of the metropolitan region. According to this scenario, further development will be monocentric and the economic dependency of the hinterland will grow. The limitations of regional planning procedures will prevent successful cooperation and block efficient decision-making processes. The depopulation of remote areas will therefore continue and most new investments, company start-ups and development of clusters will be concentrated in the metropolitan area. The condition for this scenario would be substantial growth in the number of dwellings inside the metropolitan area.

The second scenario 'Infrastructure – Spatial Expansion of the City, Residential Function of Suburban Areas' also assumes extrapolation of current trends concerning the gap between the regional and metropolitan economic structure. However, according to this alternative, the improvement in transport infrastructure will shorten travelling time, lead to better communication and links between the region and metropolis, and therefore contribute to suburbanisation. The assumption here is that, due to infrastructural improvements, there will be a significant real estate boom in the municipalities located along the main transport routes. As a result, these municipalities will change their character to typically residential areas and will benefit from the financial transfers of their new residents working in the city.

The third, most optimistic scenario 'Polycentric Network of Regional Nodes, Endogenous Development' assumes that all intended policies and strategies will succeed and lead to a diversification of the regional economic structure, with the development of new functions of regional nodes. General improvement in infrastructure, strategic localisation of technology parks and better investments in higher education will positively influence income levels and human capital and will therefore enable endogenous development. This will further attract more advanced sectors and contribute to further restructuring and growth.

All of the scenarios are based on the assumption of the economic complementarity between the region and the metropolitan area. Each scenario gradually includes the possibility of positive effects on both economic and policy levels. Taking into consideration recent

improvements in communication and cooperation between local and regional authorities, the first scenario is the least likely. The remaining two scenarios are dependent on the effectiveness of cooperation, coordination and implementation of actions foreseen in the strategic documents.

## CHAPTER 4

### CITY-REGION RELATIONSHIPS: TOULOUSE- -MIDI-PYRÉNÉES CASE STUDY

The Midi-Pyrénées region is situated in southern France and borders on Spain along the Pyrénées. This is the largest region in France (8.3% of the country's area), but sparsely populated: it has slightly over 2.8 million inhabitants, i.e. ca. 61 inhabitants per one km<sup>2</sup> (which is much less than the country's average of 113 inhabitants per one km<sup>2</sup>). The urban population accounts for the majority of the region's inhabitants, with an urbanisation rate of 68%. Toulouse is the key urban centre in the region. In 2006, the central municipality of the metropolitan area had 444 000 inhabitants, and the entire metropolitan area had a population of 1 103 000. Other urban centres in the region are markedly smaller: Tarbes (112 000 inhabitants in the urban area, 47 000 in the central municipality); Albi (93 000 and 51 000, respectively); Montauban (82 000 and 56 000); Rodez (69 000 and 26 000); Castres (63 000 and 45 000); Cahors (40 000 and 21 000); Auch (37 000 and 23 000). Therefore the region is strongly polarised and dominated by the centrally situated Toulouse, which is the administrative, economic and cultural capital of Midi-Pyrénées. This dominance is so great that the famous saying coined by Jean-Francois Gravier (1947) to describe the dominant role of Paris in the French space 'Paris and the French desert' is frequently invoked. The situation in the region is therefore referred to as: 'Toulouse and the desert of Midi--Pyrénées' (Gouardin 2008). Both these *bon mots* accurately capture the 'fractality' of how Toulouse and Midi-Pyrénées function – just as Toulouse prevails over Midi-Pyrénées regionally, both the region and the metropolis are overshadowed by Paris when we look at the entire country. Nevertheless, Toulouse is a major centre in the French space. Its role in the perspective of long term processes was emphasised by the famous historian Fernand Braudel (1986). In the early 1960s, Toulouse was selected as one of eight French 'equilibrium' metropolises, as part of the French Government programme aimed to balance the country's spatial development (Hautreux, Rochefort 1965). Owing to its long tradition of aviation industry starting after the First

World War, institutions such as a part of the National Centre for Spatial Research (Centre National d'Études Spatiales – CNES) and the National Civil Aviation School (École Nationale de l'Aviation Civile – ENAC) were moved from Paris to Toulouse (Grossetti 1995). In the second half of the 20th century, the city evolved into a metropolis, although it is frequently pointed out that not all metropolitan functions are fully developed here – this refers to the concept of Toulouse as an 'incomplete metropolis' proposed by Guy Jalabert, one of the major researchers of Toulouse, in a book published under the same title (Jalabert 1995).

#### 4.1. THE METROPOLITAN REGION AND ITS COMPONENT PARTS

The Midi-Pyrénées region is made up of 3020 communes [*communes*] (organised into eight departments [*départements*]: Ariège, Aveyron, Haute-Garonne, Gers, Lot, Hautes-Pyrénées, Tarn, Tarn-et-Garonne (cf. Fig. 40). Toulouse is located in the Haute-Garonne department, and its metropolitan area occupies the whole of the region's northern part, which in some places moves into the adjoining departments (Ariège, Gers, Tarn, Tarn-et-Garonne and Aude, which belongs to the Languedoc-Roussillon region).

The region is not a structure which is important for regional identity nor which is well rooted in history – in its present boundaries, it is a relatively new entity, established in the 1960s (Poumarede 1991), and did not become an administrative entity until the 1980s (Dugot, Laborderie, Taulelle 2008). For the inhabitants of Midi-Pyrénées, their local identifications matter more than regional, although Toulouse, as a city which enjoys international recognition, plays a considerable role in the building of a supra-local identity.

In France, metropolitan areas (*Aire Urbaine*) are established by the Institut National de la Statistique et des Études Économiques (INSEE) based on functional analyses. According to the methodology used, a metropolitan area is a compact group of communes (without enclaves) composed of the communes making up the central urban centre and the communes surrounding the centre, where at least 40% of inhabitants work in the central urban district or the surrounding communes. According to these delimitation criteria, adopted in 1999, the Toulouse metropolitan area had 342 communes with an area over 4000 km<sup>2</sup> (cf. Fig. 40). A new delimitation is planned for 2010 – in view of the rapid development of Toulouse, it can be expected that its metropolitan region will be significantly increased.

Nonetheless, the officially delimited metropolitan area is primarily a statistical and analytical entity, not transposed into administrative structures. The fragmentation of communes (basic units of territorial

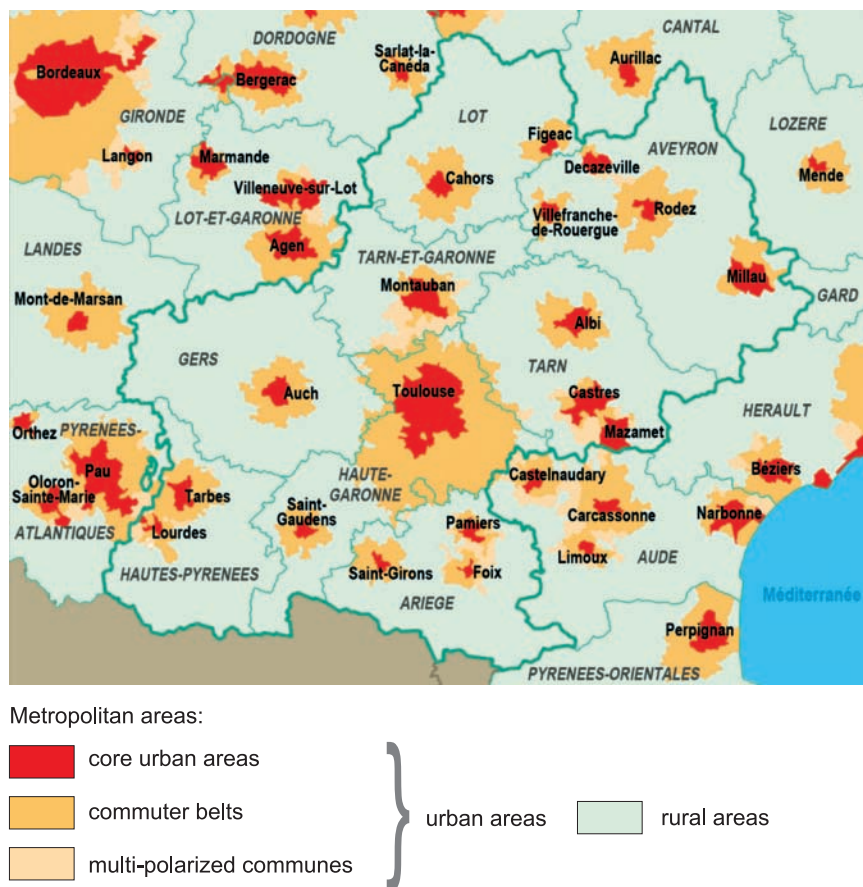


Figure 40. The Midi-Pyrénées region, departments, major cities and urban areas  
Source: Progetti 2001.

division) is typical of France; communes here are frequently very small in terms of their area, and population numbers make cooperation within the metropolitan region complicated. Nevertheless, the law provides the possibility to set up special-purpose and general-purpose associations of communes (depending on the character of the area, these include: *communauté d'agglomération*, *communauté Urbaine* and *communauté de communes*). Such general-purpose associations take over a broad range of competences from communes (cf. e.g. Kerrouche 2008), but there is a great deal of latitude in this regard. One pertinent aspect in particular is that several general-purpose associations of communes may exist within one metropolitan area. For instance, in the case of the metropolitan region of Toulouse in 2010, there existed one *communauté Urbaine*

(*Communauté urbaine du Grand Toulouse* – 25 communes, with a total population of 666 000), 2 *communautés d'agglomération* (*Communauté d'agglomération du Muretain* – 14 communes, 71 000 inhabitants, and *Communauté d'agglomération du Sicoval* – 36 communes, 66 500 inhabitants) as well as 30 small *communautés de communes*. However, this is not an uncommon situation in France. In 2008, only one in 10 metropolitan areas in France (*Air Urbaine*) had a uniform mode of management, i.e. based on one association of communes which comprised most of the communes of the area (Estèbe 2008).

The entire Midi-Pyrénées region remains unquestionably under the strong influence of Toulouse, which results both from its sheer size as well as the lack of other major city centres. The impact of Toulouse is also visible in the western part of the Languedoc-Roussillon region which borders on Midi-Pyrénées from the east, particularly the Aude department, the western boundaries of which run 40 km from the centre of Toulouse. Moreover, some communes from this department are included in the metropolitan region of Toulouse in the official delimitation. However, its immediate surroundings, defined as an area lying 30-60 minutes by car from Toulouse, have the strongest functional ties with the metropolitan area. This mostly includes smaller cities, generally the capitals of the departments: Albi, Auch, Castres, Castelnau-d'Aud, Foix, Mazamet, Montauban, Pamiers, Saint-Gaudens (Fig. 40). These cities make up an urban network, with Toulouse as its obvious hub. The area of influence defined in this way (referred to as the *Aire Métropolitaine de Toulouse*) is important because it is used in analytical and strategic studies (cf. AUAT 2008).

Toulouse is the headquarters of Airbus, the aerospace industry giant. The role of this company for the city is so great that Toulouse has been dubbed as 'Airbus-ville'. The modern aerospace industry is definitely the strongest asset of the city. Aviation industry includes not only Airbus, but also ATR, Latécoère, EADS, Cimpa and a large number of cooperating companies. Other dynamic industries include space, aircraft flight control systems, aerospace security, electronics, mechanics, as well as chemical, pharmaceutical and medical industries (Pierre Fabre, Sanofi-Aventis, the Pôle de Compétitivité Cancer-Bio-Santé initiative). These sectors are characterised by a great degree of innovation and international competitiveness, which is transposed into the significance of exports for the city and its capacity to attract foreign capital – which are the city's other assets. Toulouse is also an important national academic and research centre, with unique courses and specialisations of study (primarily those connected with the aerospace industry). One proof of the attractiveness of the metropolitan region is that in the past decade its population constantly



increased, at a rate of ca. 1.9% in the years 1999-2006, both as a result of natural increase and migrations (Tornéro 2010).

The significant role of the aerospace industry (which is e.g. expressed by the 70% share in the value of the region's exports, according to 2007 data) at the same time poses a potential threat to the sustainability of the city's development – in a situation of a potential downturn in this market or loss of its competitive advantage by Airbus and its cooperators. It should be emphasised at this point, however, that the economic structure of the metropolis is quite diverse and has a modern sectoral make-up (with over 70% of jobs in services). In addition, diversification attempts are being made (e.g. development of activities in the pharmaceutical sector). The dynamic spatial and demographic development of the city creates a strong demand for technical infrastructure, particularly in transport, the main problems being the 'bottlenecks' in public transport: the lack of a speedy connection (metro, railway) with the industrial zone in SICOVAL and with the airport. The complex structure of the administrative units is another important weakness, because it makes necessary elaborate cooperation networks, and this undoubtedly makes the decision-making process unduly long. Another threat to the city's development, also in the context of the technical and social infrastructure, is posed by suburbanisation processes, which are also difficult to control because of the complex structure of spatial units.

The main strength of the regional hinterland of the Toulouse metropolitan region is primarily a high quality of life: the scenic landscape, easily accessible basic social services and an extensive transport network which ensures speedy links with the metropolis. Other assets include the relatively well-developed subregional centres which are the capitals of the departments (with branches of higher education institutions, business environment institutions, modern industries such as the pharmaceutical industry in Castres, aerospace industry in Tarbes, Figeac and others, La Mecanic Vallée with its heart in Figeac and Decazeville). The region also has modern, specialised and profitable agriculture (with 6% employment, it generates 5% of the region's exports) and the food industry with some 100 000 jobs (more than the aerospace industry, directly and indirectly) – the competitiveness of these activities receives support from the public authorities as part of the Agrimp-Innovation scheme. Another strength of the region is its potential for tourism, particularly significant in the southern part of the region: the Pyrénées, with its well-developed mountain tourism (summer and winter) and Lourdes – a pilgrimage tourism centre. Altogether, tourists spend ca. 80 million nights per year in the region, and the tourism sector generates some 45 000 jobs (of which some are seasonal, and 29 000 permanent).



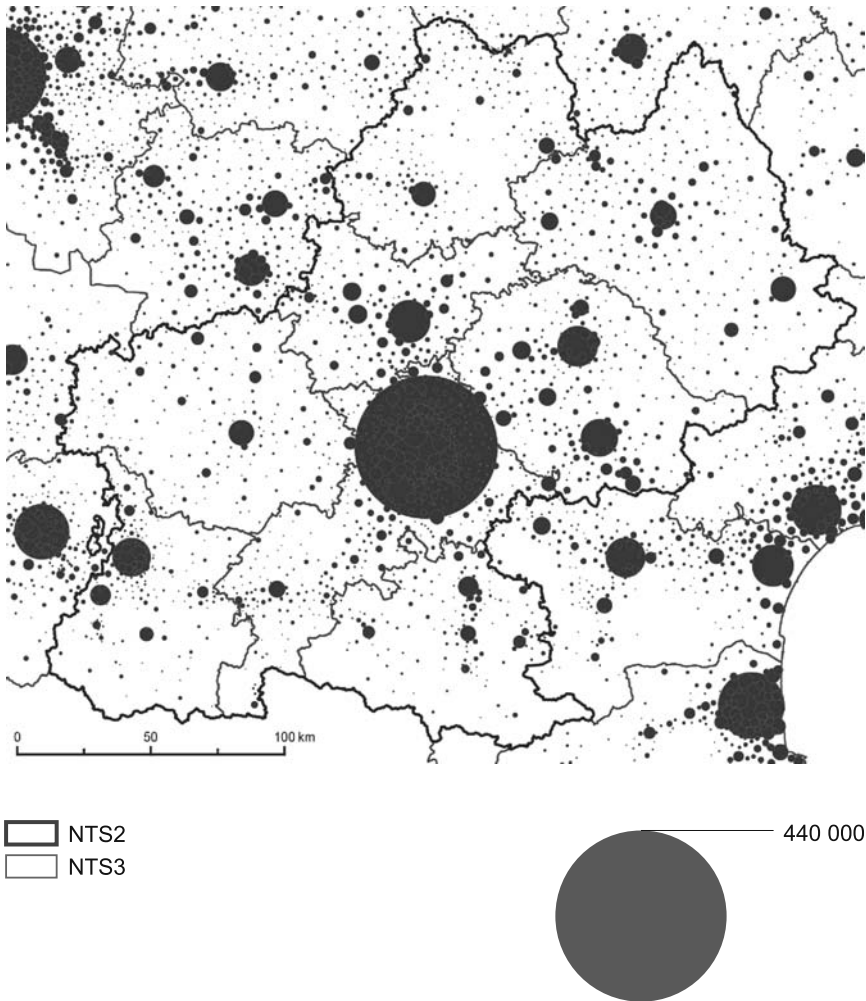


Figure 41. Midi-Pyrénées – population 2006

Source: prepared by the author based on INSEE data.

Among the weaknesses of the region is the structure of the transport network, built around connections with Toulouse, leaving inferior-quality connections between the subregional centres (this refers to public and railway transport in particular). The small size of cities other than Toulouse might also be considered as a weakness, although not as significant (Fig. 41). Due to the relatively limited demographic potential of these cities, the evolution of a polycentric network of cities to balance the influence of the metropolis is not very likely in the foreseeable future.

In the case of the analysed region, the differences between the metropolitan area and its regional hinterland are to a degree natural, arising

from the characteristics of these areas. The metropolis is a big modern city, whereas its hinterland is rural, with small or medium-sized subregional centres. The aerospace industry, however, is present both in the metropolis and outside its area (see below), as well as the chemical and pharmaceutical industries (e.g. Pierre Fabre in Castres). Agricultural activity is naturally present outside the metropolis, although food processing is located both in the metropolitan area and elsewhere in the region. Moreover, despite the concentration of higher education, research institutions and innovative enterprises in Toulouse, they are also present in other cities of the region (albeit on a relatively smaller scale). The living standards of the population are regarded as high both in the metropolitan area and in the regional hinterland. Even though some disparities are visible in the level of education, or the age or income structure (the inhabitants of the metropolis being better educated, younger and wealthier), these are only relative disparities which do not justify any statements on significant structural differences between the two.

#### **4.2. RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

##### **Commuting to work**

Commuting to work is a factor that connects the region with the metropolis. It can be analysed from two perspectives: flows as part of the metropolitan area and flows between the metropolitan area and its hinterland. The majority of work-home commuting covers journeys to work in Toulouse from outside the city. About 110 000 people, i.e. 40% of those working in the city (AUAT 2009), commute daily to work in Toulouse from its metropolitan region. Reverse flows are also visible, although on a smaller scale: some 35 000 inhabitants of the central city work outside the city, but live in the metropolitan area (total employment in the metropolitan area but excluding the central city is some 250 000, mostly residents of this area).

Another dimension of these types of linkages are flows of employees in the region, between the major cities. In this case, flows are significant, but on a much lesser scale. For instance, slightly over 8000 inhabitants of the subregional centres surrounding Toulouse commute to work to the city and its metropolitan area. Castelnaudary is the city with the strongest ties with the metropolis – 10% of economically active population living in this city (and its area of influence – *Air Urbaine*) commute to work in the Toulouse metropolitan area. This is a particularly interesting example because Castelnaudary is situated outside the Midi-Pyrénées region. This

shows the artificiality of administrative boundaries on the one hand and on the other – the power of attraction of Toulouse. Commuting to work to the Toulouse metropolitan region is also popular in the case of Pamiers and Saint-Gaudens (9% of people in work in each), Montauban (8%), Foix, Saint-Girons, Albi (each 4.5%), Castres (slightly over 4%). The distance within which Toulouse is attractive for incoming employees is about 100 km. Movement in the opposite direction is also visible. Slightly over 5000 inhabitants of Toulouse and its metropolitan area commute to work to the subregional centres, most of them to Montauban (about 1800), Albi (800), Pamiers and Castres (500) (INSEE, AUAT 2009).

### Aerospace valley – cooperation links

In Midi-Pyrénées, about 55 000 jobs are connected with the aerospace industry (40% directly, 30% indirectly, while the remaining 30% represent

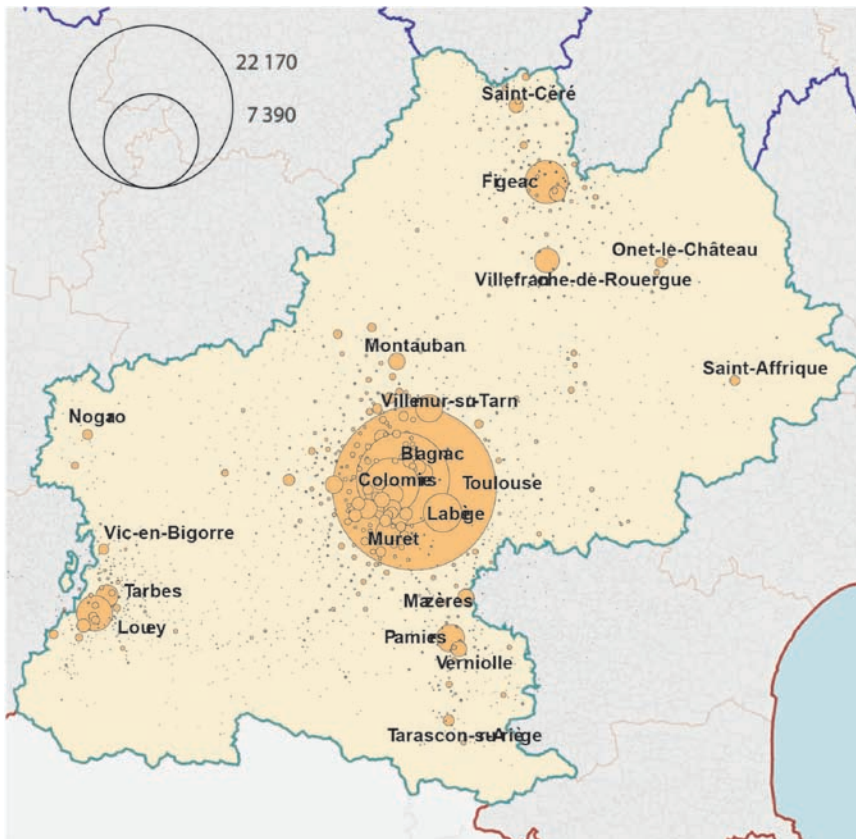


Figure 42. Jobs related to the aerospace sector in 2006

Source: Ruhlmann 2007.

employment generated by other types of activity), of which 10 000 are provided by Airbus. Employees in the aerospace industry account for slightly over 5% of all people working in the region (Ruhlmann 2007). The aerospace industry is concentrated in the Toulouse metropolitan area, which offers 3/4 of jobs associated with the aerospace industry in the region. Important aerospace industry centres are also located in other parts of the region. These include in particular: Pamiers, Villefranche-de-Rouergue, Figeac, Tarbes, Louey (cf. Fig. 42). The aerospace industry is also well-developed in Aquitaine, a region west of Midi-Pyrénées. Both these regions are in fact one functional area of the aerospace industry (and related activities), with over 1000 companies having strong cooperation links. Its development is stimulated by a dynamic organisation called the 'Aerospace Valley', which brings together some 550 enterprises and institutions associated with the aerospace industry situated in both regions (Aerospace Valley, INSEE 2008). This is an aerospace cluster with extensive internal cooperation structures and strong international links, robust R&D facilities and specialised higher education, which is promoted by both regional and national authorities (cf. e.g. Jalabert, Zuliani 2009; Dugot, Laborderie, Taulelle 2008). Toulouse is unquestionably the hub of the cluster, which proves that the metropolis control functions play a significant role not only in the regional, but also supra-regional context.

### **Higher-order services**

Toulouse concentrates many functions which do not occur elsewhere in the region. First and foremost, it is the main academic centre which attracts students from all over the region – higher education institutions in subregional centres offer a small range of specialisations, most of them at the undergraduate level. A similar situation – although on a much smaller scale – can be observed in secondary education; in this case, the range of impact is much smaller than in case of tertiary education (AUAT 2008).

Toulouse is the major centre of specialised medical care in the region – subregional centres have limited specialisations, whereas the metropolis offers a broad range of high-quality medical services and access to specialist medical equipment. The metropolis can also offer consumer goods which are not attainable elsewhere in the region. In addition, the metropolis is the main cultural centre which caters to the entire region; this is true in particular for high-culture institutions (theatres, opera, concert halls, museums and art galleries). Toulouse is also the main transport hub in the region – due primarily to its international airport, but also to its long-distance train connections.

### *Migrations*

Significant migration flows can be observed both from the metropolis to the region and in the opposite direction. In 1990-1999, about 55 000 people moved from the region to the metropolitan area, and nearly 40 000 people emigrated from the metropolitan area to other parts of the region. As we can see, the dominant direction was towards the metropolis, which attracted new residents (it should be noted that this trend was visible not only in the movement between the metropolis and the region, but also in general terms: in the period in question, Toulouse attracted over 230 000 new residents, and lost only 130 000 inhabitants). The largest age group migrating to the metropolis are people aged 15-24 (which means that many of them are students; thereby the city's academic function is strongly manifested). On the other hand, most people moving out of Toulouse are in their thirties. Those who migrate from the metropolitan area usually settle somewhere in its vicinity or in the subregional centres. This trend was also noticeable post 2000 (AUAT 2006).

### *Entertainment and leisure*

The region is attractive for tourists and serves as a natural recreational base for residents of the metropolitan area, both with regard to typical long-stay tourism (especially the Pyrénées), weekend stays (interesting historical small and medium-sized cities), spa tourism, and second homes, as the region's rural areas are attractive leisure and recreation locations. The well-developed infrastructure (which includes hiking trails, navigable canals, bicycle lanes, skiing facilities in the Pyrénées, and the south-western edge of the Massif Central) fosters the development of tourism. On the other hand, Toulouse is also an attractive leisure destination for the inhabitants of the region, mainly because of its major cultural and entertainment functions.

### *Relationships of public authorities*

Despite a high degree of centralisation and a complicated, multi-tier system of territorial administration, France has elaborate and efficient mechanisms for coordinating activities and cooperation between different territorial units, especially in the case of urban areas (cf. e.g.: Kaczmarek, Miłkowska 2007; Kerrouche 2008). Nevertheless, the system of cooperation between the communes as part of the metropolitan area is characterised by a great deal of freedom (that is, the top-down identification of areas for cooperation is limited). For this reason, there are three large

general-purpose associations of communes (see above) in the Toulouse metropolitan area, although it is difficult to find a substantive explanation for this. In this case, local interest and competition are the decisive factors (cf. also Nevers 2002, Nicholls 2006). In spite of these difficulties, and the frequently open competition at the local level, coordination of activities in the metropolitan area is effective and efficient. In the regional dimension, cooperation of public authorities is largely coordinated by the regional authorities, especially with respect to spatial planning.

#### **4.3. FACTORS SHAPING THE RELATIONSHIPS BETWEEN THE METROPOLIS AND ITS REGION**

The metropolis and the region are complementary to each other. This complementarity is facilitated by the lack any marked socio-economic disparities with negative consequences. Midi-Pyrénées can serve as an example of a strongly polarised region, with a significant concentration of the population, business activity and services in Toulouse, but at the same time with a regional hinterland that remains attractive as a place to live, rest and conduct business activity – all this is fostered by a well-developed transport infrastructure, good availability of basic social services, available land for development, as well as modern agriculture.

Diffusion is manifested most distinctly through migration flows. These take place within the metropolitan area (usually from the central city to the metropolitan area), but are also common from the metropolitan area to the region. In 1990-1999, nearly 40 000 people left the metropolitan area and settled down in the region. The destinations of such migrations were generally areas located in the vicinity of the metropolitan area, as well as the subregional centres and transport corridors connecting them with the metropolis (cf. Fig. 43). Migrants very frequently maintain strong ties with the metropolis, both with regard to employment in the metropolitan area, and services offered by the metropolis.

The considerable role of migration does not only refer to movements from the metropolitan area to the region. The Midi-Pyrénées region also attracts new residents from other regions, which, coupled with positive natural increase, produces an overall increase in the population in many areas of the region. However, the highest positive dynamics can be observed in the Toulouse metropolitan area and its direct environs, as well as in the subregional centres and their suburbs; the demographic development in the corridors connecting Toulouse with the subregional centres, mentioned above, is also clearly visible. However, an increase in the population is not only limited to urban areas – it can also be clearly observed in some rural areas, e.g. the rural areas of the Lot department, lying distance from



Toulouse. It should be emphasised at this point that rural areas are showing a reversal of the depopulation trend that was observable in the second half of the 20th century (AUAT, INSEE 2009).

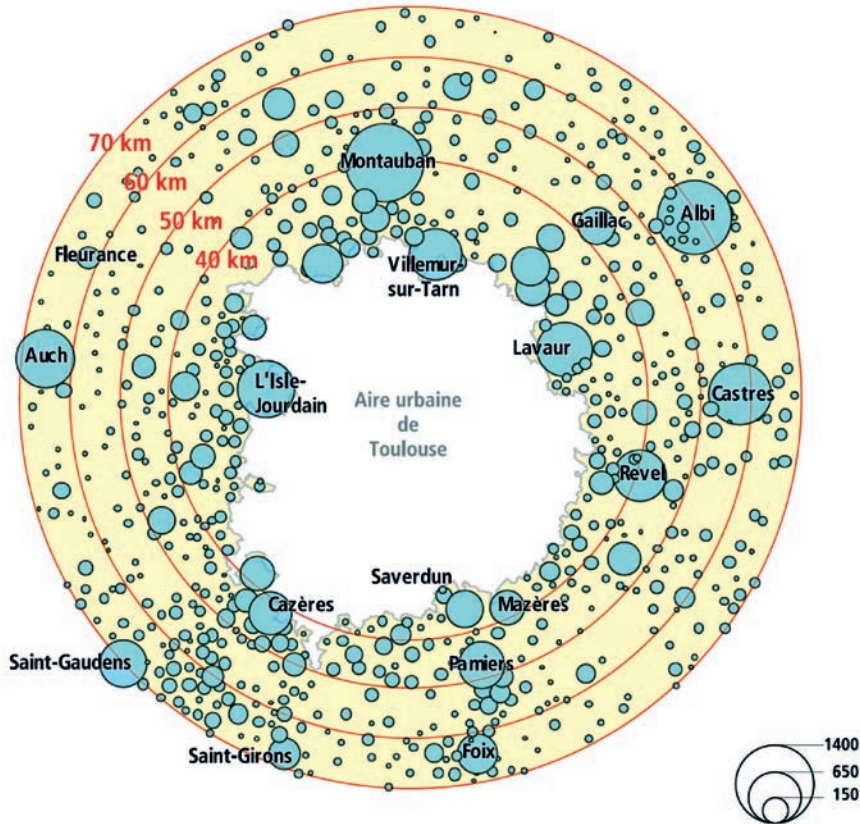


Figure 43. Destination of migrations from the metropolitan area (2000-2006)

Source: AUAT 2006.

An increase in population is transposed into an increased demand for flats, houses and development sites, and consequently price rises. This is particularly visible in the metropolitan area and its immediate hinterland. During past decades, the development of the transport infrastructure – especially expressways – increased the range of the commuter belt in the metropolitan area, and thereby extended the range of impact of the diffusion of development.

Another aspect of diffusion refers to the cooperation links of companies from the metropolitan area with companies from other parts of the region. This is most evident in activities associated with the aerospace



industry (see above), but also other industries such as the pharmaceutical and cosmetics industry. Laboratoires Pierre Fabre, a large corporation operating globally with EUR 1.8 billion turnover in 2009, can serve as an example of the latter. Its headquarters are located in the relatively small (ca. 50 000 inhabitants) city of Castres (in the Tarn department), situated east of Toulouse. The corporation has operated from Castres since 1961 and does not intend to move its headquarters. However, it has very strong cooperation linkages with Toulouse, particularly concerning R&D aspects, including the European Centre of Skin Research, founded and run together with the Paul Sabatier University and the city hospital, and participation in the new project for a cancer research centre (Cancéropôle) (cf. e.g. Abbot 2005), which is being developed on the site of the AZF plant, the explosion of which in 2001 was one of the gravest industrial catastrophes in contemporary Europe (CIEU 2002; Dechy et al. 2004).

Diffusion is also visible in the stepping up of economic activity outside the metropolitan area. This mainly applies to the growth in retail and office space. In 1999-2004, new trade and office facilities outside the metropolitan area opened mostly in the subregional centres and in the transport corridors from Toulouse, with particularly intense development in the Toulouse-Montauban and Toulouse-Albi corridors (cf. AUAT 2008).

An important manifestation of diffusion has also been the development of higher education in subregional centres, promoted by the public authorities. Currently, all the major subregional centres have higher education institutions within their boundaries. Most of these are branches of colleges and universities from Toulouse, with two notable exceptions, Albi and Tarbes, which have independent technical universities.

In addition, the development of the business environment infrastructure is visible in the subregional centres. These facilities can take different forms (such as innovation centres, technology transfer centres, technological platforms, competence centres, etc.), and their activities frequently involve developing cooperation networks between institutions from the metropolis and its hinterland. These efforts have been moderately successful, which is proved by the fact that out of 32 companies which left the regional business incubator, as many as nine chose their locations outside the metropolitan area, mostly in the subregional centres (AUAT 2008).

The phenomenon of backwashing is much weaker in the region than the diffusion of development. Migrations are probably the most important aspect of backwashing. The metropolitan area is an attractive place to work, live and study, and therefore attracts considerably large numbers of people. In the 1990s, migration flows between the metropolitan area and the region were distinctly favourable for the metropolitan area, whose population increased by over 15 000 inhabitants net (40 000 emigrated to the region,

but 55 000 moved from the region to the metropolitan area) (AUAT 2006). Such a tendency has been maintained in recent years. People who migrate from the region to the metropolis include mainly students and people of working age who take up employment in Toulouse or the metropolitan area (Le Boëtté, Ruhlmann, Laurin 2008).

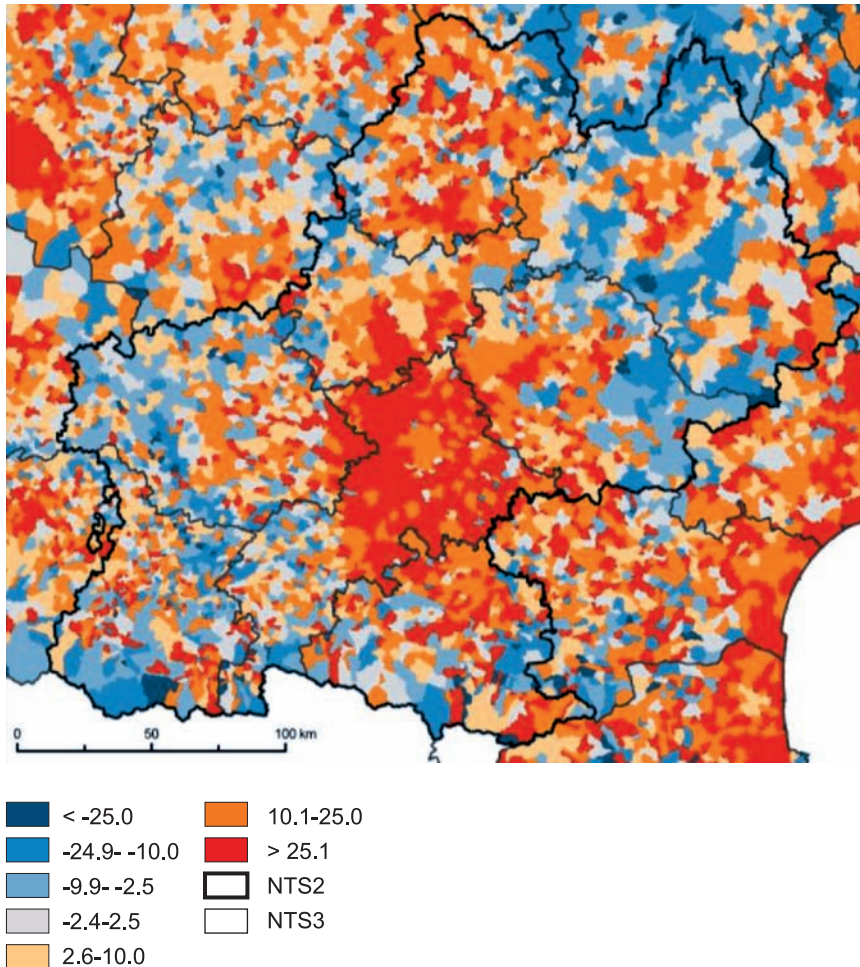


Figure 44. Midi-Pyrénées – population change in % (1990-2006)

Source: prepared by the author based on INSEE data.

Migrations and natural increase result in the growth of the population across the region. However, there can be wide disparities in this regard between the region's individual areas. In the years 1990-2006, a considerable population increase was recorded primarily in the metropolitan area of Toulouse and its direct vicinity, as well as – to varying

degrees – in the subregional centres and their suburban zones (here, we can see some analogy with the distribution of jobs associated with the aerospace industry – see Fig. 42). Meanwhile, there was a population decrease in a large part of the region's rural areas (cf. Fig. 44).

A considerable difference in scale between the metropolis and the region undoubtedly fosters the concentration of economic activity in the metropolitan area. However, it is difficult to assess the scale of this phenomenon, especially in view of the clearly visible development of the entire region, both the metropolitan area and its hinterland.

#### **4.4. MUTUAL RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

Despite the various aspects of ties between the metropolis and the region discussed above, it can be said that, for Toulouse, the linkages going beyond the region are far more important. This is particularly visible in the case of modern industries (aerospace, electronics, pharmaceuticals), in which the metropolis has a global presence, participates in international cooperation networks (e.g. Airbus parts are manufactured in several European countries) and is subject to global competition. Owing to its relatively small scale, the regional hinterland does not influence the functioning of the metropolis in any significant way. However, some elements of complementarity are evident. The regional hinterland, which provides good opportunities for leisure and recreation, is also an attractive housing location and has plenty of available land for development (a factor which can gain in importance in view of the dynamic development of the metropolis). In addition, a well-developed food sector ensures balance (diversification) in the region's economy.

On the other hand, the region seems to be strongly dependent on Toulouse. This is primarily due to the fact that Toulouse is the dominant centre, whereas other cities in the region cannot offer the same services available in the metropolis due to their small demographic scale. This dependence, however, is not excessive – the region has endogenous resources which enable it to function – at least to some extent – in isolation of the metropolis (the agriculture and food industry, tourism, pharmaceuticals in Castres, the textile industry in the departments of Tarn and Ariège, etc.) (cf. Dugot, Laborderie, Taulelle 2008).

Positive results of developmental diffusion prevail in the relationships between the metropolis and the region. To a certain extent, this is a natural phenomenon, but activities of the public authorities which promote such diffusion also play an important part.

#### 4.5. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT

The activities of public authorities are multifaceted and tackle many different spheres. This is possible owing to an elaborate institutional system. However, the activity of its individual players is well coordinated by extensive cooperation structures.

##### Competition poles

The competition poles policy (*Pôles de compétitivité*) (cf. e.g. Weil, Fen Chong 2008), pursued since 2004 at the national level, has been an important factor promoting economic development. These are clusters developed at the regional level with financial and organisational supports, aimed to promote regional specialisations while ensuring coordination and complementarity of actions at the national level. Midi-Pyrénées has identified three such poles: the Aerospace Valley ([www.aerospace-valley.com](http://www.aerospace-valley.com)), agriculture and food (Agrimp-Innovation: [www.agrimipinnovation.com](http://www.agrimipinnovation.com)), and cancer research (Cancer-Bio-Santé: [www.cancerbiosante.fr](http://www.cancerbiosante.fr)). These initiatives refer to the regional level and, as such, develop the competitiveness both of the metropolis (as a first priority) and of the region. Activities inspired by the central authorities are launched and coordinated by the regional and local authorities, with considerable commitment on the part of enterprises and R&D institutions.

##### Strategic and spatial planning

The system of development planning is well-developed in the region. The majority of plans are devised at the regional level: *Schéma Régional d'Aménagement et de Développement du Territoire* – current version from 2009. Another planning section which is important for the analysed topic is planning for the broad metropolitan area, comprised of Toulouse, its metropolitan area (*Aire Urbaine*) and the surrounding areas along with the nearest subregional centres (*Aire Métropolitain*) (cf. AUAT 2008). At both these levels, the polarisation and diffusion approach is well visible, Toulouse is perceived as a growth engine for the region: on the one hand, planning activity aims to foster the development of the metropolis and facilitate diffusion mainly through reinforcing the potential of subregional centres, and on the other, to ensure the best possible connections between them and the metropolis.

### **Higher education**

In the past 20 years there has been a consistent policy aimed to develop higher education in subregional centres. This has been possible owing to cooperation of the national, regional and local authorities. Currently, academic centres operate in all the major cities of the region, usually as branches of higher education institutions from Toulouse. These initiatives are mostly local in character. The number of students in subregional centres is not large, similarly to the number of courses and specialisations offered. As a rule, the subregional centres offer undergraduate courses (see above).

### **Economic activity zones and business environment institutions**

Economic activity zones (areas furnished with a complete infrastructure) are established outside the metropolitan area on the initiative of the regional authorities. Currently, about 30 such zones are either in operation or at the planning stage (Région... 2009). Business environment institutions are also being developed, similarly to specialised institutions focused on innovation (AUAT 2008).

### **Transport infrastructure**

The road infrastructure connecting the metropolis with the regional centres is sufficiently well developed. Currently, initiatives are under way to streamline communication between the subregional centres. However, activities in the sphere of transport infrastructure focus on the modernisation of rail connections between Toulouse and the subregional centres. In this case, the scale of neglect is quite considerable, with obsolete infrastructure and some single-track railway routes. At present, a comprehensive plan for the modernisation and extension of the railway network is under way (Région... 2009).

## **4.6. GOVERNANCE OF THE METROPOLITAN AREA**

The management system in the Toulouse metropolitan area (*Aire Urbaine*) is both complicated and lacking uniformity. First and foremost, there is no single authority in charge of the entire area. The metropolitan area is composed of many communes, which may set up general-purpose associations (furnished with broad powers taken over from their constituent communes, but ensuring the superior controlling role of the communes). However, a great deal of freedom in establishing such associations has resulted in an excessive number, and the spatial ranges of the associations

hardly correspond to the functional areas (cf. e.g. Lanusse 2006). In the very core of the metropolitan area, three associations of communes operate (see above: PART 1. The Metropolitan Region and Its Component Parts). However, spatial planning is currently conducted for a different, more functional division. At present, four supra-municipal spatial development plans (SCOT – *Schéma de Cohérence Territoriale*) are being prepared for the metropolitan area, which have been synchronised in the planning document entitled: *InterSCOT de l'Aire Urbaine de Toulouse* (AUAT 2005).

Coordination of activities in such a fragmented institutional structure requires efficient cooperation mechanisms. It should be emphasised that, in this case, these mechanisms work quite well. The planning and coordination of activities in the metropolitan area rests with the Agency for Urbanisation and Spatial Development of the Toulouse metropolitan area (AUAT – *Agence d'Urbanisme et d'Aménagement du Territoire Toulouse Aire Urbaine*, [www.auat-toulouse.org](http://www.auat-toulouse.org)), made up of several public institutions representing different administration levels (both state authorities and local governments).

#### 4.7. DEVELOPMENT PROSPECTS

In the coming few years, economic development and continued population increase will be the major factors determining the relationships between the metropolis and the region. The demographic and economic development will mainly be concentrated in the Toulouse metropolitan area and the subregional centres, and to some extent in rural areas (in the latter case, some depopulation trends may also be expected in certain areas). The development of the metropolis will increase the extent of its direct influence, which may have some negative consequences in the form of suburbanisation pressure and an overburdened infrastructure. Activities initiated by the authorities to strengthen the subregional centres may, however, prevent such negative phenomena and create conducive conditions for more polycentric development. Nevertheless, taking into account the wide differences in the scale of the metropolitan area and the surrounding cities, no evolution of a fully polycentric system should be expected in the foreseeable future. Toulouse will remain an indisputable growth engine for the region. This will be fostered by the diversification of economic activity, primarily in hi-tech industries (space, electronics, pharmaceuticals, biotechnology, etc.) and launching a high-speed railway connection (by 2020, the journey to Paris will take about three hours). In this way, conditions will be created for the further metropolisation of Toulouse and the enhancing of its status in the European network of cities.



The biggest threat for the city and the region may be posed by a crisis in the aviation industry (but such a risk in the coming years is regarded as minimal). The fall of large enterprises would entail problems in companies cooperating with them and could lead to a severe crisis in the labour market in activities directly and indirectly associated with aviation. Such a scenario, however, is neutralised by activities aimed to maintain the competitive edge of the aerospace industry, and to diversify the region's economic structure.



## **CHAPTER 5**

### **CITY-REGION RELATIONSHIPS: WARSAW-MAZOWSZE CASE STUDY**

Mazowieckie voivodship (province) situated in central Poland occupies an area of 35 600 km<sup>2</sup> and has 5.2 million inhabitants. There are 85 cities within the voivodship, of which Poland's capital, Warsaw, is the largest. It has a population of 1.7 million, and its metropolitan area has some 2.6 million inhabitants. Mazowieckie is structured as a nodal region, being distinctly divided into the metropolitan area of Warsaw and its regional hinterland, which in many cases is rural in character. In the remaining parts of the region, there are a number of medium-sized cities such as: Radom (224 000), Płock (127 000), Siedlce (77 000), Ostrołęka (54 000) and Ciechanów (45 000). Generally speaking, however, the region's rate of urbanisation outside the Warsaw metropolis is low, not only in comparison with highly-developed Western European countries but also with the national average (61.2%).

From the very beginning of economic transition, Mazowieckie voivodship has been a driver of change and a leader of the transformation, and currently is the fastest-developing region of the country. Its privileged position is primarily due to the capital city, which has become the leading centre of the transformation (including privatisation) and has attracted the bulk of the USD 125 billion of inward capital invested in Poland (until 2008). In Warsaw, being a seat of transnational corporations, the sector of higher-order services (mostly related to finance and information) has developed to cater to their needs (e.g. Nowosielska 2002). In contrast, the remaining part of the region trails far behind the capital city and its direct hinterland in terms of the level and dynamics of growth. A low-productivity agricultural sector still dominates the economy of these areas, and the restructuring of the industrial sector there has been longer, frequently leading to the closing down of enterprises, which has severely affected many local labour markets.

As a result of the 1998 administrative reform, 16 voivodships with a mixed system of administrative authority (shared by the government-

appointed voivode (governor) and an elected regional assembly) were formed, Mazowieckie being one of them. The elected regional authorities are responsible *inter alia* for drawing up development strategies and, since recently (2007), also for the preparation of the Regional Operational Programme (ROP) which provides the basis for using structural funding assistance from the ERDF.

### **5.1. THE METROPOLITAN REGION AND ITS COMPONENT PARTS**

Warsaw, as any big city, has a broad zone of influence owing to its capital city and metropolitan functions. The public administration sector in Warsaw employs 64 000 staff, which accounts for ca. 8% of its entire working population; this does not make it substantially exceptional when compared to other large Polish cities, but the figure is over twice as high as the national average. It is metropolitan functions that are of cardinal importance for the city's economy. This is associated e.g. with Warsaw being the headquarters for large enterprises, including branch offices of transnational corporations which operate across Poland (eg. Śleszyński 2007). Their needs are catered to by the well-developed B2B services sector, employing 110 000 staff, and the financial intermediation sector (58 000 employees) with the highest location rate values in Poland. In addition, Warsaw is the country's leading academic centre (280 000 students) and a city with the greatest concentration of R&D potential. Cultural functions are also well developed, even though other large Polish urban centres are worthy competitors in this sphere. Warsaw is also an important location on the national map for tourist traffic (the largest airport in Poland, handling ca. 9 million passengers per year, but with a growing significance of other regional airports), mostly business in character, but with poorly developed facilities for congress tourism.

The Warsaw labour market is both attractive (high salaries) and open (a high degree of diversity). The majority of those who settle down in Warsaw explain their decision to do so by job opportunities offered here. Daily commuting to work is also popular, and its extent goes beyond the administrative boundaries of the voivodship. Two types of commuting can be distinguished: daily journeys (which prevail in the belt up to 80 km from the city centre) and weekly journeys, with distances in many cases exceeding 200 km.

Although Mazowsze (Masovia) is a region with a long history, its regional identity is not strong. The historical region covered only the northern and central part of what now makes up the voivodship, and its boundaries have changed during the ages. In the past, the southern part of

Mazowsze belonged to Sandomierskie voivodship (part of historic Lesser Poland), and its border, running along the River Pilica, is still clearly visible inter alia on the map of *gminas'* (municipalities) own incomes. Another reason for this deficiency of regional identity is the fact that Warsaw, since it became a capital city in the 16th century, has always had relatively weak ties with its direct surroundings. This situation changed slightly towards the end of the 19th century as cooperation linkages grew within the industrial economy.

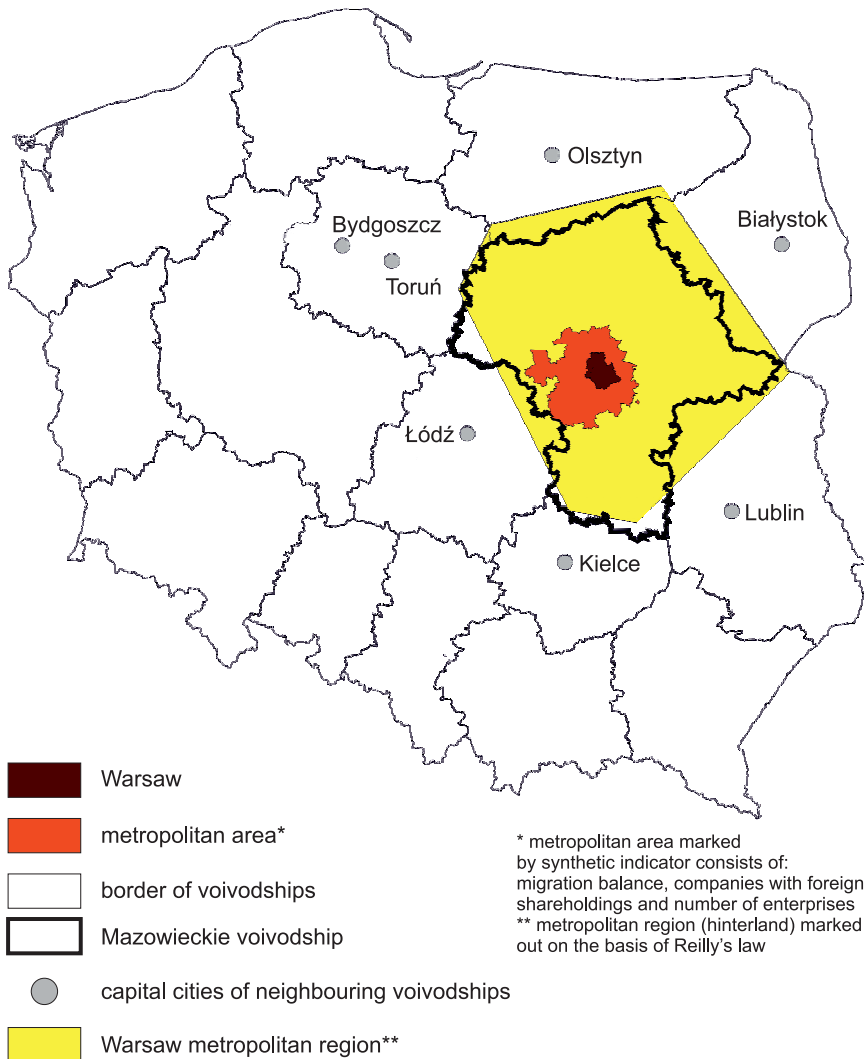


Figure 45. Warsaw and its spheres of influence in the context of Poland's administrative division

Source: Smętkowski (2005a).

Mazowieckie voivodship in its present shape came into being as a result of the administrative reform of 1998. The boundaries of all the 16 new regions reflect the spheres of influence of the respective voivodship seats relatively well; this is also the case of Warsaw. Only small fragments of the neighbouring voivodships belong to the prevailing sphere of influence of the national capital (Fig. 45).

There are 314 *gminas* – municipalities (NUTS5) in Mazowieckie voivodship, which are concentrated in 42 districts – *powiats* (NUTS4). The majority of analyses delineating the metropolitan area of Warsaw use *gminas* as the basic delimitation units. Despite some differences between the individual approaches, a metropolitan area is usually enclosed within a 50 km distance from the central city, and its actual shape is determined by the routes of the major transport corridors. This area stretches most visibly westwards and southwards (directions of the main economic linkages), and less so in the eastern direction, which is partly associated with the communication barrier posed by an insufficient number of bridges on the Vistula. In addition, the boundaries of the metropolitan area largely overlap with the borders of the former capital city voivodship existing in the years 1976-1998. Unlike the present Mazowieckie voivodship, this administrative unit was not a self-governing one, and its scope of competences was relatively narrow.

The strengths of the Warsaw metropolitan region include high-quality human capital, evidenced, for example, by the share of people with tertiary education, which is the highest in the country. Secondly, Warsaw has strongly developed nation-wide control functions, which is proved by its being a seat of major enterprises, including transnational corporations. Thirdly, the B2B sector has a considerable share in the metropolitan economy, including financial intermediation and information services: accounting, IT, advisory services, advertising and public relations. For these reasons, the Warsaw market for office space is booming, and the capital can offer over three million square metres of modern office space.

In contrast, Warsaw's weaknesses are the poorly developed external transport links (the city is not included in the trans-European motorway network) and a standard of living which is relatively low when compared to other European metropolises. The latter is compounded by the low quality of public space and the growing spatial chaos in the suburban zone, propelled by uncontrolled suburbanisation processes. Furthermore, despite the robust R&D potential, linkages between science and business have so far been weak in Warsaw and failed to produce any synergy.

When compared with Warsaw, its regional hinterland shows hardly any strengths. Instead, certain and as yet unutilised development opportunities may be indicated: firstly, those associated with the existence of large

subregional centres, which in the future (e.g. following the development of transport links) could serve as supra-local growth poles. Secondly, some of the region's areas have favourable conditions for specialised market-oriented agriculture. In addition, some potential for tourism can be observed in several locations, based on agri-tourism farms and associated tourist products.

The weaknesses of the regional hinterland of the Warsaw metropolis include a considerable role of subsistence agriculture. Also, due to excessive employment in this sector, the voivodship is struggling with a high level of hidden unemployment. On top of this, the non-metropolitan part of the region is not very attractive for investors from Poland and abroad, which can be attributed to a low-quality human capital and poor transport accessibility. The resources needed for endogenous growth are rather limited and in effect the SME sector outside the Warsaw metropolis is not very well developed.

The above review of the strengths and weaknesses points to a distinct dichotomy of socio-economic structures existing between the metropolis and the region. As a result, Mazowieckie is a region of Poland with the widest internal disparities. Apart from development disparities (GDP per capita 2 to 1), this dichotomy between the metropolis and the region is clearly visible in the economic structure, mostly in the divergent shares of farming activity in the labour market. Furthermore, Warsaw's economic structure remains coherent regardless of the indicator applied, i.e. the number of employees or gross value added. Meanwhile, the remaining part of Mazowieckie voivodship is characterised by a large share of agriculture (excluding hidden unemployment in agriculture) with lower productivity (53% share in the employment structure and 9% share in gross added value). In addition, in comparison to Warsaw, the region shows a relatively higher significance of industry – mostly in traditional industrial sectors. Other major differences include the quality of human capital: whilst in Warsaw the percentage of people with higher education is ca. 30%, it does not exceed 1% in some rural *gminas* of Mazowieckie voivodship.

## **5.2. RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

### **Commuting to work**

Commuting to work is one of the basic linkages between the Warsaw metropolis and its regional hinterland. The scale of daily commuting to Warsaw is high, and estimated at some 170 000 people (about 20% of the city's employees), while only 12 000 employees move in the opposite

direction. It should be pointed out that the rate of daily commuting to work has a strong negative correlation with the physical and temporal distance from the centre of Warsaw. The distance beyond which weekly commuting begins to prevail over daily commuting (which involves renting accommodation in Warsaw) may be set at ca. 80 km from the centre of Warsaw, or 95 minutes travelling by car. Daily commuters usually travel from *gminas* situated in close vicinity to Warsaw. Such commuting involves transfer of incomes, which may lead to the development of the endogenous sector in a given *gmina*. In addition, commuting increases budgetary revenues of *gminas* through personal income tax. Meanwhile, less developed and more distant *gminas* serve as providers of cheap labour for Warsaw, with most such journeys made at weekly intervals.

### **Migrations**

Migration flows are partly correlated with commuting to work, as discussed above. Migrations in Mazowieckie comprise two segments. The first segment refers to the outflow of inhabitants from the city centre, which began in the early 1990s and involves suburbanisation processes in the suburban zone. Its larger part is directed to *gminas* surrounding the city; in 1988-2002, they received ca. 70% of 114 000 former Warsaw residents. As a rule, these people maintain close links with Warsaw, starting from work to education, culture, leisure and daily shopping. A mere 10% of people who had earlier resided permanently in Warsaw moved to other parts of the region. Meanwhile, the majority (63%) of the population incoming to Warsaw (151 000) came from peripheral areas of Mazowieckie voivodship. This particularly applies to people with tertiary education aged 24-30 (29 000), whereas *gminas* of the remaining part of the metropolitan region accounted for 76% of the inflow to Warsaw.

### **Trade exchange between businesses**

Warsaw's metropolitan area plays a considerable role in Poland's foreign trade turnover, which accounts for a ca. 30% share in the imports of goods and services and ca. 16% share in exports. Imports, which are twice as high as exports, distinctly point to the intermediary function of Warsaw enterprises in foreign trade, which to some extent correlates to the location of foreign trade enterprises supplying the nation-wide market in Warsaw. At the same time, the 2002 survey of companies with locations within the Warsaw metropolitan area showed that the metropolis' regional linkages were poorly developed. The remaining part of Mazowieckie voivodship had a marginal (less than 10%) share in the supply and sales of enterprises

outside the local market – usually lower in the case of more processed goods or specialised services (Gorzelać, Smętkowski 2008).

### **Higher-order services for individuals**

Warsaw's higher education institutions are very popular with secondary school leavers from Mazowieckie voivodship. The rate of this type of commuting to Warsaw is the highest within a 60 km radius from the city centre. The role of this type of commuting has increased in nearly all *gminas* of the region compared to the period prior to 1989. This can be viewed as proof of growing educational aspirations in society, coupled with the significant role of Warsaw as a leading academic centre.

Warsaw's institutions of culture are also popular with the residents of other *gminas* of the metropolitan region. Nevertheless, the intensity of commuting for cultural purposes is not as strong as in the case of student commuting. It is clearly visible within a radius of 30 km from the city; less so at a greater distance, and beyond the threshold of 60 km this type of commuting is only episodic.

The role of Warsaw as a centre of medical services is less significant in comparison with the above types of commuting, and applies only to some of the region's areas.

### **Entertainment and leisure**

Journeys made by Warsaw residents outside the city for entertainment and leisure purposes can serve as an example of movement in the opposite direction. This type of commuting as a rule involves the construction of holiday homes, often in densely built-up enclaves in places with outstanding natural assets – most frequently in river valleys. The intensity of such travelling decreases visibly with distance from the city; this phenomenon is absent in *gminas* situated at the north-western, southern and eastern borders of Mazowieckie voivodship. The rate of commuting is highest within a 90 km radius from the centre of Warsaw, particularly in *gminas* bordering the metropolitan area. At the same time, competition from more distant areas of the country should be emphasised, especially from Warmińsko-Mazurskie voivodship.

### **Relationships with public authorities**

Mazowieckie voivodship provides a good example of how national policies affect the relationships between various bodies responsible for the region's development. The capital's decision makers are seriously involved



in national-level politics, and the office of the mayor (or commissioner) is generally held by politicians with careers in the government, presidential election runners or leaders of major political parties. However, since 1998, the position of the marshal who is responsible for regional government has been held by a politician affiliated with the Polish People's Party (PSL), which is a farmers' party. This leads to political rivalry, manifested inter alia during the process whereby the principles for allocating the Regional Operational Programme funds are agreed. Quite frequently, the exercise is biased in favour of entities operating in the non-metropolitan parts of the voivodship. Apart from very few examples, such as a joint ticket for use on city public transport (Warsaw's authorities) and regional railways (the region's authorities) for journeys within the agglomeration and the Mazowsze Loan Guarantee Fund (*Mazowiecki Fundusz Poręczeń Kredytowych*), there are no project initiatives implemented jointly by the city and regional authorities. The relationships between public authorities and enterprises are similar in character; it is difficult to indicate effective communication channels between them or joint public and private initiatives.

By contrast, more examples can be found to illustrate the well functioning cooperation networks between *gminas* in different areas of activity, starting from access to public services to joint infrastructure projects to development planning (Zegar, 2003). Inter-municipal cooperation is relatively least developed between Warsaw and the neighbouring *gminas*. This is an area fraught with the most serious conflicts of interests. Nevertheless, successes are possible, e.g. the recently introduced joint public transport ticket for the Warsaw agglomeration, co-financed by the *gminas* from the metropolitan area – but based on bilateral agreements with Warsaw, and not negotiated as an initiative of a coalition of *gminas* formed for this purpose.

### **5.3. FACTORS SHAPING THE RELATIONSHIPS BETWEEN THE METROPOLIS AND ITS REGION**

The key factors affecting the linkages between the metropolis and the region are the structural mismatches described above, in social and economic spheres. The Warsaw metropolis operates within the global information economy, which is also its source of major development resources. In this regard, the attractiveness of endogenous resources in other parts of Mazowieckie voivodship is rather low. In addition, owing to inefficient agriculture in the vicinity of the city, even the traditional food-producing zone is poorly developed in the region. Its role is diminished even further by the development of large-format retail trade facilities in Warsaw, which considerably expand the range of services to the city in terms of food provision. Moreover, the insufficient capacity of the existing

transport network obstructs the development of strong linkages between the metropolis and the region. Thus, the accessibility of the region's peripheral areas is limited, which further reduces their attractiveness for private investors.

In these circumstances, it is difficult to maintain the region's cohesion politically, as the huge differences in the electoral make-up hamper consensus between the different local government levels. This situation also makes it difficult to implement a pro-development policy for the entire region, despite the fact that the marshal's office is furnished with all the requisite competences.

All these factors are closely interrelated. On the one hand, the traditional central functions play a minor role in Warsaw's economy, and on the other, the region has not been able to make use of potential benefits associated with the development of the country's key metropolis.

The spread of Warsaw's development processes is rather limited spatially and they usually take place within its metropolitan area. The major indications of such processes include the relocation of enterprises or the opening of branch offices in *gminas* situated near Warsaw. For instance, the range of foreign investments is restricted to an area within a 30 km radius from the city (Fig. 46a). Certain structural differences are also clearly visible in this area: while service sector investments prevail in the central zone, manufacturing, logistics and warehousing activity is developing in the region's peripheries. This specialisation is also shown by the fact that some service enterprises operating in the environs of Warsaw move their head offices to the capital. In addition, investors interested in conducting business activity outside Warsaw very frequently register their company in Warsaw and in many cases (also for marketing purposes) also locate the company's head office in Warsaw.

Another symptom of diffusion processes is the outflow of residents from Warsaw in search of better housing conditions. *Gminas* situated in the immediate vicinity of Warsaw are usually chosen by people of working age who maintain close ties with the city, mostly in the form of commuting to work. On the other hand, areas situated further from the city centre are selected by people of retirement age, often due to their earlier family ties with a given area. Nevertheless, *gminas* situated in close vicinity to Warsaw play a major role in the population outflow from the capital (mostly persons with a higher education), followed by other Polish metropolises or the capitals of the neighbouring voivodships. In this respect, the role of the main subregional centres of Mazowieckie voivodship is only marginal.

Furthermore, daily commuting to work in Warsaw plays a certain role in capital transfers from Warsaw to peripheral areas, although their greatest intensity is limited to the metropolitan area.

Figure 46a. Companies with foreign shareholdings in 2005

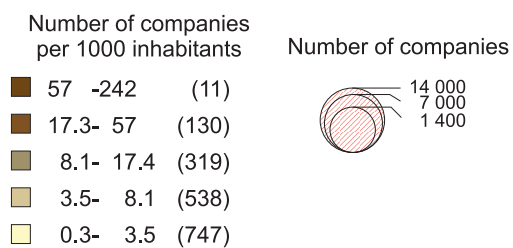
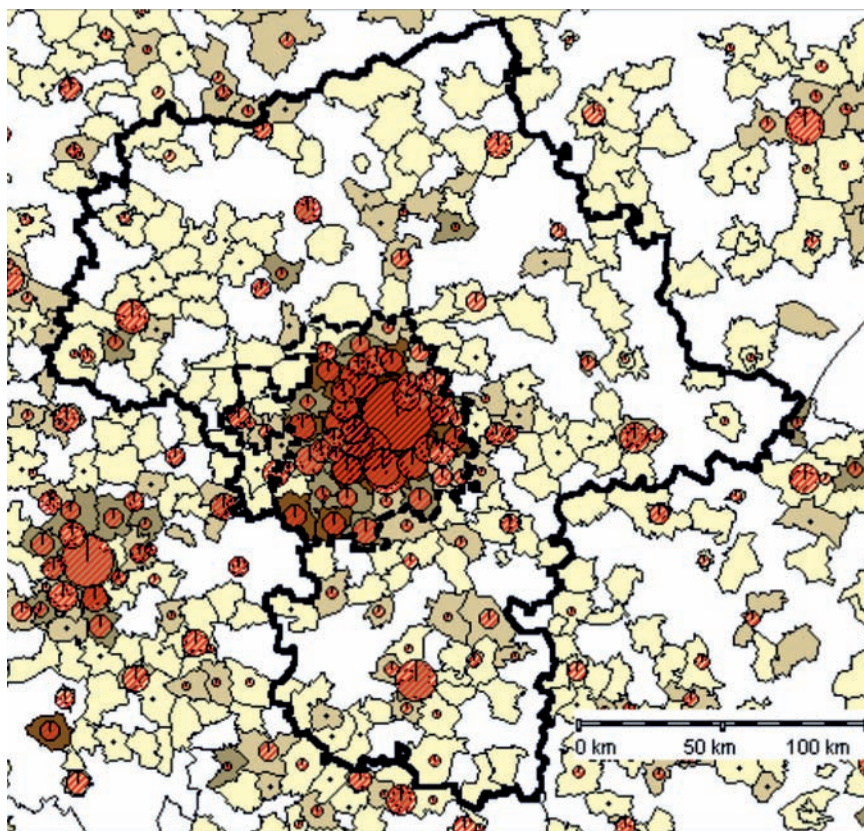
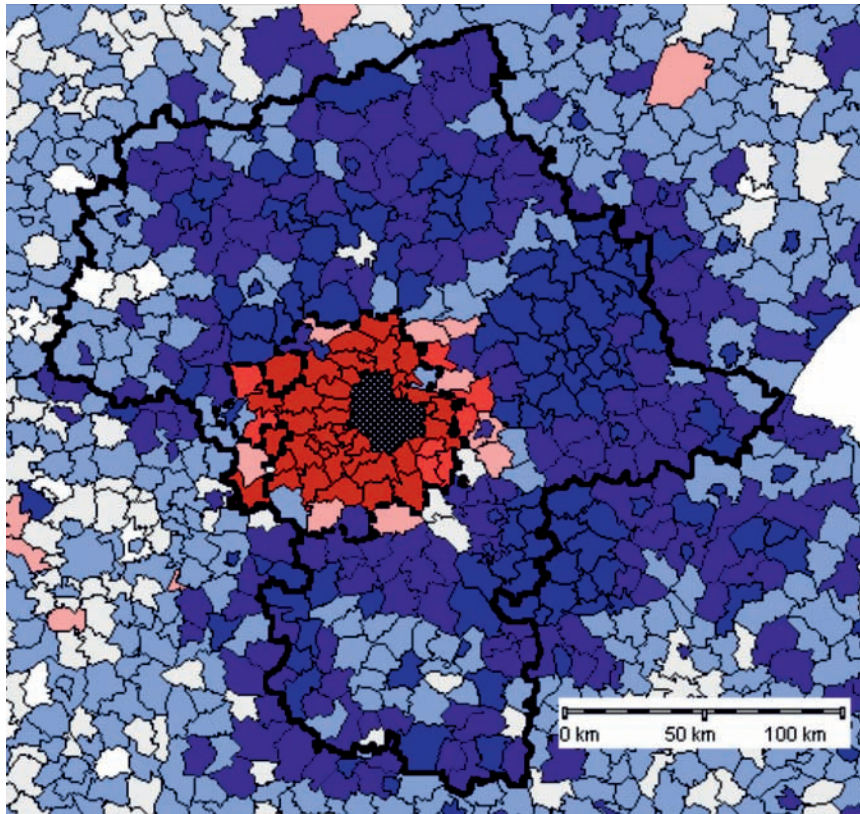


Figure 46b. Migration balance in 1988-2002 in ‰



|   |            |       |
|---|------------|-------|
| ■ | 1.0- 27.7  | (44)  |
| ■ | 0.5- 1.0   | (9)   |
| ■ | 0.1- 0.5   | (48)  |
| ■ | -0.1- 0.1  | (816) |
| ■ | -0.5- -0.1 | (826) |
| ■ | -1.0- -0.5 | (227) |
| ■ | -3.2- -1.0 | (132) |

Figure 46. Development dynamics of *gminas* in Mazowieckie voivodship

Source: M. Smętkowski (2005b).

According to the map showing the migration balance (net rate of migration) between Warsaw and the remaining *gminas* (Fig. 46b), a negative balance can be observed in *gminas* lying within a 150 km radius of Warsaw. In this area, *gminas* situated near subregional centres had a relatively low net balance of migration: north-west of Płock and south of



Radom, and along Route No. 8 north-east, towards Białystok. Meanwhile, two compact areas with a considerable outflow of population to Warsaw were clearly visible in the east of the region, and two less compact ones in the north and the south of the voivodship. Isolating the group with a higher education (including those aged 24-30) from migratory outflows did not have any significant influence on this picture.

*Gminas* characterised by a high negative balance of migration with Warsaw are as a rule less developed. As a result, they function as sources of cheap labour for Warsaw, mostly commuters at weekly intervals. In this case, the relationship between commuting and the level of development is bilateral in character. A low level of *gmina* development and a weak local labour market prompts the local residents to migrate in search of work. The barriers that hinder a steady migration outflow include high costs of housing and living in Warsaw. For this reason, some migrants rent flats (rooms) in Warsaw and return to their families on days off. Such migratory outflows may have negative consequences related to migrants spending a large part of their income in Warsaw. In the long term, it may lead to a steady outflow of some residents to Warsaw with the resultant capital transfers for real property purchases.

#### **5.4. MUTUAL RELATIONSHIPS BETWEEN THE METROPOLIS AND THE REGION**

From the perspective of the metropolis, the linkages between the metropolis and the region were weak and irrelevant. Regional concentration processes dominate in Mazowieckie voivodship both in absolute and in relative terms, expressed by the concentration of jobs outside agriculture mostly in the metropolitan service sector. In contrast, deindustrialisation processes more strongly affect Warsaw's metropolitan area, which has led to a relative increase in production functions elsewhere in the metropolitan region. Nevertheless, the role of the regional hinterland in providing supplies for Warsaw's enterprises is rather marginal and largely limited to simple products, with little added value. Similarly, the labour force from the regional hinterland in many cases lacks the necessary qualifications to be able to participate in the mainstream of development, which is associated with the increasing role of specialised services. In addition, deconcentration of business activity and locating branch offices of Warsaw's enterprises does not tend to reach beyond the borders of the Warsaw metropolitan area. Meanwhile, the region's non-metropolitan areas most frequently provide locations for traditional and more noxious types of activity, e.g. cement industry.

The development of the Warsaw metropolis has opened a window of opportunity for its regional hinterland, but this has not been utilised. For instance, in the case of inhabitants with a higher education, processes of relative regional deconcentration can be observed, mostly due to the development of subregional academic centres. At the same time, development diffusion processes associated with shuttle migrations of the population (including daily commuting to work) are limited to *gminas* neighbouring the metropolitan area, mostly those situated along transport corridors. Their positive impact is largely reduced by commuting to work on a weekly basis, which is mainly the case in *gminas* situated in the region's periphery. The capital balance of the remaining types of commuting suggests their centripetal character, which in turn increases the trade exchange deficit and is only partially offset by entertainment and leisure travelling by Warsaw residents and the resultant development of construction activity. This is accompanied by a deficit in the metropolitan region in trade exchange with the metropolis, both with regard to simple and processed resources.

To sum up, the economy of Warsaw is characterised by a considerable degree of diversity, with a growing significance of specialised B2B and financial intermediation services, and diminishing industrial activity. The role of the service sector is much smaller in the case of Mazowieckie voivodship, which, however, does not entail any clear sectoral specialisation in manufacturing. In effect, the development paths of the metropolis and the region are not significantly intercorrelated, although the region may to some extent benefit from the development of the capital city.

### **5.5. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT**

In the recent years, the regional government of Mazowieckie voivodship has prepared a number of strategic and operational documents outlining key policy directions for the region's development. These documents correctly identify the voivodship's strengths and weaknesses while clearly indicating the dichotomy between Warsaw's metropolitan area and the remaining part of the region. The planned projects are expected to gradually close development gaps between the metropolis and the region. The planned activities may be divided into financial instruments addressed to enterprises and local governments, and investment tools related to the development of 'hard' infrastructure, intended inter alia to boost Warsaw's positive impact, as well as 'soft' initiatives aimed at fostering the development of human resources, to help reduce the results of the backwashing of development resources from the regional hinterland to the metropolis.

### Financial instruments

At the national level, a map of regional assistance has been drawn up to limit public support of enterprises. In the case of the Warsaw metropolis, this cap is set at 30%, as compared to 50% in other parts of Mazowieckie voivodship. In addition, the Regional Operational Programme adopted by the regional government allocated 23.5% of its EUR 1.8 billion budget to the development of enterprise and innovation. The disbursement of these funds depends to some extent on the terms of calls for tenders, which in many cases include provisions giving preference to projects and beneficiaries located in peripheral or rural parts of the region. Nevertheless, the effectiveness of these activities has not been great so far, and most active are companies operating in the Warsaw metropolitan area.

Moreover, the national system for the financing of territorial self-governments uses an equalising mechanism whereby some of the wealthiest *gminas*' own revenues are transferred to the poorest *gminas*. This severely affects Warsaw which in effect loses some EUR 250 million every year, with the city budget totalling ca. EUR 3.5 billion.

### Infrastructural projects

The development of the transport infrastructure largely rests with the national authorities. The network of modern roads and railways in Mazowieckie region is rather poorly developed. Some progress has been made in this regard in recent years, with the opening of several sections of dual carriageways. However, an effectively functioning transport network is still a far cry. Rail transport has also been neglected, which is due not only to tardiness in the implementation of infrastructure investments (despite EU co-financing, which allowed for the repairing of some major rail lines in the east-west direction), but also to deficient organisation skills, failing to match rail services with the needs of passengers. This, coupled with the obsolete rolling stock and depreciated railway stations, makes competing against private transport providers difficult. Furthermore, several public carriers use the railway infrastructure, including the Mazowieckie Railways (*Koleje Mazowieckie*) run by the regional government, and this – with its lack of coordination – does not serve to improve the quality of transport services.

### Education

Activities planned nation-wide in education (Human Capital Operational Programme) include strengthening the education system in rural areas,



partly by extending the pre-school experience to include children aged 3-5. The ROP has allocated ca. 9% of the budget (EUR 164 million) to human resources development, and the main anticipated areas of activity include: increasing social cohesion, equalising development opportunities and supporting structural changes in rural areas.

Recent years have seen a rapid development of public higher education institutions in subregional centres of Mazowieckie voivodship (a considerable increase in the number of students). This has been supported by private investments and has led to the establishment of a number of non-public higher education institutions. While these serve to broaden the educational offer, the standard of teaching is often questionable.

### **Summary**

The results of activities discussed above have so far been modest, and their coordination may be summarised as only mildly satisfactory. In effect, they have not made any significant contribution to the development of linkages between the metropolitan centre and the remaining part of the metropolitan region. It should be remembered, however, that a large number of the plans and projects have not been launched or completed yet. The disbursement of cohesion policy funds in the years 2007-2013 may considerably change this picture. However, the short period set for the implementation of operational programmes in this financial perspective does not allow for their comprehensive evaluation.

## **5.6. GOVERNANCE OF THE METROPOLITAN AREA**

The discussion on the creation of metropolitan areas in Poland has been going on in Poland since 2001, when the amendment to the Spatial Planning and Management Act was made, pursuant to which such areas should be delineated as part of the National Spatial Arrangement Policy (KPZK). Irrespective of the ongoing work on the KPZK and on the draft bill on metropolitan areas, the crucial issue as to whether metropolitan areas should be instruments of regional policy or exclusively elements of spatial policy still remains unresolved. The debates so far have primarily focused on identifying the number of metropolitan centres, rules for delineating their boundaries, as well as the scope of competences and governance. Currently, it is difficult to predict what general and specific decisions will ultimately be made in this matter.

Regardless of the lack of central solutions, in the light of the legislation in force, *gminas* in Poland may set up special-purpose associations of their own accord for addressing specific issues or making use of development

opportunities. In the vicinity of Warsaw, however, propensity to cooperate is not particularly great, particularly in comparison to the environs of other cities e.g. Wrocław or cooperation of cities making up the Silesian conurbation.

As shown above, in the recent years, a number of concepts concerning the delimitation of the Warsaw metropolitan area have been prepared. None of them, however, is legally binding. Work on these issues is currently under way i.e. at the Mazowsze Bureau for Regional Development, which reports to the regional self-government authorities.

As a result of bilateral agreements between Warsaw and individual *gminas* in its direct vicinity, a joint public transport ticket has been introduced for a large part of Warsaw's metropolitan zone. The agreements inter alia laid down the rules governing participation of *gminas* in the operational costs of the system, of which only 40% are covered by ticket sales. In this particular project, it was possible to reconcile the interests of the city authorities (buses servicing the areas outside Warsaw's administrative boundaries) and the regional self-government (regional railways) in the metropolitan area. Work on continued integration of the transport system is now under way.

The regional self-government authorities are also responsible for the adoption of the spatial development plan for the Warsaw metropolitan area. However, many different problems are associated with planning at the local level. So far, only a very small area of the *gminas* making up Warsaw's metropolitan area (ca. 3%) have valid local spatial development plans, and work to prepare such plans in the remaining *gminas* is proceeding slowly. In Warsaw alone, less than 20% of the city's area has valid local spatial development plans. In this situation, it can hardly be expected that the spatial development plan for the metropolitan area, if adopted (at the moment, no guidelines for this have been issued as yet), could change this picture in any significant way.

## 5.7. DEVELOPMENT PROSPECTS

In the coming years, further increase in the development disparities between the Warsaw metropolis and the surrounding region can be expected. In many cases, the scale of disparities between the metropolis and the region is so huge that it hampers any potential opportunities to make use of the complementarity of their socio-economic structures. In other words – Warsaw and its surroundings increasingly operate in a modern information economy, while the region as such – in a traditional agricultural and industrial economy. In effect, it seems that only large-scale migration flows could, in the long term, help reduce the scale of

the present disparities in the level of economic development. As regards Warsaw itself, it can be expected that its internationalisation will further increase and its position in the European and global network of cities will be strengthened even more. This will have a specific impact on the situation of the surrounding region which – considering the development mechanisms outlined above – may develop according to three general scenarios described below.

According to the first scenario, the regional hinterland will be depopulated owing to the migratory outflow to Warsaw, coupled with population ageing processes. The speed of this process will largely depend on the development of residential housing in Warsaw and the speed at which the polycentric structure of the metropolitan area evolves, increasing the availability of cheap housing. In the long term, the decreasing population and the growing quality of human capital may lead to a relative increase in the wealth of the population living in other parts of the metropolitan region.

The second scenario envisages the development of the transport infrastructure, leading to enhanced internal cohesion of the metropolitan region. Together with the development of the polycentric structure of the metropolitan region in terms of jobs, this could foster the increase of daily commuting to work and eliminate commuting on a weekly basis. In addition, increased accessibility may encourage investors to establish new companies in locations outside the metropolis, mainly in the largest subregional centres.

The third scenario involves a transformation of the social and economic structure of non-metropolitan areas through human capital investments and increased availability of modern technologies. This in turn could trigger endogenous development processes, especially in subregional centres provided with the requisite infrastructure, and could halt the widening of developmental disparities between the metropolis and the rest of the region.

All the above scenarios are based on currently observable development mechanisms, which suggest adopting the polarisation and diffusion model as the basis for considerations about the region's future. In the case of a lack of intervention from public authorities, the first scenario is the most plausible. The remaining two depend on channelling public intervention and coordinating the activities of local authorities, particularly within the metropolitan area, and with the policies pursued by the authorities of the region's major urban centres.

## **CHAPTER 6**

### **COMPARISON OF CASE STUDIES: TOWARDS SYNTHESIS**

#### **6.1. GENERAL CHARACTERISTICS OF THE ANALYSED METROPOLITAN MACROREGIONS**

The analysed macroregions operate within dissimilar administrative structures. Two of the cities covered by analysis, Stockholm and Warsaw, are state capitals, while the remaining cities are regional centres. To some extent, this affects their functions: as a rule, capital city status is associated with a greater diversification of the economy, while regional centres are more specialised. The surveyed metropolitan macroregions correspond to NUTS2 units or aggregated NUTS3 subregions, and reflect the range of the central city's dominant influence relatively well. The relatively widest mismatches in this regard can be observed in the Glasgow region, in the case of which the functional linkages are both complex and historically varied, which is mostly due to the close proximity of Edinburgh, and also to the diversity of the geographical environment (differences between the northern and southern parts of the region). Except for Catalonia, the close correspondence between administrative division and functional ties does not imply the existence of a strong regional identity; for this reason, regional identity does not play any key role in the linkages between the metropolis and the region.

The disparities in the development level between the metropolis and the region are widest in the case of Mazowsze, in which there is a clear 'divide' between the metropolitan region and the more distant regional hinterland of Warsaw, manifested inter alia by the different economic structures (services in the metropolis vs. agriculture and traditional industry in the regional hinterland) and the quality of human capital. A similar situation can be observed in Scotland, where the Glasgow metropolitan region is historically strongly industrialised (metallurgy, shipbuilding, engineering, and formerly hard coal mining), whereas the regional hinterland of the metropolis much less so. On the one hand, this implies a need for a thorough

restructuring of the metropolis, but on the other hand, the level of education and qualifications of people, partly due to the presence of higher education institutions, is much higher in the centre of the macroregion. Similarly, in the Stockholm macroregion, intraregional disparities are on the increase. The industrialisation of the non-metropolitan part of the region necessitates the restructuring of traditional sectors, as opposed to the economy of the metropolis, which has a robust service sector, including well-developed IT and financial services. On the other hand, there is a visible social polarisation of the metropolitan area itself in terms of class structure and ethnicity. In the case of Midi-Pyrénées, the disparities between the metropolis and the region are also wide, primarily due to the concentration of higher-order services in Toulouse. At the same time, social differences associated with quality of life are relatively small. The most interesting situation can be observed in Catalonia, where – despite the disparities in the economic structure – the development level is similar throughout the entire metropolitan macroregion, and in some non-metropolitan local systems it was even higher than in the metropolis itself. The reason for this uncommon situation is widely believed to be the (now completed) process of depopulation of the remaining parts of the region due to the dynamic industrialisation and urbanisation of the core of Catalonia. In effect, the population decrease, coupled with the modernisation of the non-metropolitan economy, have not only resulted in the statistical increase of per capita income but also in the real improvement of the quality of life.

The strengths of the analysed metropolitan areas are primarily connected with their international significance. In the case of Stockholm, the R&D and hi-tech sector is one such strength, in particular the ICT, biotechnological and the technologically advanced automotive sectors, associated with the presence of large transnational corporations of domestic origin. In Toulouse, it is the well-developed aviation industry and the developing space industry, supported by R&D and academic potential. By contrast, as early as the 19th century, Barcelona was one of the major industrial centres in Europe which, coupled with its role as an important trade and transport centre in the western part of the Mediterranean Sea, accorded it a crucial position in Spain. Currently, Barcelona is also a major cultural and tourist centre. Both these sectors are likely to supersede traditional industrial sectors, which – despite major initiatives undertaken in recent years – have not yet been replaced by hi-tech sectors. The role of Glasgow is being determined by the gradual reworking of the city's image by overcoming of the negative consequences of the collapse of traditional branches of industry. At present, efforts are aimed at fostering development in eight strategic sectors (natural sciences, energy, financial services, tourism, creative industries, food industry and electronics), in an effort to stimulate

transformation towards a knowledge-based metropolis. Meanwhile, in the case of Warsaw, the high development dynamics accompanying the influx of foreign capital is of crucial importance, as well as the control and management functions performed nation-wide by the capital city owing to well-developed human resources.

In most cases, the weaknesses of the metropolis are associated with difficulties and limitations in using their international potential. The weaknesses of Warsaw include the poorly-developed external transport links (the city is not included in the trans-European motorway network), and also the relatively low standard of living when compared to other European metropolises. The latter aspect has been aggravated by the low quality of public space and the growing spatial chaos in the suburban zone, caused by uncontrolled suburbanisation processes. In addition, despite its significant R&D potential, the linkages between the science and business sectors are weak in Warsaw and do not achieve any synergy. In contrast, Glasgow is still struggling with its industrial past and the negative effects of the restructuring process (for more information see Box 1). Meanwhile, the problems experienced by Stockholm are side-effects of the fast and stable growth of the city in the last two decades and the position achieved in the process, manifested by an excess of demand over supply in the housing market, which has led to increases in real estate prices and rents. Paradoxically, this has lowered standards of living, because despite high earnings, the relative level of housing expenses in the metropolitan region is among the highest in Sweden. This fuels the ongoing social polarisation which also has a spatial dimension, and causes difficulties in the labour market integration of immigrants. In Toulouse, inferior transport accessibility (compared to the neighbouring metropolises of Bordeaux and Montpellier) is a certain drawback, especially the lack of high-speed railways connecting the city with Paris and Spain (which is offset to some extent by a well-developed network of airline connections). On the other hand, Barcelona has not been able so far to develop the hi-tech sector in order to replace traditional industrial branches. The problem of Barcelona affects the city itself; here, for some years now, efforts have been made to bring in domestic and foreign services and hi-tech companies to the old industrial district (eastern Barcelona), but so far it has mostly attracted office blocks and a few hotels. For reasons which are not clearly understood, modern companies and foreign investors are definitely more willing to locate their business in Madrid. The local experts emphasise that not only new, significant investors omit Barcelona, but also major companies already located in Barcelona are moving elsewhere. Meanwhile, the traditional industrial centres, deconcentrated many years ago from the

so-called Arc surrounding Barcelona, are now undergoing an accelerated process of deindustrialisation and unemployment increase.

**Box 1. Restructuring of the Glasgow metropolitan area**

The economic restructuring of the Glasgow metropolitan area not only brought about adverse social consequences in the form of structural and long-term unemployment (poverty, break-up of families, health problems), but also made it necessary to remove the remnants of industrial past associated with environmental degradation (contaminated soil, post-industrial areas). Until the 1970s, new investments were located in areas with a considerable availability of 'greenfield' sites, in particular in the so-called 'New Towns' (East Kilbride, Cumbernauld and Irvine). However, from the 1980s onwards, efforts have been made to develop degraded, 'brownfield' areas for both housing and industrial purposes. These weaknesses of the Glasgow metropolitan area associated with restructuring negatively affect the city's image, which is undoubtedly one of the factors hampering the location of large international companies in the metropolis.

Regarding the attractiveness of the metropolitan area for new investment, we can conclude, based on questionnaire surveys of enterprises (Fig. 47), that in all the metropolises (including Warsaw), the costs of labour and costs related to the purchase or lease of space needed to conduct business activity were evaluated the most negatively. In addition, entrepreneurs were rather sceptical about the positive attitude of the public authorities regarding the creation of conditions conducive for new investments (this aspect was ranked the lowest in Barcelona and Warsaw). On the other hand, the conditions and standard of living in all the metropolitan areas belonged to the most highly evaluated aspects of their competitiveness (particularly in the case of Toulouse).

Certain differences exist between the surveyed metropolises in the evaluation of some of the remaining location factors. In Barcelona, the quality of life was viewed by the respondents as the most important of 'soft' factors, and transport infrastructure as the most crucial among 'hard' factors. In Stockholm, entrepreneurs paid special attention to the size of the sales market, coupled with a well-developed transport infrastructure (both external and internal) and extensive social networks in business. Toulouse – the smallest of the analysed metropolises – was most highly evaluated in terms of the quality of life, and the quality of labour (the greatest difference in comparison to labour supply). On the other hand, in case of Toulouse, the size of the local sales market and the development level of the transport infrastructure were evaluated as the weakest. In Warsaw, the sales market played an important role, whereas the development level of the transport infrastructure was regarded as weak. In addition, among soft location factors, accessibility to information on innovation and the development level of social networks in business were evaluated as weak.



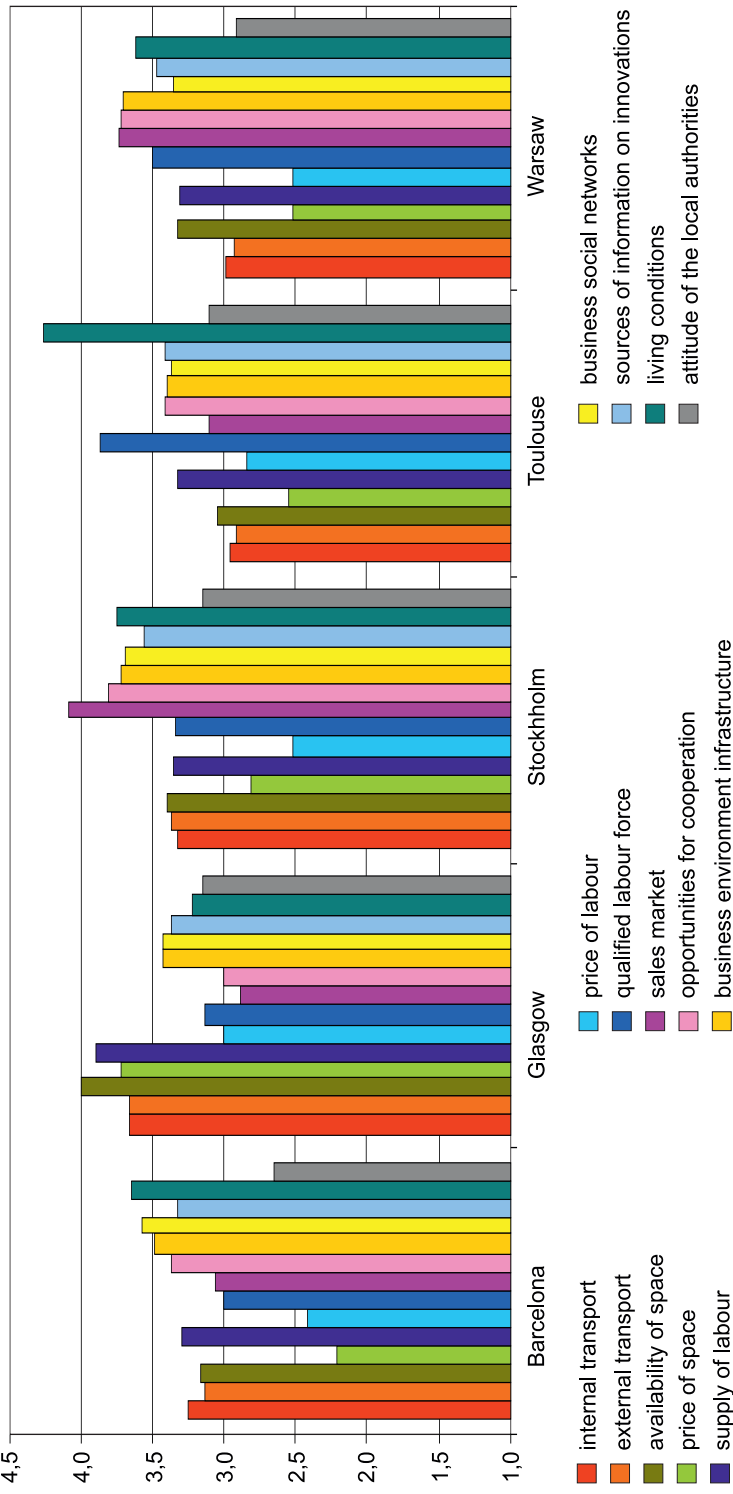


Figure 47. Evaluation of the attractiveness of the metropolis for new investment\*  
\* From: 1 – very poor, to 5 – very good / results for Glasgow for a very small sample (N=10)  
Source: prepared by the author.

In some macroregions, the regional hinterlands of cities have few advantages when compared to the metropolis (Warsaw, Glasgow). In these cases, certain development opportunities are indicated, most of them connected with the strengthening of subregional centres through investments in transport and the telecommunication and IT infrastructure. Secondly, some opportunities arise in the utilisation of their endogenous potential: agriculture, tourism and renewable energy. In the case of the remaining macroregions, the strengths of the regional hinterland include, in particular, a high quality of life associated with a high-quality infrastructure. Among more specific strengths, we can indicate a high work culture in the case of the Mälars region, which attracts foreign capital and generates high productivity in traditional business activities. Meanwhile, in Toulouse and Barcelona, the strengths of the regional hinterland include a highly productive, modern agricultural sector and the accompanying food industry (particularly in western Catalonia), associated with a significant attractiveness of many areas (coastal and mountain) for tourism.

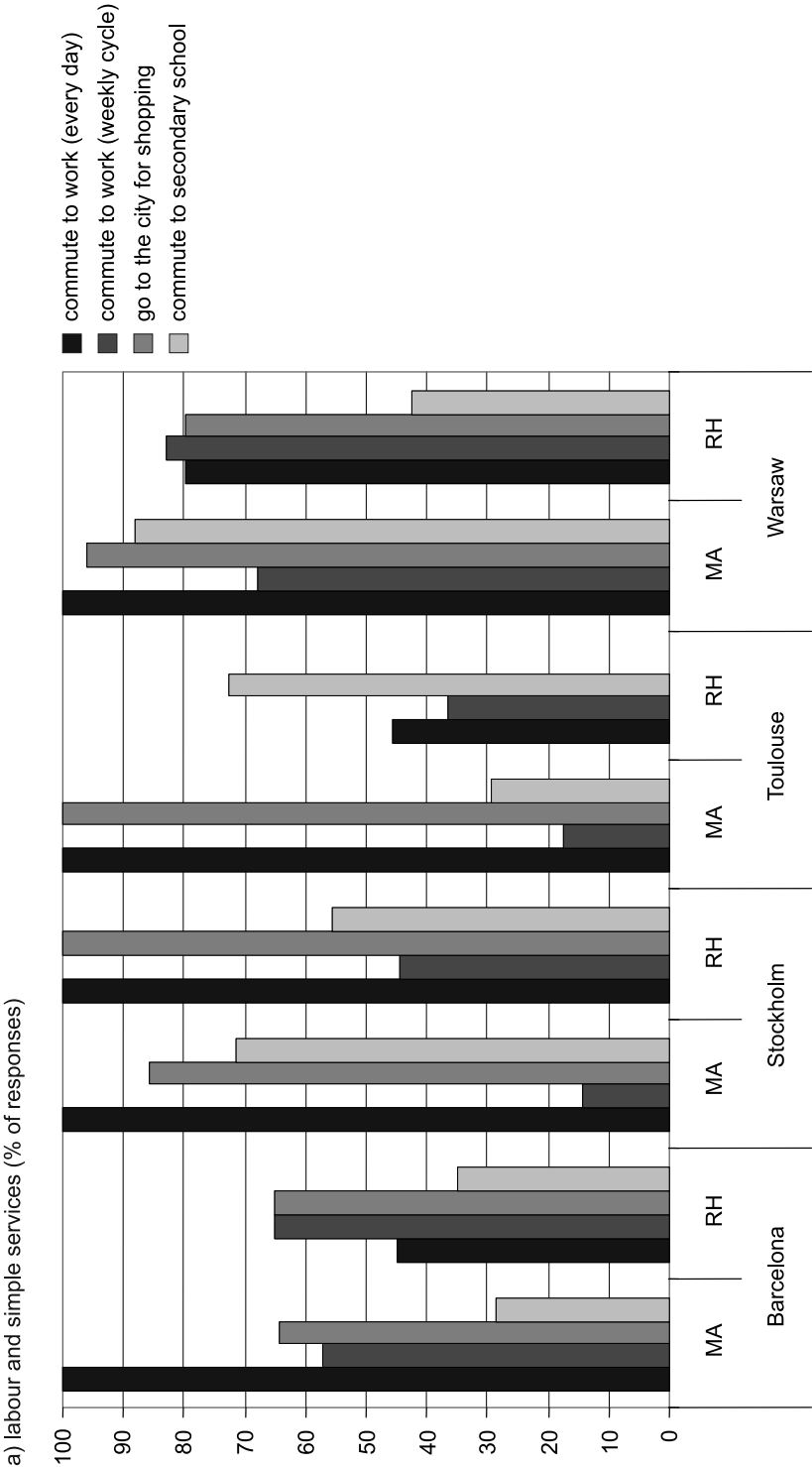
The weaknesses of the regional hinterland of the metropolis are mostly associated with a low productivity of labour in traditional sectors, such as: agriculture (Warsaw) or industry (Glasgow), with a simultaneous low level of economic activity. Another important problem is the lack of sufficient human capital resources, which *inter alia* is connected with the outflow of the most enterprising individuals to the central cities (also in Toulouse, Stockholm and Glasgow) or the influx of unqualified foreign immigrants to the regional hinterlands which remain dependent on traditional industries and agriculture (Barcelona). In effect, the regional hinterland of the metropolis generally loses out in the competition for investment capital with the central city's metropolitan area.

## **6.2. THE RELATIONSHIPS BETWEEN THE CITY AND THE REGION**

In all the analysed metropolitan areas (broadly speaking, municipalities situated within 50 km of the metropolitan centre were classified as belonging to the metropolitan area), the local government authorities identified the following linkages with the central city (Fig. 48a):

- Daily commuting to work (with the lowest relative intensity in Barcelona and the greatest in Stockholm and Warsaw);
- Commuting for shopping (except for the Barcelona metropolitan area);
- Commuting of students to universities;
- Commuting for cultural and medical services.

Some differences in the organisation of secondary education can be observed between individual metropolitan areas: commuting to school is



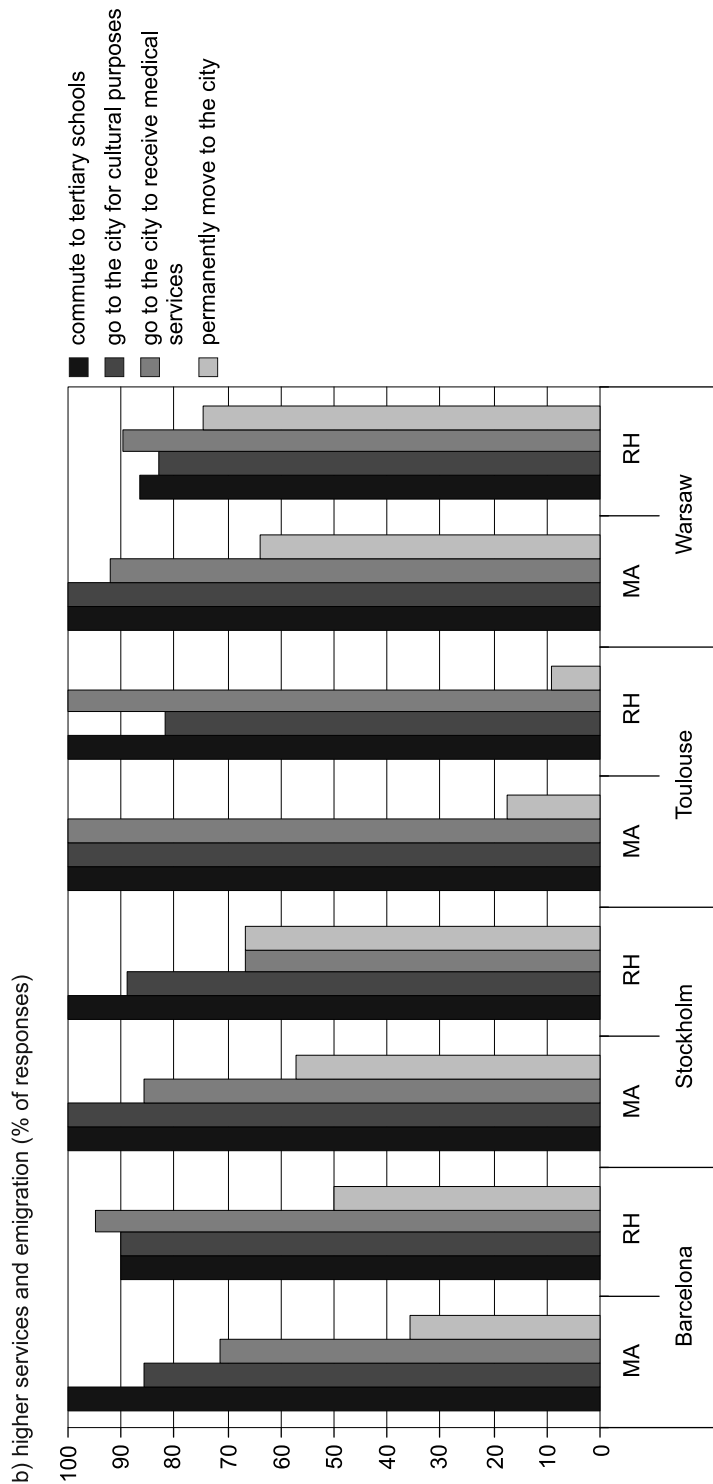


Figure 48. Linkages of municipalities in the macroregion with the metropolitan centre (% of surveyed municipalities)  
MA – municipalities situated within 50 km from the city centre  
RH – municipalities situated further than 50 km from the city centre  
Source: prepared by the author based on research findings.

clearly visible in Stockholm and Warsaw, and much weaker in Toulouse and Barcelona. On the other hand, commuting home for the weekend by those who work in the city during the week is characteristic for Warsaw and Barcelona. Permanent migration of residents from the suburban zone to the city can be observed mainly in Warsaw and Stockholm (but with a relatively low intensity and a weakening of this trend in recent years). In most spheres, there tends to be an increasing intensity of commuting (save for Stockholm) or the maintenance of existing levels, which could be viewed as proof of a small increase in the degree of polycentricity of metropolitan areas, manifested by the deconcentration of jobs and certain services.

In the external zone of the metropolitan macroregions (Fig. 48b), commuting in order to participate in higher-order services (e.g. higher education, institutions of culture and healthcare) play the most important role. Daily commuting to work is also important in the case of Stockholm and Warsaw (over 80% of the surveyed municipalities), which could indicate a greater range of the functional influence of the city. In Barcelona and Toulouse, this affects less than a half of the municipalities, and the role of such commuting is viewed as insignificant. In all these cases, commuting to work can be observed at weekly intervals, on the greatest scale in the Warsaw and Barcelona macroregions. Commuting for shopping is also quite popular, but the scale of this phenomenon is not extensive (particularly in the case of Barcelona), but even in Stockholm – where such commuting is very popular – it does not have any significant intensity. Commuting to secondary schools is done on a minimal scale. At the same time, metropolitan centres represent attractive locations for migration, particularly noticeable in Warsaw (with a growing tendency) and Stockholm (with a falling tendency).

Commuting to work is also an important factor identifying the functional metropolitan macroregion in all the analysed cases. As a rule, such commuting takes the form of daily journeys, although in some macroregions (Warsaw, Barcelona) it is also done on a weekly basis (which implies renting accommodation and returning home for the weekend). Such journeys are of a clearly centripetal character. As a result, no processes concerning the evolution of the polycentric structure of functional ties, characteristic e.g. for Randstad Holland can be observed in the analysed macroregions. In the case of Barcelona, this is partly due to the region's geographical features, where mountain ranges separate many settlements (districts, municipalities) of the metropolitan area, and the main valleys host strategic transport routes connecting these areas with their surroundings. As a result, centripetal connections definitely prevail, and there is a shortage of ring roads to integrate the peripheral centres

of the metropolitan area. In some cases, the metropolitan region is rather enclosed as regards commuting to work; for example, in Glasgow, journeys to work do not exceed a distance of 50-70 km. In Stockholm, by contrast, the number of commuters to work from region to the metropolitan area is some 85 000 people, of whom nearly 60% are residents of the remaining part of the Mälars metropolitan region. Moreover, the increase dynamics of such commuting is very high, and in some areas exceeds 50% over a decade. These processes may be explained by the improved transport accessibility of Stockholm owing to the extension and enhanced quality and speed of the transport infrastructure.

**Box 2. Commuting to work in the Midi-Pyrénées region and the administrative boundaries**

Commuting to work within the metropolitan macroregion can be analysed from two perspectives: flows within the metropolitan area and flows between the metropolitan area and its hinterland. The majority of work-home commuting covers journeys to work in Toulouse from the metropolitan area – about 110 000 people, i.e. 40% of those working in the city. The reverse direction of such flows is also visible, although on a smaller scale: some 35 000 inhabitants of the central city work outside the city, but live in the metropolitan area which provides some 250 000 jobs). Another dimension of these types of linkages are (much smaller) flows of employees between the major cities of the macroregion. Slightly over 8000 inhabitants of the subregional centres surrounding Toulouse commute to work to the city and its metropolitan area. Castelnau is the city with the strongest ties with the metropolis – 10% of economically active population living in this city commute to work in the metropolitan area. This is a particularly interesting example because Castelnau is situated outside the Midi-Pyrénées region, which shows a certain artificiality of the existing administrative boundaries. Generally speaking, the distance within which Toulouse is attractive for incoming employees is about 100 km. Movement in the opposite direction is also visible. Slightly over 5000 inhabitants of the Toulouse metropolitan area commute to work to the subregional centres

In many cases, metropolitan centres monopolise the provision of higher-order services. Practically all municipalities of the metropolitan macroregions generate commuting of their residents with the aim of using such services, but this is usually done on a minimal scale. Health services and cultural services are relatively the most deconcentrated services in the macroregions, while higher education is the least deconcentrated (mainly in the regions of Barcelona and Warsaw, as well as branches of higher education institutions in the region of Toulouse, and Uppsala in the region of Stockholm). At the same time, the potential of metropolitan centres in terms of higher-order services generally reach beyond the boundaries of the analysed macroregions. Furthermore, in some regions, there are no other urban centres which can compete in this regard with the metropolis (Glasgow, but with the tangible impact of its rival Edinburgh).

Migration flows within the metropolitan macroregions are varied in character. One significant dimension of such differences is the division into domestic and international migration. The latter is particularly pertinent in the regions of Stockholm and Barcelona, the only difference being that, in the case of the Mälars region, immigrants are mostly attracted by the metropolitan region, and in the case of Catalonia both the core of the macroregion and its peripheries are attractive for immigrants. Segmentation of migration flows is visible between the metropolis and the region. On the one hand, suburbanisation processes which are taking place in the metropolitan area involve the middle-aged population, especially families with children. On the other hand, people of retirement age are those who migrate to more distant locations, frequently their places of origin. As a rule, this outflow is compensated by the inflow of young people with a higher education to the metropolitan centres (for example in Warsaw and Glasgow). An important source of such migrations is the regional hinterland of the metropolis, and in the case of the Barcelona metropolitan area in the last decade, migration also originates from other provinces of Spain and, particularly recently (just as in Glasgow), other EU Member States (primarily the new Member States).

In the analysed regional macroregions, production systems are developed to varying degrees (Fig. 49). Based on the questionnaire surveys of enterprises concerning the role of the individual market ranges e.g. for supply chains and sales, we can observe that economic processes are largely enclosed within metropolitan areas, particularly regarding the use of services (both simple and specialised), personnel recruitment and sources of investment capital. The role of the regional hinterlands of the metropolises is extremely varied. In the case of Barcelona, the considerable role of the metropolis' regional hinterland is clearly visible, mainly as the location of both recipients and clients of enterprises from the metropolitan area (the region plays a greater role than the national market). To a lesser extent, this applies to providers of goods and services (primarily advanced services). Moreover, regional competition has not fallen much behind competition on a national scale. Interestingly, the region is also a source of information about innovations implemented by enterprises operating in the city's metropolitan area. Toulouse also has quite strong linkages with its regional hinterland (providers, recipients and employees), yet the regional ties are, on the whole, significantly smaller than those with other regions of the country (primarily with regard to sources of investment capital and sources of information about innovations). In this context, the marginal significance of foreign markets is striking; this could be due to the fact that only a narrow group of major enterprises operates on such markets (cf. Box 3). In the case of Stockholm and Warsaw, the role of



Fig 49a. Barcelona

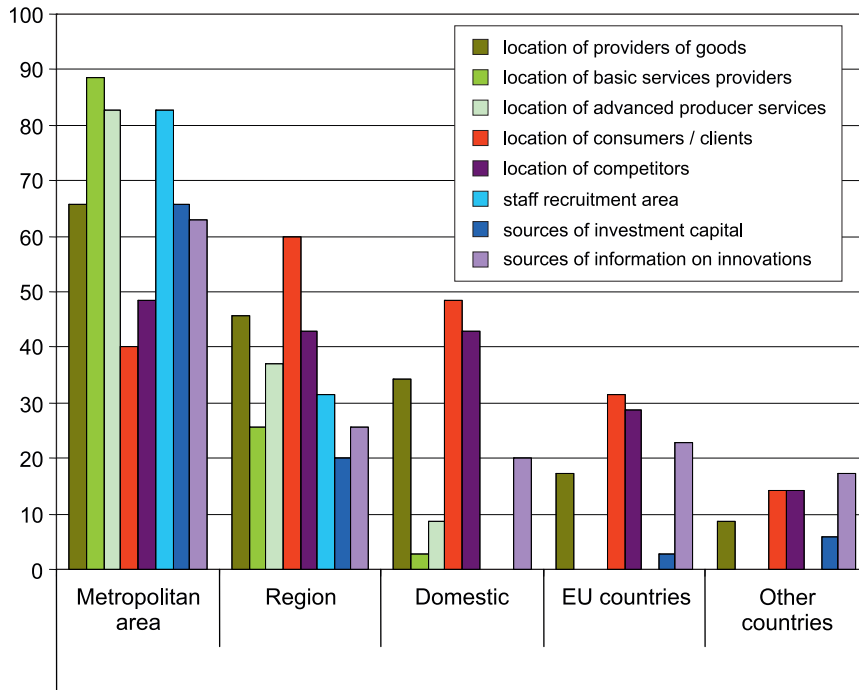


Fig. 49b. Stockholm

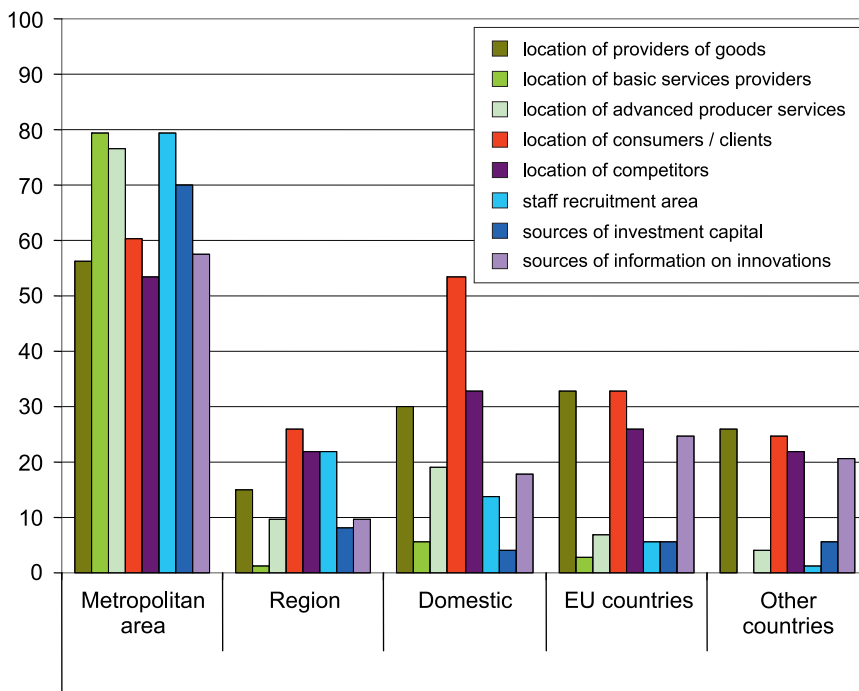


Fig. 49c. Toulouse

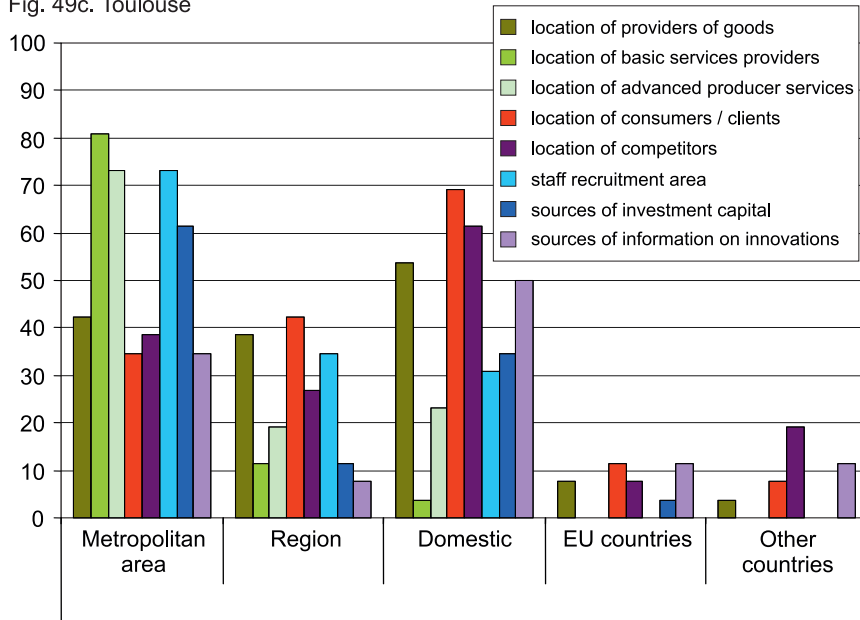


Fig. 49d. Warsaw

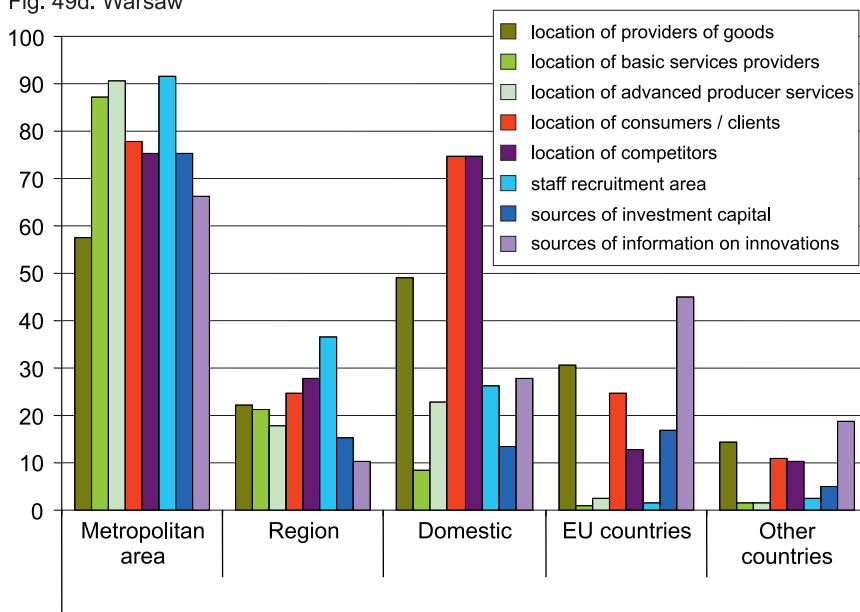


Figure 49. Spatial linkages of enterprises located in the metropolitan areas (% of firms surveyed)\*

\* Two key markets / spatial ranges could be indicated in the answer.

Source prepared by the author.

the regional hinterland is marginal. The Stockholm metropolis is the most strongly internationalised in terms of suppliers' locations (but also in terms of recipients and sources of information about innovations) – both in the national and European dimension. In the case of Warsaw, the degree of internationalisation is not uniform, i.e. foreign provisions and supplies (including information about innovations) are more important than sales of goods, which are primarily sold on the domestic market.

**Box 3. The Aerospace Valley in the Toulouse macroregion – cooperation links**

In Midi-Pyrénées, some 55 000 jobs are connected with the aerospace industry (40% directly, 30% indirectly, while the remaining 30% represents employment generated by other types of activity), of which 10 000 are provided by Airbus. Employees in the aerospace industry account for slightly over 5% of all people working in the region (Ruhlmann 2007). The aerospace industry is concentrated in the Toulouse metropolitan area, which hosts 3/4 of jobs associated with the aerospace industry. Important aerospace industry centres are also located in other parts of the region (Pamiers, Villefranche-de-Rouergue, Figeac, Tarbes, Louey). The aerospace industry is also well-developed in Aquitaine, a region west of Midi-Pyrénées. Both these regions are in fact one functional area of the aerospace industry (and related activities), with over 1000 companies having strong co-operation links. Its development is stimulated by a dynamic organisation called the 'Aerospace Valley', which brings together some 550 enterprises and institutions associated with the aerospace industry situated in both regions (Aerospace Valley, INSEE 2008). This is an aerospace cluster with extensive internal cooperation structures and strong international links, robust R&D facilities and specialised higher education, which is promoted by both regional and national authorities (cf. e.g. Jalabert, Zuliani 2009). Toulouse is unquestionably the hub of the cluster, which proves that the metropolis' control functions play a significant role not only in the regional, but also supra-regional context.

In all the regions, the regional hinterlands of the metropolis perform recreation and leisure functions. However, their role in regional development is significantly varied and largely depends on their supra-regional attractiveness (e.g. Catalonia – the coastal and mountain areas). Recreation and leisure functions are insignificant only in the case of the regional hinterland of Warsaw, which can partly be explained by the competition of other regions of the country in this respect. By contrast, tourist functions play a considerable role in case of certain local systems in Scotland, which supplement the offer of Glasgow as a cultural, conference and retail centre. As a rule, the recreation and leisure assets of the regional hinterland are important factors in improving the quality of life and the attractiveness of the entire area (e.g. the region of Stockholm – nature and sports tourism, with a very high quality of recreation infrastructure and intensive management of natural assets). In the Midi-Pyrénées region, the regional hinterland also provides a recreation base for the inhabitants

of Toulouse (diverse landscape, well-developed mountain tourism, spas, attractive rural areas, historic small and medium-sized cities).

### **6.3. DETERMINANTS OF LINKAGES AND PROCESSES OF POLARISATION AND DIFFUSION**

As the analysed case studies reveal, considerable differences in socio-economic structures, which suggest potential complementarity between the metropolis and its regional hinterland, are not a sufficient factor in fostering the development of linkages between these territorial systems. This is most clearly visible in Mazowsze, where the Warsaw metropolitan region basically functions within the framework of the global information economy whilst the rest of the region – in a traditional agricultural and industrial development paradigm (Box 4). Meanwhile, in the Barcelona region, despite the dissimilarities existing between the socio-economic structures, the functional ties are strong, mostly due to the well-developed endogenous potential for growth in both these territorial systems. The situation in the Mälär region to some extent resembles that in Mazowsze, but the regional hinterland of the former region has been able to make effective use of the endogenous development potential associated with the processing activity and logistic services catering to the metropolis. Nevertheless, the historical division of economic activity between the subregional centres can still be visible in the region. In the western part, traditionally based on industry and mining, manufacturing (which today has a relatively high technological level) still represents a significant part of the economic structure. Meanwhile, the eastern part of the region which traditionally evolved on the basis of trade and transport functions, performs higher-order functions and had a more diversified economic structure. By contrast, in the Toulouse region, the existing linkages are determined on the one hand by the functions provided by the metropolitan centre to its hinterland, and on the other by the high quality of life in the regional hinterland. In the region of Glasgow, the role of the hinterland is limited to providing a recreation and leisure base for the inhabitants of the metropolis, the alimentary zone, as well as a source of compensating shortages in the metropolitan labour market. On the other hand, Scotland provides a different example of structural complementarity in the financial sector between Glasgow and Edinburgh – in the former, back office and contact functions prevail, while in the latter – high quality functions.

The similarity between the socio-economic structures – whether observable in the entire region or only in the major subregional centres – fosters the development of intraregional linkages. In the latter case, it is associated with a specific hierarchy of linkages (metropolitan centre

– subregional centres – regional hinterland). In particular, the similarity between the metropolis and the region, in terms of the quality of human capital and degree of innovation, is a significant factor promoting the development of linkages between the two. This is particularly visible in the case of Barcelona, where such linkages are very strong, partly because of a high level of civilisational development both in the metropolitan area and in the remaining parts of the region, and due to a strong sense of ethnic (according to the Spanish authorities) or national (according to Catalonians) identity.

**Box 4. Mazowieckie voivodship – an example of intraregional civilisational disparities**

In the Warsaw metropolitan macroregion, there exists a clear dichotomy in the socio-economic structures between the metropolis and the region, expressed by the level of internal disparities in the voivodship, which is the highest in the country. In addition to the above disparities, the dichotomy between the metropolis and the region (GDP per capita ratio of 2 to 1) is also manifested in the economic structure – a well-developed sector of higher-order services with nation-wide significance in the deindustrialised metropolis and low-productivity agriculture with a primarily social function prevailing in the remaining parts of the region, except in the industrial subregional centres (with traditional industry branches). Another key disparity is related to the quality of human capital – while in Warsaw the share of the population with a higher education is about 40%, it does not exceed 1% in some rural areas of Mazowieckie region. Also, despite certain deficiencies in the capital city and its environs, the level of infrastructure is low, mostly in the peripheral rural areas. In addition, the level of the region's internal integration associated with the existing transport networks is very low due to the huge scale of neglect and very low traffic capacity of the road and railway infrastructure.

The development of the regional hinterland largely depends on the quality of life offered there, as this can prevent the outflow of top professionals from the region to the metropolis. In effect, this facilitates the development of activities with high added value, which requires hiring high-quality specialists. On the one hand, they can be recruited from the region's inhabitants; on the other, the opportunity arises for hiring relevant specialists from outside the metropolitan labour market. The example of Barcelona corroborates this thesis, although it should be taken into account that, particularly in the case of migrants (and in the period 2002-2006 alone, the population of the Barcelona metropolitan area increased by 10%), the choice of residing place is largely determined by the costs of living, which are the highest in Barcelona.

In the development of linkages between the metropolis and the region, well-developed transport networks can play an important role, which inter alia is proved by research carried out by the local government authorities

in metropolitan macroregions (Fig. 50). In particular, the transport infrastructure is of cardinal importance at a distance from 80 to 160 km from the metropolitan centre. Within this distance, the ties are strong or moderate<sup>1</sup> in the case of municipalities where the travelling time is shorter than 90 minutes. A longer travelling time would imply much weaker linkages. In the case of shorter distances from the centre of the metropolis, a travelling time of under 60 minutes is less important than location with regard to the centre of the region.

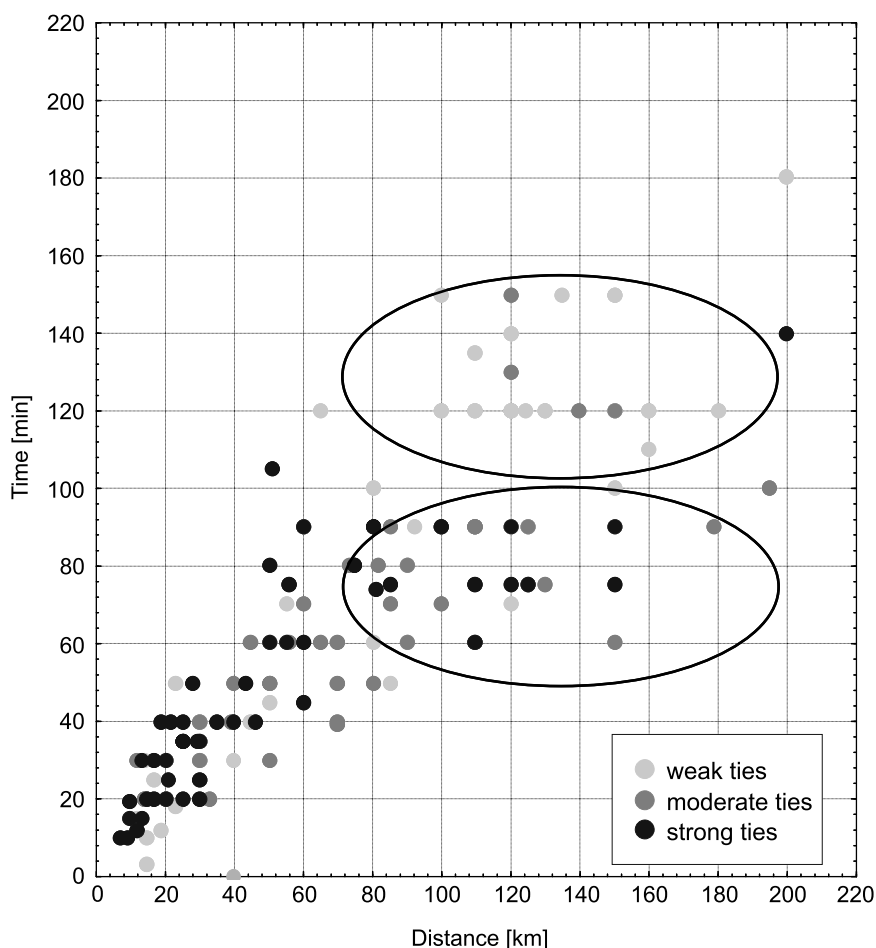


Figure 50. Relationships between accessibility and impact on development

Source: prepared by the author.

<sup>1</sup> Strength of ties between municipality and metropolitan centre was calculated as a sum of indications in questions 6-8 (scoring: weak – 1, average – 2, strong – 3) in questionnaire to local governments (Annex 9). In the next stage, municipalities were classified into three ranges based on the natural break method.

In the local governments' opinion, transport access to the central city affects the development of the municipality (from 50% in the case of the Toulouse region to 80% in the case of the Warsaw region). At the same time, the majority of municipalities which have efficient transport connections with the metropolitan centre believe that this has a positive impact on their development, and that poor transport access has a negative influence. In most cases, the most weakly developed areas of the macroregions are those which have the weakest transport connections with the metropolitan centre – that is, those situated between transport corridors or in the region's periphery.

The centrifugal movements observable in metropolitan areas are mostly related to suburbanisation processes, the intensity of which has visibly increased in recent years (excluding Stockholm). The development of a polycentric structure of metropolitan areas is most advanced in Barcelona and Stockholm, as the majority of municipalities situated within 50 km of the city centres encountered equally commuting to work and permanent migrations of core city residents' (Fig. 51). However, using the example of Barcelona, we can see certain changes in this process. The increasing costs of living in Barcelona itself, coupled with well-developed transport links with the non-metropolitan areas, has fostered suburbanisation. On the other hand, the dynamic development of the Barcelona metropolitan area has stimulated immigration which covers different zones of the metropolitan area. To some extent, these processes have cancelled each other out in the last decade, but overall they have generated rapid growth of the Barcelona metropolis.

In the Warsaw metropolitan area, over a half the municipalities acknowledge commuting to work of Warsaw inhabitants, but both their intensity and rate of increase are moderate. In the case of Toulouse, only 25% municipalities make a similar declaration, but this is associated with a much greater intensity and rate of increase in commuting than in the case of Warsaw. There is a similar situation in terms of commuting for shopping to the central city, which is occasional in Toulouse and Warsaw and quite popular in Barcelona and Stockholm. In the metropolitan areas of Warsaw and Barcelona, commuting for recreation purposes is relatively the most important, whereas in Toulouse this is acknowledged by less than half the municipalities, and in Stockholm by only 1/3 of municipalities.

Similarly, the majority of municipalities in the regional hinterland perform recreation and leisure functions for the residents of the metropolis. In comparison with the municipalities of the metropolitan area, this is particularly visible in the regions of Stockholm and Barcelona. Only in Warsaw does the role of this function significantly decrease with distance from the centre. There is good reason to conclude that this kind of linkage



most significantly affects later migration decisions. This is corroborated by the fact that residents of the central city move out to live in the regional hinterland on the largest scale in the Barcelona and Stockholm regions, while in the regions of Warsaw and Toulouse the scale of this phenomenon is rather limited. In the case of Stockholm and Toulouse, commuting to work plays a certain role in the development of municipalities in the regional hinterland – on a daily basis in the former case, and on a weekly basis in the latter. In the case of Barcelona, this type of commuting is indicated by 30% of municipalities, and in Warsaw – only by 15% of municipalities situated further than 50 km from the city centre.

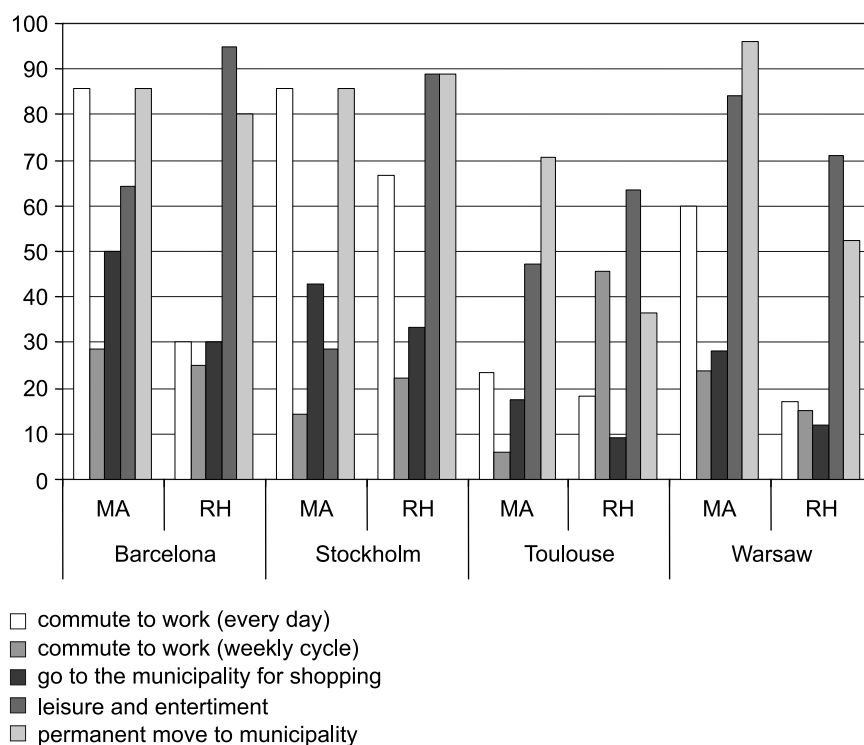


Figure 51. Ties of the macroregion's municipalities with the metropolitan centre – commuting or movement of the metropolitan centre residents (% of municipalities surveyed)

MA – municipalities situated within 50 km from the city centre

RH – municipalities situated further than 50 km from the city centre

Source: prepared by the author.

In all the metropolitan areas except Toulouse, about a half the municipalities declare that enterprises which have their headquarters in the central

city locate their branches in those municipalities (Fig. 52)<sup>2</sup>. Relatively most often, these are facilities associated with logistic functions, but other types of activity such as production, trade or services are nearly as popular. In the metropolitan areas of Barcelona and Stockholm, the role of branches of trade companies is significant, in the case of Toulouse the majority of such locations are production companies, while Barcelona shows the greatest degree of stagnation in this respect. At the same time, the accelerated development activity of the metropolitan area has led to the emergence of pockets of prosperity and also of poverty. As a rule, this is caused by the classical segregation and succession processes described by social ecology, which are currently taking place on a larger spatial scale in metropolitan areas.

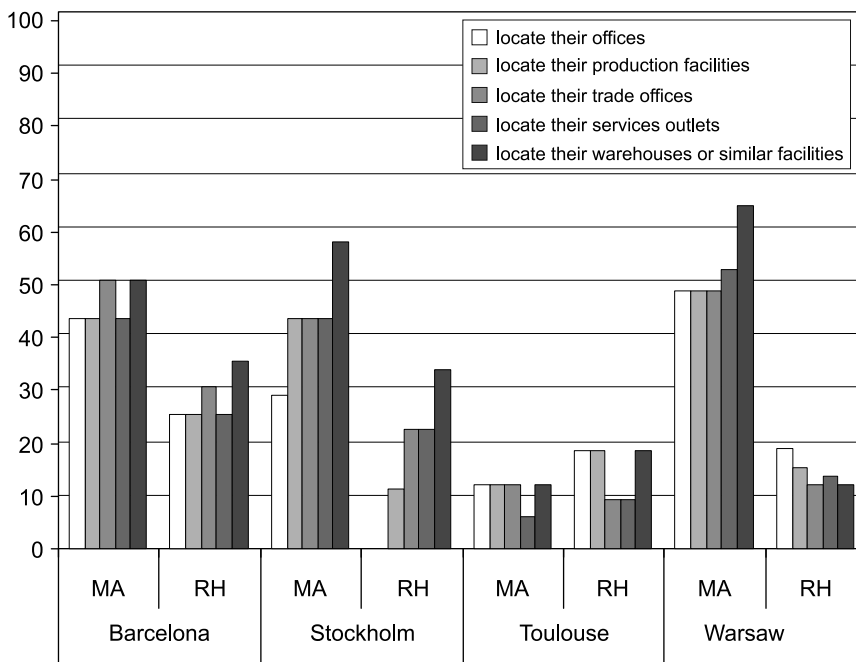


Figure 52. Location of businesses from metropolitan centres (% of municipalities surveyed)

MA – municipalities situated within 50 km from the city centre

RH – municipalities situated further than 50 km from the city centre

Source: prepared by the author.

<sup>2</sup> The results obtained for Toulouse could be affected by the structure of the spatial units: the municipality of Toulouse (the central city) is relatively small, and is surrounded by many municipalities urban in character, where a very large number of enterprises are located. For this reason, the respondents, when answering the question on linkages between the central city, might not indicate connections with the municipalities surrounding Toulouse, which represent a coherent urban functional region.

Based on the questionnaire surveys, it can also be observed that, as a rule, the regional hinterlands save for Catalonia do not matter as much as locations for the branches of companies operating in the central city. Metropolitan enterprises most frequently launch storage and warehousing activity in the regional hinterland, although in the case of Warsaw this also applies to the company headquarters, a situation which does not occur at all in the case of the Mälär region.

The process of the ‘backwashing’ of employees with the highest qualifications and young people in education or training from the regional hinterland to the metropolis can be clearly seen in all the regions (the migration balance of the surveyed municipalities in the metropolitan macroregions is shown in Annex 11). The main reason for this is the concentration of the best paid jobs in the metropolitan centre and its direct hinterland. It is also associated with the technological advancement of activities in the centre of the region, the level of innovation of new projects and ventures, and with the well-developed sector of information services. Development opportunities offered by the regional hinterland, including a high quality of life, do not, as a rule, offset the attractiveness of the labour market in the metropolitan area. This is one of the basic reasons for an increase in disparities in the development level between the metropolis and the region. The exception here is the macroregion of Toulouse, where the backwashing and spreading of developmental processes remains in relative balance. On the one hand, young people go to study in Toulouse, and generally go on to start employment there. On the other hand, middle-aged people who have started a family move out of the city, most frequently to locations within the metropolitan area, but also further away (including subregional centres), which is facilitated by the well-developed road network connecting Toulouse with subregional centres.

#### **6.4. ACTIVITIES OF PUBLIC AUTHORITIES IN THE METROPOLIS-REGION CONTEXT**

Cooperation networks in the analysed metropolitan macroregions are rather varied. The case studies reveal that one factor which impedes the development of cooperation is the region’s dependence on the current political situation (e.g. Mazowsze and Catalonia), while the ability for working out an institutionalised model of cooperation is a factor conducive to development. The current administrative division is also an important factor in the creation of such networks. In the case of Warsaw and Barcelona regions, the existence of authorities in charge of regional development in a situation of overly politicised relationships does not make the development of cooperation easier. Meanwhile, the absence of

such authorities forces certain bottom-up activities which in many cases are more effective than solutions imposed from above. The most important examples of such cooperation at the macroregional level include spatial planning (Glasgow, Toulouse) and development of transport networks (Barcelona, Stockholm).

**Box 5. Transport integration – the example of Stockholm**

In Stockholm, the authorities of five subregions and their municipalities proposed an initiative entitled 'En Bättre Sitts – On the Right Track', which was aimed to improve the accessibility, quality and speed of the transport infrastructure. One of the reasons for this was the neglect the specific needs of the Mälars region in central-level planning. The initiative operates as a forum for dialogue between regional and local public authorities and representatives of specialised central institutions dealing with transport. Its aim is to arrive at a consensus concerning investment priorities, and addressing the interests of individual actors, the entire metropolitan region, entrepreneurs, inhabitants as well as environmental protection issues.

The authorities of the metropolitan centre are generally the dominant entity determining mutual relations between the metropolis and the region. In some cases, the city authorities have greater, nation-wide ambitions (Warsaw), whereas elsewhere the regional and city authorities show no interest in the establishment of an additional – metropolitan – tier of administration (Barcelona). The latter case, in which conflicts are usually sought in relation to the Autonomous Community of Catalonia, shows how difficult this issue is, and proves that in the case of Catalonia, the significance of intraregional interests is usually underestimated. The establishment of the metropolitan authorities in 1974 immediately met with a negative response both from the city of Barcelona and the regional authorities, as a result of which, 13 years later (in 1987), the metropolitan authorities were abolished by the decision of the regional authorities.

Competition in the metropolitan macroregions is manifested in a variety of ways, primarily by efforts to ensure the location of strategic inward investments, which to a lesser or greater degree can be observed in all the macroregions. In this regard, competition is particularly severe in the metropolitan areas, which also include plans to attract the wealthiest residents.

Another symptom of competition is fighting for political influence and voters' support, which is most visible in those regions which have regional authorities. It is also manifested by the ambitions of the subregional centres which strive to attract some of the higher-order services from the metropolitan centre (the region of Toulouse – higher education; the region of Warsaw – academic and cultural functions).

The regional coordination level of activities is varied. The paradox is, that such coordination is relatively weak in those regions where self-government authorities are furnished with broad competences (Mazowsze: e.g. railways run by the regional government, regional roads, specialised healthcare, spatial planning; Catalonia – own treasury, police, numerous companies, e.g. General Roads Directorate, Catalanian Railway Infrastructure, Audiovisual Media Corporation). For instance, in Catalonia, intensive spatial planning work is carried out for the region; however, due to a lack of funds, the effects of this are meagre. This is because the municipalities have most of the powers and funds, and engage in territorial cooperation networks very cautiously, only in justified situations and specific spheres (transport, environmental protection, etc.). The situation is similar in Mazowsze, where – despite the existence of a regional spatial development plan – the decision-making power in this regard rests with the local governments, which pursue their own policy.

In contrast, in case of the Midi-Pyrénées region, the coordination of activities is quite extensive. This is possibly due to efficient forms of cooperation between different administration levels (both horizontally and vertically). Coordination is also facilitated by the fact that the regional authorities have been furnished with broad powers and investment budgets: the region is *inter alia* responsible for secondary and vocational education, spatial planning, economic development, and transport (road and railway infrastructure, financing and organisation of public road and railway transport).

In many cases, the analysed regions lack institutions furnished with relevant powers at the regional level. The non-governmental Mälars region in Sweden is in charge of the coordination of bottom-up activities, including promotional ones, in order to increase the competitiveness of the metropolis and its regional hinterland. Sweden is an exceptional example here, because the division of competences can be described using the hourglass metaphor. This means that considerable powers related to planning, setting standards and decision-making processes are vested in the central level, whereas the implementation of programmes and policies takes place at the level of municipalities, which have both extensive competences in deciding the methods of executing specific tasks, as well as far-reaching fiscal autonomy and freedom in the expenditure of funds.

Similarly, in the case of Western Scotland, the key competences are concentrated at the local level. Consequently, local networks of cooperation between municipalities are well developed, but there is a deficiency of coordination at the macroregional level. To some extent, this gap is filled at the governmental level (Scottish Government) as the powers vested in it include railways, environmental protection and flood protection.

Another example of national-level activities is the Government Relocation Programme, which aims to transfer some public services outside London and the south-eastern region. The results of this activity include the location of a computerised government register and statistical data centre in Western Scotland (Dumfries).

In many cases, individual areas of macroregions seek ways to release their endogenous potential on their own. For example, Dumfries and Galloway, the largest agricultural area in Western Scotland, undertakes joint activities together with the Scottish Borders region located in the zone of Edinburgh's influence, relating to e.g. applications of modern design in the traditional textile industry.

The relationships between the city and the surrounding region are ascribed varying roles in the strategies of public authorities at different levels. In some cases, efforts to equalise development disparities by favouring peripheral areas can be observed (Mazowsze – equalising instruments addressed to enterprises and local governments; United Kingdom – government-level relocation programme to peripheral regions; the strategic goal in Scotland is to reduce the intraregional development gap). In other macroregions, clear domination of the metropolitan area is evident. For example, the Barcelona metropolitan region, depending on the mode of its delimitation, has from 3.7 to 4.9 million inhabitants – i.e. hosts the definite majority of Catalonia's population. In addition, the bulk of economic activity with regional and supra-national significance, including international, is concentrated here. In contrast, activities have been undertaken in Sweden to create functional links throughout the macroregion by strengthening second and third-order subregional centres, primarily by the establishment of technological parks, logistics and retail centres and new housing estates. Technological parks are developed via branches of higher education institutions with a view to attracting companies operating in the ICT and biotechnology sectors (Kista and Flemingsberg) and reinforcing the region's R&D potential.

In the majority of macroregions, the undertaken activities focus on utilising the endogenous potential of individual areas, on the assumption that the development of the metropolitan area has a positive impact on its regional hinterland.

The extension of the transport infrastructure is one of the major tasks undertaken to disseminate development from the metropolis to more peripheral areas of the region. However, key decisions in this regard generally rest with the central authorities. In some situations, in view of the passivity of the central-level authorities, such activities have been initiated 'on the ground', as in the case of Stockholm, where the initiative 'En Bättre Sits – On the Right Track' is aimed at integrating and coordinating

decision-making processes at different levels (see above). This places special emphasis on the development of the transport infrastructure in the Stockholm-Mälär region as it is believed to be of crucial importance for maintaining the region's competitiveness and good performance of the labour market. This is particularly important when we take into account the limited availability of housing in the area of the metropolis. Transport accessibility is also regarded as crucial in Western Scotland, which is corroborated by activities at the level of the Scottish Government concerning the development of the railway network. In the Midi-Pyrénées region, efforts are concentrated on strengthening of the subregional centres (development of business activity centres and branches of higher education institutions) and upgrading the railway infrastructure (key road investments have already been completed), while the major investment in this regard – the construction of a TGV route (from Bordeaux to the Mediterranean Sea) rests with the central authorities.

**Box 6. The concept of polarisation and diffusion in the Midi-Pyrénées region**

In Midi-Pyrénées, the development policy is based on the polarisation and diffusion concept. It is believed that development opportunities for the region should be sought primarily in the development of Toulouse (modern technologies, R&D in the aerospace industry, pharmaceuticals and medicine, chemistry and food processing) and in creating conditions for the diffusion of development – mainly through the development of a high-quality transport network, promoting the building of human capital (development of higher education in the subregional centres) and zones of industrial activity outside the metropolitan area. Modern specialised agriculture is also supported (including ecological, traditional agriculture, also combined with agri-tourism); it is regarded (together with the food industry) as a significant endogenous resource of the region's rural areas.

Most frequently, activities relating to the development of the transport infrastructure help build supra-regional linkages of metropolises, catering to their regional hinterlands only incidentally, and leaving gaps in the transport networks and 'tunnelling' effects. These activities are supplemented by efforts to ensure conducive conditions for the creation of new jobs around smaller urban centres.

Some of the activities are associated with attempts to build a polycentric structure of metropolitan areas. For instance, efforts were made in Barcelona (in its eastern part) to create a centre of hi-tech sectors, but these attempts have not been particularly successful. The metropolitan region of Barcelona is relatively polycentric, owing to the intentional deconcentration of industry many years ago (although the centripetal arrangement of the transport system strengthens the role of Barcelona). Problems experienced today are mostly related to difficulties with finding



an alternative for the last declining zones of traditional industry (also as a result of their offshoring to Eastern Europe and Asia). In the case of Western Scotland, the location of regional airports offers an example of actions which build the polycentricity of the metropolitan area. The two international airports are situated outside the city boundaries (Glasgow Airport in Renfrewshire and Prestwick in South Ayrshire). Moreover, measures have been implemented to improve the external image of the individual parts of the metropolis, which include the regeneration project of the River Clyde waterfront (with a shipbuilding past), the redevelopment of the former steelworks in Ravenscraig (North Lancashire), the restructuring of Motherwell and Wishaw (metallurgy), building new housing estates and the Building Society in Glasgow, the urban renewal of downtown Glasgow and regional cities and the regeneration of free urban space.

**Box 7. Polycentric development of the Stockholm metropolitan area**

RUFS 2010, the Regional Development Plan for the metropolitan region of Stockholm, stipulates the consolidation of the areas' polycentric structure inter alia by strengthening the role of second and third-order regional urban centres. Activities, which are implemented at several levels, involve strengthening cooperation between local authorities, particularly in taking account of the local development plans and spatial development plans, developing a networked structure of transport connections (concentrically around Stockholm), cooperation in the field of education and higher education, development of housing and adaptation of the infrastructure to the needs of the regional labour market. In addition, the development plan identifies areas which call for closer cooperation and integration. One such area is the central area which comprises Stockholm, the Arlanda Airport, Uppsala and Södertälje. Another is the planned bi-city of Västerås-Eskilstuna. The third area for integration is the research centre and the technological park of Linköping, the environs of the Nyköping Airport and the city of Norrköping. Ultimately, the entire area (except the third component) is to have transport connections with a maximum travelling time of one hour to Stockholm and to Arlanda Airport.

Source: RUFS 2010.

Activities related to the development of education are the major instruments to counteract the backwashing of developmental resources. In Mazowsze, there are plans for the development of education at the lowest (pre-school) level, but this is a nation-wide initiative. Furthermore, non-public higher education institutions develop spontaneously in subregional centres of the Warsaw region. In Midi-Pyrénées, attempts have been made to develop academic functions in subregional centres, but such activities are on a limited scale (small number of courses offered, only undergraduate programmes), thus Toulouse remains the dominant academic centre of the region. In Catalonia, attempts to deconcentrate higher education institutions (e.g. *Universidad Autonoma Barcelona*) have been only partly

satisfactory and have led to additional burdens on the transport system of the metropolitan area. In view of the high population density in the Barcelona metropolitan area, such extensive deconcentration does not make much sense. Similar efforts are being made in Western Scotland to develop modern vocational education centres outside the metropolis (a branch of the University of Glasgow in Dumfries). By contrast, Sweden operates a binary higher education model, which means that elite universities such as the Royal Institute of Technology (KTH), Stockholm School of Economics, Stockholm University, Karolinska Institute and Uppsala University function side by side with smaller higher education institutions, the so-called *högskolan*, which mainly offer undergraduate and graduate courses. Altogether, there are 26 higher education institutions in the Stockholm-Mälars macroregion, which give employment to 40% of the country's academic staff. The most prestigious higher education institutions are located in Stockholm and focus on research activity and technology rather than on teaching. This function is partly discharged by the *högskolan*, which are frequently located outside the city, both in the metropolitan area and in the macroregion itself. The highest expenditure on education, including adult education, and increase in student numbers has been made by the Södertörn University and the Mälardalen University, located in Eskilstuna-Västerås, a bi-city that is currently being established.

### 6.5. GOVERNANCE OF METROPOLITAN AREAS

Many European cities have tried to create a comprehensive model for the management of metropolises, understood as functional entities comprised of the centre and the metropolitan area. The following models for managing metropolitan areas can be distinguished (cf. METREX 2004):

- Comprehensive: authorities are elected and have extensive powers in the running of social, economic, infrastructure and environmental policies, which allow them to devise and implement integrated development strategies for the metropolis (e.g. Hannover);
- Key tasks: the authorities are elected or appointed but have limited powers, as a result of which they can only solve specific problems related to metropolitan development (e.g. Stuttgart, Helsinki, Paris, Athens, Thessaloniki, Lisbon, Porto);
- Advisory: there is no separate tier of authority at the level of the metropolis, and the tasks related to the strategic planning of metropolitan development and providing advisory functions in their implementation are executed by development agencies or joint advisory committees appointed by the current public authorities (e.g. Glasgow, Berlin, Munich, Copenhagen-Malmö, Zurich).

Table 48. Management model for metropolitan areas and tasks performed

| Model          | Spatial planning      | Infrastructure  | Environment  | Economy   | Society  |
|----------------|-----------------------|---|--|---|--|
| Comprehensive  | Metropolitan planning | Roads<br>Public transport<br>Water management<br>Waste management | Natural protection<br>and conservation<br>administration | Development<br>agencies<br>Training<br>agencies | Healthcare<br>Education<br>Higher education<br>Social assistance<br>Social housing |
| Selected tasks | Metropolitan planning | Roads<br>Public transport   | Environmental<br>protection agencies                     | Development<br>agencies                         |  |
| Advisory       | Metropolitan planning |   |  |   |  |

Source: prepared on the basis of (METREX 2004).

In order to establish a level of elected authorities responsible for strategic planning on the metropolitan scale, taking into account all the basic aspects of its development, the existing territorial self-government structures at the local level need to be redesigned. This is undoubtedly a challenging task and has rarely been attempted so far. More common forms of managing metropolitan development are based on the voluntary cooperation of existing territorial self-government units in solving specific problems, primarily those related to transport and economic development. The growing pressure from global and local environments is a stimulus for creating various institutionalised forms of such cooperation to facilitate more effective performance. Arguably, if regional and national strategies dealing with these issues function properly, with the involvement of major local and regional bodies and the existence of efficient cooperation networks at the metropolitan level, the establishment of institutionalised forms is not so vital (METREX 2004).

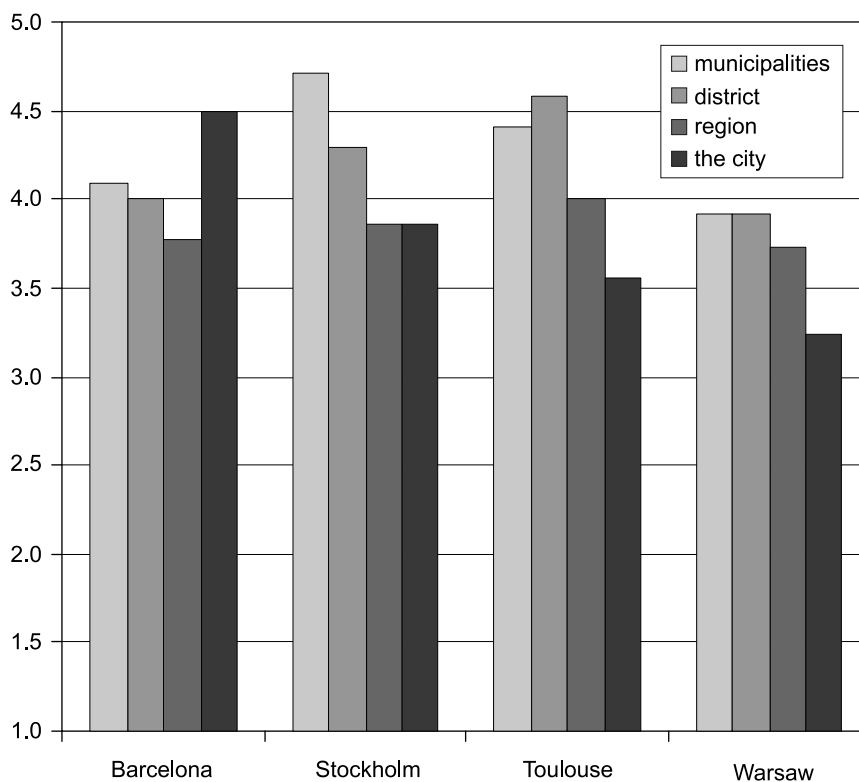


Figure 53. Evaluation of cooperation with the central city authorities vs. other territorial authorities by municipalities of the metropolitan area\*

\* 1 – very bad, 5 – very good (average).

Source: prepared by the author.

In all the analysed metropolitan macroregions except Barcelona, cooperation between the central city and the municipalities situated in its closest vicinity is not as good as between inter-municipal cooperation networks (Fig. 53). Cooperation of municipalities with the metropolitan area is most negatively evaluated in Warsaw and Toulouse (in the latter case this is the consequence of the adopted model of extensive horizontal cooperation networks). In Stockholm, this cooperation is evaluated as good, but still not as good as cooperation with neighbouring municipalities. In Barcelona, the very good cooperation between the city and the municipalities in the metropolitan area could to some extent be a consequence of poor cooperation between the municipalities and regional authorities.

**Box 8. Incoherence of administrative and planning divisions in Catalonia**

In the case of Catalonia, there is a discrepancy between the traditional administrative division established in the early 19th c. and the planning division, certainly better suited to the actual structure of economic activity and employment in the period after Catalonia's industrialisation. Admittedly, the duality of this division (administrative and planning) has a political context (related to the dissimilarity of interests, which also divide the Catalanian community). The appointment of the authorities of the Catalanian metropolitan area and their subsequent abolishment may serve as an example here. The strong metropolitan authorities, representing the majority of the region's population, were not welcome by the political elites of Barcelona, much less by the autonomous region of Catalonia.

In the analysed cities, there are generally no regulations imposed by the central authorities governing cooperation within the entire metropolitan area. We should not, however, overlook attempts at their implementation in Poland (with no effect so far), and their functioning in the case of Glasgow (Box 9) and Catalonia, where they were ultimately abolished, mostly due to political conflicts.

**Box 9. Liquidation of the Glasgow metropolitan area**

In 1975-1996, Scotland had a two-tier system of local administration. In this period, the city of Glasgow operated as part of the Strathclyde Regional Council, which was the most populated and largest region in Scotland. The Council was responsible inter alia for education, transport and strategic planning. The reasons for its abolishment included e.g. blurred powers and mismatches concerning the spatial range of the provided services. However, regional experts emphasise that political interests played an important role in this process, and that the 1996 reform was a mistake as far as Western Scotland is concerned. At present, there is no political nor social willingness to return to the earlier organisation of regional government.

In the case of Barcelona, difficulties in this regard are multifaceted, associated with engaging the national authorities in this process, in addition to regional and urban authorities. As mentioned above, intraregional interests also play a role; in consequence, the metropolitan corporation (authority) was dismantled after only 13 years of operation.

In Sweden, no attempts have been made so far to implement the arrangements imposed by the central authorities. However, legal forms of establishing bottom-up associations of the local authorities are quite popular, e.g. on the basis of the so-called ‘ordinary contract’ used for specific objects of cooperation; ‘local government federation’ – a form of cooperation between various levels of local government authorities (Sweden has over 60 such authorities), and the broadest form, subsidised by the central government – the ‘Regional Cooperation Council’, which brings together representatives of municipalities from across the region, with the possibility for inviting representatives of subregions.

In the existing situation, bottom-up initiatives seem to be the key to effective and efficient management of metropolitan areas. However, they encounter many barriers, mostly associated with a lack of trust between the authorities of the metropolitan centre and the surrounding municipalities (e.g. Warsaw where, despite the legal arrangements regulating the functioning of special-purpose associations of municipalities, cooperation is poorly developed). In the case of Toulouse, there are three rival general-purpose associations of municipalities in the core of the metropolis, the establishment of which was driven by a desire to gratify local ambitions; this hampers cooperation and makes coordination of activities much more complicated. It should be emphasised, however, that extensive cooperation networks between different administrative units (and their associations) facilitate efficient management of metropolitan areas. Meanwhile, in the metropolitan area of Stockholm, activities are hindered by lengthy decision-making processes (the consensus culture), but cooperation is well developed and covers many areas, being supervised by the County Administrative Board which is appointed by the central authorities. Additionally, regional planning is made more difficult by the fact that municipalities have broad powers in the sphere of spatial planning, and the County Administrative Board draws the regional plan (which is, however, not compulsory for the municipalities) on the basis of the plans prepared by municipalities. Meanwhile, in the metropolitan area of Glasgow, cooperation ‘on the ground’ does not encounter any considerable obstacles, which is the effect of continuing earlier traditions in this regard as well as strong functional linkages. Nevertheless, it is pointed out that some harmonisation concerning the territorial scope of local agreements and special-task organisations would be useful. The most important

example of cooperation at the level of the metropolis is the Clyde Valley Community Planning Partnership, established in 2003 by the political leaders of eight local governments in order to initiate joint strategic actions for the regeneration of the Glasgow metropolitan area.

Similarly, in Barcelona, the actual metropolitan region (understood as an area where activities are coordinated and decisions are made jointly) is determined by municipal cooperation in three areas. The first covers 31 municipalities (including Barcelona) furnished with powers in the sphere of environmental protection; the second covers 18 municipalities (including Barcelona, in the sphere of transport), and the third includes 36 municipalities which cooperate in the preparation of the strategic metropolitan development plan. Even though there are no integrating elements here, it is believed that the municipalities, acting jointly, express the interests of the metropolis.

The scope of activities undertaken by the metropolitan areas most frequently include transport and spatial planning. All the analysed metropolitan areas have made some achievements in this respect: on the lowest level relatively in the case of Warsaw, and fully operable in the case of Stockholm, and in Toulouse (while taking account of the coordination of activities between different administrative units as part of the *Communauté Urbaine du Grand Toulouse*, which had quite extensive powers: municipal housing, culture, public transport, spatial planning, municipal services (water, sewerage), environmental protection, social services, economic development). Activities also cover more specific areas, e.g. tourist traffic services and environmental protection in Barcelona (which is connected with managing the water resource deficit) or development projects in Glasgow (Advanced Research Centre, Science Technology Diamond).

In the case of Barcelona, environmental protection issues (including water and sewage management) are also covered by inter-municipal cooperation in the core of the metropolitan area. Likewise, cooperation efforts between the industrial cities surrounding Barcelona (from Villanova through Martorell and Terrasa to Mataró) initiated to address the threat of marginalisation and costs of deindustrialisation have been interesting. For these cities, the goal is to construct a road connecting them with Barcelona.

In the metropolitan area of Stockholm, state and local government administration function in parallel. The government administration (County Administrative Board) is in charge of:

- Coordination of government policies at the regional level;
- Natural environment protection;
- Monitoring and inspection of local and subregional governments.

The tasks of the subregional local government (County Council) include administration of the healthcare system, public transport (including



transport of people with disabilities), regional planning, and to some extent higher education, while the sphere of regional planning and public transport rests with the Office for Regional Planning and Transport.

Based on the questionnaires distributed among the municipalities, the key areas of cooperation in the metropolitan areas are the following (Fig. 54):

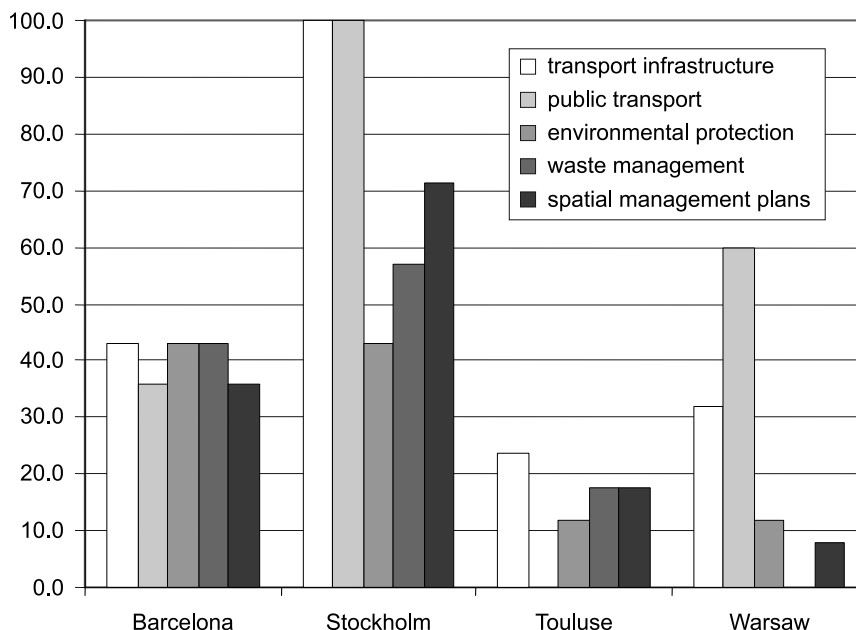


Figure 54. Scope of cooperation with the central city authorities by municipalities of the metropolitan area (% of municipalities surveyed)\*

\* In the case of Toulouse, we should bear in mind the specific structure of the metropolitan area, where the central city occupies a relatively small area. For the respondents, a more pertinent point of reference could be the key association of municipalities operating in the metropolitan area of the *Communauté Urbaine du Grand Toulouse* – 25 municipalities, including the central city, and furnished with extensive powers.

Source: prepared by the author.

- Public transport (Stockholm, Barcelona (to a lesser extent), some indications in Warsaw);
- Environmental protection and waste management (Barcelona and Stockholm, some indications in Toulouse);
- Spatial planning (Stockholm, certain indications in Barcelona, marginally in Toulouse and Warsaw).

It should also be pointed out that in the case of the Stockholm region, cooperation networks also cover municipalities situated further than 50 km from the city.

The majority of municipalities which have not as yet been engaged in cooperation see a need for it. In the case of the Barcelona metropolitan area, this pertains to cooperation in the sphere of transport (including public transport), environmental protection and planning (in various groups of municipalities), while in Toulouse and Stockholm – to environmental protection and spatial planning. In contrast, the respondents in the metropolitan area of Warsaw see a need for developing cooperation in all of the aforementioned spheres.

## 6.6. DEVELOPMENT PROSPECTS

In practically all the regions except Catalonia and Midi-Pyrénées, we can expect an increase in developmental disparities between the metropolis and the surrounding region. In most cases, this is associated with the polarisation and diffusion development model, which stipulates that the extent of the spread of development processes is usually small, with a simultaneous backwashing of resources from the more distant parts of the metropolitan macroregion. Warsaw can be viewed as a classic example of this model, even though some of its elements can also be found in Glasgow. In the case of Stockholm, the complementary model associated with the functioning of modern industry outside metropolitan areas is also partly applicable. In Barcelona, there are so far no indications of polarisation, although the consequences of an accelerated deindustrialisation of the cities in the so-called Arc surrounding Barcelona may generate more rapid polarisation within the metropolitan area. This is partly a consequence of globalisation, since the hinterland of the metropolis (including rural areas) will probably not be directly affected by these processes.

The scenarios concerning further anticipated developments vary, and largely depend on the regional context. In the first model, a growing depopulation of peripheral rural areas is the most likely. This trend can be reversed based on the local resources (more likely in the case of Glasgow) or investments to disseminate the scale of the metropolis' development (more likely in the case of Warsaw). In the case of Stockholm, one of the probable scenarios envisages the emergence of a polycentric metropolitan area which will foster development processes across the region. In contrast, the future of the Toulouse region relies most heavily on the diversification of the economy in the metropolitan area, which can lead to the expansion of present cooperation links and better integration of the metropolitan hinterland. Meanwhile, the future of Barcelona and Catalonia will significantly depend on their ability to meet the challenges posed by globalisation and international competition, which can hardly be expected to be manifested on the regional scale. Undoubtedly, however, some local

systems in the metropolitan area of Barcelona are seriously threatened by the diminishing significance of the industrial sector, which the region has so far been unable to offset by creating alternative jobs.

## CONCLUSIONS

In the analysed European metropolitan macroregions, trends of increasing development disparities between the metropolis and the surrounding region can be observed in the period 1995-2004. This can be viewed as a consequence of metropolisation processes, spurring the development of large urban centres which pool the resources indispensable for the development of the information economy, overshadowing their regional hinterlands, which in many cases function in the previous, industrial and agricultural development paradigm. Similarly, middle-sized cities 'eclipsed' by the large metropolises are developing more slowly. Although opposite processes have been taking place in some of the macroregions, this is usually either a consequence of enormous intraregional disparities or of a lower rate of economic growth in the countries in which they are located.

The national context plays an important role in analysing the development dynamics of metropolises as the nation-wide rate of growth is, as a rule, strongly correlated with the rate of development of metropolitan areas. By comparing the rates of growth in the component parts of the metropolitan macroregions with the national average, we were able to identify the four basic types of regions. Consequently, we indicated macroregions where fast development of the metropolitan area was accompanied by rapid development of its surroundings. This could be viewed as proof of the lack of barriers to the diffusion of developmental processes. Meanwhile, an inverse situation could point to structural differences or low accessibility which hampers the diffusion processes or, alternately, to the backwashing of developmental resources from the periphery into the regional centre. Where development of the centre is slower, its surroundings generally cope slightly better than the mean value. This could either indicate relatively weak intraregional linkages or point to a competent use of endogenous resources by the regional hinterland (e.g. related to the development of tourism or modern industries). Nevertheless, there are also macroregions where both the metropolis and the remaining part of the macroregion develop tangibly more slowly than the national average; this could be

seen as proof either of their strong intraregional ties or of their structural affinities.

Metropolitan macroregions are strongly divergent in terms of the correspondence of demographic processes, structural changes and labour market fluctuations taking place in the analysed component parts (i.e. in metropolitan areas and their regional hinterlands). This makes generalisation difficult and points to the significant role of national and regional contexts, which prove a clear *differentia specifica* of each of the surveyed macroregions.

However, in the majority of metropolitan macroregions, a population increase could be observed, primarily caused by migration inflows both to the metropolitan areas and their regional hinterlands. This is probably connected with the segmentation of migration – young people of working age migrate to metropolitan areas to seek employment or to study, whereas middle-aged or retired people move to areas situated further from the centre, seeking a higher quality of life and better living conditions.

It is difficult to identify linkages between structural changes occurring in metropolises and in their regional hinterlands. In some regions, similar processes take place (e.g. an increasing role of services), whereas opposing trends can be observed in other macroregions (e.g. an increasing share of services in the metropolitan area's economy, accompanied by a simultaneous industrialisation of the metropolitan regional hinterland). The development of services in metropolises usually results from the growing role of specialised services, and this service 'advancement' of the metropolis is usually accompanied by an increased role of services in the regional hinterland.

However, there are marked linkages between the labour market situation in metropolises and in their regional hinterlands, but this applies to the dynamics rather than the situation on the macroregional labour market – and is largely a consequence of changes in the nation-wide labour market. Simultaneously the situation in macroregional labour markets is rather stable despite a period of good economic performance, and economic growth is mostly produced by an increase in productivity. The disparities in productivity between the metropolis and the region are still relatively wide, both in the case of the industrial and service sectors.

One of the major factors differentiating both metropolises and their regional hinterlands is the modern character of the economic structure, expressed by a large share of services, including specialised services, associated with a high level of economic development. In addition, the disparities in the demographic potential of the macroregions also play an important role as they signal the size of the local labour pool and sales markets, which in turn foster the development of the service sector. In

the case of metropolitan areas, their place in the respective national settlement structures is important, with an additional differentiating factor being the degree of integration of the suburban zone with the metropolitan centre, expressed by the disparities in the economic structure and labour productivity. On the other hand, for regional hinterlands of metropolises, the labour market situation is more important; in many cases it is linked to the level of industrialisation of the regional economy. Furthermore, the level of duality of the economy, expressed by the disparities in labour productivity between agriculture and non-agricultural activity, is another significant factor.

Taking into account the above dimensions of disparities, we identified several main types of conditions determining the economic relationships between the metropolis and the region observable in Europe. Most types of such conditions can be encountered across Europe and are spatially dispersed. Nonetheless, there are also groups of macroregions with similar conditions which can be found in one or several neighbouring countries, e.g. southern Germany, northern Italy, Austria and Slovenia, as well as the remaining macroregions of large German cities. Meanwhile, the capital city macroregions of Central and Eastern European countries are the most conspicuous of metropolitan macroregions. In this group, it can be clearly observed how metropolises break the ties with their regional hinterlands. This is probably caused by the rapid pace at which the capital city metropolises joined the mainstream of an open networked economy, dominated by traditional functions such as low-productivity agriculture and declining traditional industries in the economies of their regional hinterlands. To some extent, this type is imitated by other, usually smaller cities with peripheral locations, where similar processes take place but with a lower degree of macroregional divergence. At the same time, highly industrialised regions ('industrial' or 'problem' regions) are relatively the most internally coherent. However, during the process of adapting their economic structures to the conditions of the global information economy, their intraregional convergence generally decreases. The remaining types of regions are quite varied despite a similar scale of intraregional disparities in economic development level. Divergence can be observed both in highly-developed monocentric and in polycentric regions. Nevertheless, in the former type of region, this process takes place in the conditions of an extensive and complex network of flows, both regarding migration and local labour market linkages, whereas in monocentric regions the degree of complexity of these relationships is much smaller. By contrast, metropolitan regions situated in Germany, Austria and Slovenia manifest the greatest stability in terms of development disparities between the metropolis and the region, which is largely a result of a similar situation in the macroregional labour

markets and can be seen as proof of considerable integration of regional production systems. However, capital city macroregions yield the least to such attempts at generalisation – particularly those in smaller countries, where the relationships between the metropolis and the region are unique.

The key factor affecting the disparities in the economic development level and their change is the similarity of the economic structures of the component parts of the metropolitan macroregion. A similar economic structure could point to the existence of direct or indirect linkages between metropolitan areas and their regional hinterlands which lessens the disparities in development level. Wider structural differences are manifested in the dissimilar development paths of the metropolises and their regions and lead to macroregional divergence. Nonetheless, the increasing level of similarity between the economic structures of the metropolis and the region is not the key factor underlying macroregional convergence.

Similarity of the labour market situation is a manifestation of minor intraregional disparities in the level of economic development, which could be seen as proof of linkages within the macroregional labour market. Furthermore, an improved situation in the metropolitan labour market with its simultaneous deterioration in the regional hinterland is the main reason for (or consequence of) the macroregional divergence in the development level. Seen together with the migratory outflow from the regional hinterland to the metropolis, this could testify to the backwashing of development resources (mostly human capital), from the periphery to the core.

Labour productivity is very strongly correlated with the development level that to some extent results from structural disparities. This is manifested *inter alia* by the differences in labour productivity in industry reflected by the varied degree of capital intensity of the sector, and thereby probably to the level of its technological advancement.

It should also be pointed out that both the scale of intraregional disparities and their changes are quite strongly dependent on the national and regional contexts, and the indicators used as well as the regression models applied reveal only some of the factors that determine them. It is quite likely that incorporation of indicators related to the quality of human capital and innovation of the enterprise sector into these models would have allowed for a better explanation of the observable intraregional disparities and their changes. Furthermore, the capital city macroregions most often evade such generalisation, particularly in smaller countries whose very nature adds specific qualities to the relationships between the metropolis and the region.

The case studies selected for analysis (Barcelona-Catalonia, Glasgow-Western Scotland, Stockholm-Mälär Region, Toulouse-Midi-Pyrénées,



Warsaw-Mazowsze) represent extreme situations regarding both the scale and the dynamics of intraregional disparities. Such a selection made it possible to present a broad spectrum of mechanisms underlying the relationships between the metropolis and the region. These studies show those factors for which no comparable statistical data at the European level could be compiled, and which are pertinent to the relations between the metropolis and the region, while simultaneously taking into account the opinions of both regional and local authorities.

In the analysed cases (except Catalonia), the regional hinterland does not play a significant role in metropolitan development. This proves *inter alia* that the strengths and weaknesses of the cities concerned are primarily related to their functioning in the international dimension. Moreover, economic processes are generally enclosed within the metropolitan areas, and the regional linkages of enterprises are poorly developed when compared to their linkages with the rest of the country or internationally. At the same time, the regional hinterlands in many cases are not able to take advantage of the opportunities created by the metropolitan centre, which typically leads to an excess of the backwashing of developmental resources over diffusion processes.

The key factors which foster strong linkages between the metropolis and the region include intraregional similarities between the socio-economic structures (notably the quality of human capital and degree of innovation). In this context, the quality of life in the metropolitan hinterland plays a crucial role in retaining or attracting top professionals. Another major factor of intraregional integration is transport accessibility, which is particularly important at a distance of 80-160 km from the centre (with special significance of the isochron of 90 minutes' travelling time for the intensity of linkages with the metropolitan centre). In addition, the polycentric structure of the metropolitan area plays a part, as it facilitates access to the metropolitan labour market of the residents of the regional hinterland; it also fosters the development of linkages between enterprises regionally.

Activities which are most frequently undertaken by public authorities in the analysed regions in the context of the relationships between the metropolis and the region include the development of transport infrastructure, particularly with regard to creating supra-regional connections between the central city and other metropolitan centres. This leads to the emergence of transport corridors (roads and railways) which act as development networks, as well as growth poles or sectors located in the vicinity of regional airports. The development of the transport infrastructure is also associated with efforts to develop a polycentric structure in metropolitan areas. Another important type of activity

includes human capital investments, which are frequently manifested by the development of academic centres in the regional hinterlands of the metropolises. Such undertakings have been successful to varying degrees since these centres are generally no competition for the academic potential of the metropolis, as the quality of their educational offer is normally inferior, and the scope of the offered courses more limited.

## ANNEXES



## **ANNEX 1. DELIMITATION OF METROPOLITAN MACROREGIONS**

Based on these assumptions and remarks, the first step of this research has been to define metropolitan and urban areas (MA) based on the comparison of Urban Audit Larger Urban Zones (LUZ) and EUROSTAT population data for NUTS3 regions. The following basic rules have been applied:

### **Rule 1) Size of LUZ**

1. Only LUZs with over 250 000 inhabitants have been included in the city-region analysis (MA).
2. Larger LUZs with over one million inhabitants have been considered as metropolitan areas (MAM) while smaller agglomerations – as urban areas (MAU).

### **Rule 2) Correspondence between LUZ and NUTS3**

1. Only LUZs exceeding 70% of the population threshold of NUTS3 have been included in the city-region analysis (MA\_REG)<sup>1</sup>.
2. In case of LUZs consisting of more than one NUTS3, only regions with at least 50% of the population living within LUZ have been considered as a part of the metropolitan area (MA\_REG\_PART).

### **Rule 3) Combination of metropolitan areas**

Polynuclear metropolitan areas (MA\_POLI) have been defined in the following circumstances:

1. The distance between LUZ core cities have been smaller than: 60 km in case of LUZs with over 500 000 inhabitants (at least one) or 30 km in case of smaller LUZs.
2. Rule 2 applies to the whole polynuclear metropolitan area.
3. Polynuclear metropolitan areas have been considered as a compact (MA\_POLI\_COMP) or scattered (MA\_POLI\_SCAT) ones depending on other NUTS3 regions that separating them apart.

The regional hinterlands (RH) for such metropolitan and urban areas (MA) have been delineated using surrounding NUTS3 combination approximations. Another set of rules has been applied here:

### **Rule 4) Neighbouring regions**

1. The regional hinterland (RH) consists of all NUTS3 regions directly neighbouring on the metropolitan area in a respective country (MA\_REG).

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<sup>1</sup> The result has been checked against ESPON 1.4.3. project results and LUZs not classified as large cities (100,000 and more) have been rejected (i.e. Bajadoz (ES) and Maribor (SI)) as well as ESPON 1.1.1. project results to accept selected cities below the threshold (but over ca. 65%) classified as MEGA (i.e. Bordeaux in France, Gdańsk, Łódź and Szczecin in Poland, Sevilla and Valencia in Spain).

2. The regional hinterland consists of NUTS3 regions whose at least 75% of their total area is within the range constituted by the maximum distance between LUZ's core city and the farthest point of the neighbouring regions.

**Rule 5) Predominance of larger metropolitan area regions**

1. The neighbouring metropolitan area regions (MA\_REG) or a metropolitan area situated in the regional hinterland of another metropolitan area constitute a part of the regional hinterland of a larger metropolitan area region if the ratio of their population size is more than three.

**Rule 6) Separate hinterlands**

1. The NUTS3 region that is a part of two different regional hinterlands constitutes a part of the regional hinterland: a) of a larger metropolitan area region if the ratio of their population size is more than three b) of the neighbouring metropolitan area's hinterland c) of metropolitan area region situated in the same NUTS2 region.

The typology of NUTS3 regions based on these rules allows for identifying two main groups of regions: NUTS3 regions included in city-region analysis and other NUTS.

Table 1. Types of NUTS3 regions

| Abbreviation                                       | Code | Name  | Description   |
|--|------|---|---|
| <b>NUTS3 selected for the city-region analysis</b> |      |   |   |
| MA_REG   | 1.0  | Metropolitan area region                              | Region with LUZ with over 250 000 population and LUZ population > 70% NUTS3 population                            |
| MA_REG_PART  | 1.1  | Metropolitan area – part                              | Regions with LUZ that consists of more than one NUTS3   |
| MA_POLI  | 1.,2 | Polynuclear metropolitan areas region                 | Region with more than one MA_REG and LUZ's core cities within certain distance                                    |
| RH   | 2.0  | Regional hinterland                                   | NUTS3 neighbouring MA_REG or situated in NUTS2 within certain distance from MA_REG                                |
| RH_MA_REG  | 2.1  | Metropolitan area – part of regional hinterland       | Region with LUZ three times smaller than larger LUZ of neighbouring MA_REG  |
| RH_MA_REG < 70                                     | 2.2  | Metropolitan area – part of regional hinterland       | Region with LUZ three times smaller than larger LUZ of neighbouring MA_REG; LUZ population < 70% NUTS3 population |
| <b>Other NUTS3 regions</b>                         |      |   |   |
| MA_REG<70  | 3.0  | Metropolitan area – weak LUZ-NUTS3 correspondence     | Region with LUZ with over 250,000 population and LUZ population < 70% NUTS3 population                            |
| MA_SMALL   | 4.0  | Small urban area region                               | Region LUZ with less than 250 000 population  |
| RH_MA_SMALL  | 4.2  | Small urban area region – part of regional hinterland | Region LUZ with less than 250 000 population constitutes part of regional hinterland                              |
| NUTS3_IND  | 5.0  | Other regions without LUZs                            | Regions situated outside influence of MA_REG or a part of two separate regional hinterlands                       |

Source: prepared by the author.



## **ANNEX 2. CHARACTERISTICS OF METROPOLITAN MACROREGIONS**

Table 2 shows selected components from the profiles of the national settlement systems, highlighting in particular their specific nature related to LUZs as defined in the Urban Audit, as well as NUTS3 administrative divisions. In addition to that, the Table shows LUZs with a population over 250 000 which were excluded from the analysis of city-region relationships due to the following considerations:

- Non-fulfilment of the correspondence criterion (Rule 1);
- Being 'dominated' by larger urban centres located in the vicinity (Rule 5);
- Impossibility to delimit the regional hinterland due to the penetrating influence of the neighbouring urban centres or geographical barriers (Rule 6).

In particular, this applies to the relationship between metropolitan areas and their surroundings in the case of polynuclear metropolitan regions, which were singled out in the Netherlands, Belgium, central England and northern Spain. Secondly, it refers to LUZs with a large surface area as defined by the Urban Audit, which led to the setting of the extent of their impact quite broadly, on the basis of the adopted delimitation procedure (e.g. Berlin, Prague). On the other hand, such relationships may be distorted in the case of small LUZs (e.g. Bucharest, Porto and Lisbon). We tried to take these considerations into account while interpreting the results. For the case studies selected for detailed analysis, we attempted to make the research polygons more unified.

In conclusion (Tab. 3), of a total of 308 LUZs (including also Marseilles, Lille and Nice-Grasse) in the EU27, Norway and Switzerland, 126 (40%) were accepted for further analyses. These areas, however, were inhabited by nearly 80% of the overall LUZ population, while almost 40% of the population of the entire researched area were living in NUTS3 regions corresponding to these LUZs. Among them, 72 LUZs were predominantly monocentric in character, whereas 48 LUZs were parts of 11 polynuclear systems having at least a bipolar character (Tab. 4).

Table 2. Characteristics of the metropolitan macroregions sample in individual countries

| Country        | Number of selected macroregions | Characteristic features   | LUZ with more than 250 000 inhabitants (rejected) |                                      |  |
|----------------|---------------------------------|---|---|--------------------------------------|--|
|                |                                 |   | a) weak correspondence with NUTS3                 | b) dominated by larger Urban centers | c) difficulties in delimitation of regional hinterland |
| Austria        | 5                               | Relatively small LUZ of Vienna in comparison to other urban centres in the country. Potential transborder relations of Vienna.  | -   | -                                    | -  |
| Belgium        | 2                               | One dominant polynuclear metropolitan macroregion as a result of small distances between Brussels, Antwerp, Ghent and Charleroi.  | -   | -                                    | -  |
| Bulgaria       | 2                               | The capital city macroregion covers substantial part of the east part of the country.   | Plovdiv   | -                                    | -  |
| Cyprus         | 0                               | Geographical barriers as a result of location on the island (including division of the Cyprus).   | Nicosia   |                                      |  |
| Czech Republic | 1                               | Large surface area of Prague LUZ and as a result very large regional hinterland that consists of number of smaller LUZs regions Penetrating influence of urban centres situated in Silesia and Moravia. | Brno  | Pízeň                                | Ostrava  |

Table 2 – continued

| Country | Number of selected macroregions | Characteristic features   | LUZ with more than 250 000 inhabitants (rejected)   |  |  |
|---------|---------------------------------|---|---|--|--|
|         |                                 |   | a) weak correspondence with NUTS3   | b) dominated by larger Urban centers                     | c) difficulties in delimitation of regional hinterland |
| Denmark | 2                               | Penetrating influence of urban centres situated in Jutland. Potential transborder relations of Copenhagen. The role of geographical barriers e.g. Odense.   | -   | -  | Aalborg, Odense  |
| Estonia | 1                               | The capital city macroregion covers substantial part of the whole country.  | -   | -  | -  |
| Finland | 1                               | Helsinki macroregion covers substantial part of the country and the most densely populated areas.   | Tampere   | Turku  | -  |
| France  | 4                               | Significant number of LUZ rejected mainly as a result of weak correspondence with NUTS3 regions. Large metropolitan macroregion of Paris consists of number of LUZ regions. Penetrating influence of urban centres situated in Alsace, Lorraine and Provence. | Lille, Nice-Grasse, Marseilles, Metz, Nancy, Strasbourg, Dijon, Caen, Rennes, Nancy, Tours, Limoges | Amiens, Rouen, Orléans, Reims, Clermont-Férand, Grenoble | -  |

Table 2 – continued

| Country | Number of selected macroregions | Characteristic features  | LUZ with more than 250 000 inhabitants (rejected) |                                      |  |
|---------|---------------------------------|--|---|--------------------------------------|--|
|         |                                 |  | a) weak correspondence with NUTS3                 | b) dominated by larger Urban centers | c) difficulties in delimitation of regional hinterland |
| Germany | 18                              | Small size of NUTS3 regions lead to strong correspondence between LUZ and NUTS3 regions. This allows for delineation of macroregions even for small urban centres (like Göttingen). Berlin LUZ has a very large surface area as a result of administrative division (LAU2). Penetrating influence of urban centres is observed very often. The macroregion of Hamburg consists of former East Germany territories. |   | Kiel, Schwerin, Karlsruhe            | Koblenz  |
| Greece  | 2                               | Athena macroregion covers large number of islands.   | -   | -                                    | -  |
| Hungary | 1                               | The capital city macroregion covers substantial part of the whole country. Penetrating influence of urban centres situated in the east part of the country.  | Miskolc, Debrecen                                 | -                                    | -  |

Table 2 – continued

| Country    | Number of selected macroregions | Characteristic features  | LUZ with more than 250 000 inhabitants (rejected) |                                      |  |
|------------|---------------------------------|--|---|--------------------------------------|--|
|            |                                 |  | a) weak correspondence with NUTS3                 | b) dominated by larger Urban centers | c) difficulties in delimitation of regional hinterland |
| Ireland    | 1                               | Artificial boundaries of Dublin macroregion as result of NUTS3 division of the country.  | -   | -                                    | -  |
| Italy      | 8                               | The number of polynuclear metropolitan macroregions: Bologna-Modena, Venezia-Padova, Napoli-Caserta-Salerno. The macroregion of Genoa has specific shape as result of geographical barriers. Penetrating influence of urban centres situated in the north and south part of the country. | Verona, Bari, Pescara                             | Brescia                              | Taranto  |
| Latvia     | 1                               | The capital city macroregion covers substantial part of the whole country.   | -   | -                                    | -  |
| Lithuania  | 1                               | Penetrating influence of LUZs Vilnius and Kaunas that have also very large surface areas.  | Kaunas  | -                                    | -  |
| Luxembourg | 1                               | Potential transborder interactions.  | -   | -                                    | Luxembourg   |

Table 2 – continued

| Country     | Number of selected macroregions | Characteristic features  | LUZ with more than 250 000 inhabitants (rejected)        |                                      |  |
|-------------|---------------------------------|--|--|--------------------------------------|--|
|             |                                 |  | a) weak correspondence with NUTS3                        | b) dominated by larger Urban centers | c) difficulties in delimitation of regional hinterland |
| Malta       | 0                               | Geographical barriers as a result of location on the island.   | -  | -                                    | -  |
| Netherlands | 2                               | One dominant polynuclear metropolitan macroregion as a result of small distances between Randstad Holland urban centres as well as Breda, Tilburg, Eindhoven, Arnhem and Nijmegen. Relative importance of Groningen situated in the north part of the country. | Twente   | -                                    | -  |
| Norway      | 2                               | Large surface area of NUTS3 regions and as a result large macroregions of Oslo and Bergen.   | Stavanger  | -                                    | -  |
| Poland      | 6                               | Polycentric settlement system with large number of smaller cities (but usually weak correspondence between LUZ and NUTS3). Penetrating influence of urban centres. LUZs of Szczecin, Gdańsk and Łódź have very large surface areas.                            | Kraków, Poznań, Olsztyn, Opole, Kielce, Bydgoszcz, Toruń | Częstochowa, Radom                   | -  |

Table 2 – continued

| Country  | Number of selected macroregions | Characteristic features  | LUZ with more than 250 000 inhabitants (rejected)       |                                      |  |
|----------|---------------------------------|--|---|--------------------------------------|--|
|          |                                 |  | a) weak correspondence with NUTS3                       | b) dominated by larger Urban centers | c) difficulties in delimitation of regional hinterland |
| Portugal | 2                               | Small LUZs of Lisbon and Porto.  | -   | -                                    | -  |
| Romania  | 1                               | Small LUZs and as a result weak correspondence between LUZ and NUTS3. LUZ of Bucharest has small surface area.   | Cluj-Napoca, Craiova, Timișoara                         | -                                    | -  |
| Slovakia | 1                               | Potential transborder relations of Bratislava. Penetrating influence of smaller urban centres.   | Košice  | -                                    | -  |
| Slovenia | 1                               | The capital city macroregion covers substantial part of the whole country.   | Maribor   | -                                    | -  |
| Spain    | 6                               | Macroregion of Madrid is very large. Penetrating influence of urban centres in case of Andalusia and in the macroregion of Valencia. LUZs of Zaragoza and Seville have very large surface areas. Polynuclear metropolitan macroregion in Basque Country and Cantabria. | Badajoz, Oviedo, Gijón, Vigo, Córdoba, Málaga, Pamplona | Valladolid, Alicante, Murcia         | -  |
| Sweden   | 1                               | Large surface area of NUTS3 regions. Potential transborder relations of Malmö.   | Gothenburg, Malmö                                       |                                      |  |



Table 2 – continued

| Country        | Number of selected macroregions | Characteristic features   | LUZ with more than 250 000 inhabitants (rejected) |   |  |
|----------------|---------------------------------|---|---|---|--|
|                |                                 |   | a) weak correspondence with NUTS3                 | b) dominated by larger Urban centers                      | c) difficulties in delimitation of regional hinterland |
| Sweden         | 1                               | Large surface area of NUTS3 regions. Potential transborder relations of Malmö.  | Gothenburg, Malmö                                 |   |  |
| Switzerland    | 1                               | Potential transborder interactions.   | Bern  | -   | Geneva, Lausanne.                                      |
| United Kingdom | 10                              | Very large polynuclear metropolitan macroregion of Central England. LUZs of Aberdeen, Kingston-upon-Hull, Newcastle upon Tyne have very large surface areas. Penetrating influence of urban centres in case of Glasgow-Edinburgh and Bristol-Cardiff. | Exeter  | Cambridge, Portsmouth, Stoke-on-Trent, Worcester, Wrexham |  |

Source: prepared by the author.

Table 3. Population in selected NUTS3 types

| Type of LUZ/NUTS correspondence   | No  | % of total | Population LUZ | % of total | Population NUTS3 | % of total | Population ratio LUZ / NUTS3 |
|---|-----|------------|----------------|------------|------------------|------------|------------------------------|
| Metropolitan areas regions (fitted)                                       | 126 | 40.9       | 172 177 948    | 77.3       | 188 560 444      | 37.5       | 91.3                         |
| – single NUTS   | 36  | 11.7       | 50 352 896     | 22.6       | 57 538 575       | 11.4       | 87.5                         |
| – combination of NUTS   | 36  | 11.7       | 73 797 740     | 33.1       | 78 408 726       | 15.6       | 94.1                         |
| – polynuclear areas   | 48  | 15.6       | 48 027 312     | 21.6       | 52 613 143       | 10.5       | 91.3                         |
| Metropolitan areas (unfitted)   | 63  | 20.5       | 30 921 373     | 13.9       | 59 011 649       | 11.7       | 52.4                         |
| Metropolitan areas subordinated within metropolitan macroregions          | 21  | 6.8        | 8 499 365      | 3.8        | 14 383 432       | 2.9        | 59.1                         |
| Urban areas (LUZ < 250 000) subordinated within metropolitan macroregions | 33  | 10.7       | 5 089 015      | 2.3        | 15 216 131       | 3.0        | 33.4                         |
| Urban areas (LUZ < 250 000)   | 65  | 21.1       | 11 164 121     | 5.0        | 27 082 682       | 5.4        | 41.2                         |
| Other NUTS3 regions (848)   | n/a | n/a        | n/a            | n/a        | 198 834 137      | 39.5       | n/a                          |
| Total   | 308 | 100.0      | 222 762 807    | 100.0      | 503 088 475      | 100.0      | 44.3                         |

Source: prepared by the author.

Table 4. Characteristics of polynuclear metropolitan regions

| Polynuclear metropolitan areas region | Number of LUZ | Names   | Population of metropolitan areas regions (in million) | Population of regional hinterland |
|---------------------------------------|---------------|---|---|-----------------------------------|
| Central England                       | 10            | Wolverhampton<br>Leicester<br>Sheffield<br>Wrexham<br>Manchester<br>Liverpool<br>Bradford-Leeds<br>Birmingham<br>Nottingham<br>Coventry | 12.0  | 8.8                               |
| Rhine-Ruhr                            | 6             | Bonn<br>Cologne<br>Düsseldorf<br>Mönchengladbach<br>Wuppertal<br>Ruhr   | 10.2  | 6.2                               |
| Netherlands                           | 9             | Utrecht<br>Breda<br>Eindhoven<br>Tilburg<br>Arnhem/<br>Nijmegen<br>Rotterdam<br>s' Gravenhage<br>Amsterdam                              | 7.1   | 5.0                               |
| Frankfurt am Main                     | 4             | Mainz<br>Darmstadt<br>Wiesbaden<br>Frankfurt am Main  | 3.8   | 3.0                               |
| Central Belgium                       | 4             | Ghent<br>Charleroi<br>Antwerp<br>Brussels   | 3.5   | 3.8                               |
| Munich                                | 2             | Munich<br>Augsburg  | 3.2   | 2.9                               |
| Naples                                | 3             | Salerno<br>Caserta<br>Naples  | 3.1   | 2.1                               |
| Bilbao-Santander                      | 3             | Santander<br>Bilbao<br>Vitoria-Gasteiz  | 1.5   | 1.2                               |

Table 4 – continued

| <b>Polynuclear metropolitan areas region</b> | <b>Number of LUZ</b> | <b>Names</b>                  | <b>Population of metropolitan areas regions (in million)</b> | <b>Population of regional hinterland</b> |
|--|----------------------|-------------------------------|--|--|
| Leipzig-Halle                                | 2                    | Leipzig<br>Halle an der Saale | 1.4  | 1.7                                      |
| Bologna-Modena                               | 2                    | Modena<br>Bologna             | 1.1  | 2.0                                      |
| Padua-Venice                                 | 2                    | Padua<br>Venice               | 1.2  | 2.2                                      |
| Geneva-Lausanne                              | 2                    | Lausanne<br>Geneva            | 0.8  | –  |

Source: prepared by the author.

At the same time, the barrier identified in the case of 63 LUZs (20% of their aggregate number) was their poor fit with NUTS3 regions. This meant that on average slightly over 50% of the NUTS3 population where a given LUZ was located inhabited an urban area. It should be noted that as a rule these were smaller cities' LUZs. This is proved by the fact that they had a lower than 15% share in the population of all the urban areas defined in the Urban Audit. Another important group was made up of LUZs (regardless of their population) which were incorporated in the regional hinterlands of much bigger urban centres. Although there were as many as 54 of such LUZs, they had a minor share in the aggregate population (6%). As insignificant in terms of the population were smaller urban areas with a population under 250 000, which were also poorly fitted with the NUTS3 administrative level (on average, only 40% population were living in a given urban area).

### ANNEX 3. ACCESSIBILITY OF STATISTICAL DATA AT NUTS3 LEVEL

| Country        | R&D employment<br>(2002, 2005)                                 | Population with higher<br>education (2002) | Tourist arrivals<br>(2002, 2005) |
|----------------|--|--|----------------------------------|
| Austria        | —  | +  | +                                |
| Belgium        | —  | —  | —                                |
| Bulgaria       | —  | +  | +                                |
| Czech Republic | +  | +  | +                                |
| Denmark        | —  | —  | —                                |
| Estonia        | —  | +  | +                                |
| Finland        | +  | +  | +                                |
| France         | —  | +  | —                                |
| Germany        | —  | —  | —                                |
| Greece         | —  | —  | —                                |
| Hungary        | +  | +  | +                                |
| Ireland        | —  | +  | —                                |
| Italy          | —  | —  | —                                |
| Latvia         | —  | +  | +                                |
| Lithuania      | —  | +  | +                                |
| Netherlands    | —  | +  | —                                |
| Norway         | —  | —  | —                                |
| Poland         | +  | +  | +                                |
| Portugal       | —  | +  | —                                |
| Romania        | +  | +  | +                                |
| Slovakia       | +  | +  | +                                |
| Slovenia       | +  | +  | +                                |
| Spain          | —  | +  | —                                |
| Sweden         | —  | +  | —                                |
| Switzerland    | —  | +  | —                                |
| United Kingdom | —  | +  | —                                |
| Luxemburg      | Not relevant for the metropolis-hinterland relationships study |  |                                  |
| Cyprus         |  |  |                                  |
| Iceland        |  |  |                                  |
| Malta          |  |  |                                  |

+ available

— not available

#### ANNEX 4. PRINCIPAL COMPONENTS OF DIFFERENTIATION OF METROPOLITAN AREAS (VARIMAX ROTATION)

| Variables   | Components       |                        |                        |                      |
|---|------------------|------------------------|------------------------|----------------------|
|   | 'Modern economy' | 'Population potential' | 'National growth pole' | 'Weak suburban zone' |
| Principal component value                                 | 4.6              | 2.8                    | 2.2                    | 2.2                  |
| <b>Share of variance (%)</b>                              | 25.5             | 15.8                   | 12.2                   | 12.2                 |
| Population  | 0.00             | <b>0.75</b>            | 0.07                   | -0.35                |
| Density of population (people/sq km)                      | 0.10             | 0.53                   | 0.22                   | -0.43                |
| GDP per capita (EUR)                                      | <b>0.89</b>      | 0.06                   | -0.09                  | -0.12                |
| GDP per capita (respective country = 100)                 | 0.16             | 0.16                   | <b>0.84</b>            | 0.20                 |
| Population of metropolitan area                           | -0.04            | <b>0.81</b>            | 0.10                   | 0.04                 |
| Share of metropolitan city in total population (%)        | -0.13            | 0.11                   | 0.10                   | 0.56                 |
| GVA in agriculture (%)                                    | -0.57            | -0.29                  | -0.04                  | -0.09                |
| GVA in industry (%)                                       | -0.03            | <b>-0.71</b>           | 0.28                   | -0.28                |
| Labour productivity in agriculture (EUR)                  | 0.42             | 0.14                   | -0.10                  | <b>-0.77</b>         |
| Labour productivity in industry (EUR)                     | <b>0.74</b>      | -0.10                  | -0.10                  | -0.29                |
| Labour productivity in agriculture (% total productivity) | -0.12            | 0.11                   | -0.03                  | <b>-0.74</b>         |
| Labour productivity in services (% total productivity)    | -0.46            | 0.18                   | 0.23                   | 0.22                 |
| GVA simple services (%)                                   | <b>-0.73</b>     | 0.07                   | 0.41                   | 0.23                 |
| GVA specialised services (%)                              | <b>0.62</b>      | <b>0.66</b>            | 0.01                   | 0.02                 |
| GVA public services (%)                                   | 0.17             | 0.07                   | <b>-0.88</b>           | 0.04                 |
| Share of specialised services in service sector (%)       | <b>0.74</b>      | 0.44                   | 0.12                   | -0.10                |
| Employees per 100 inhabitants                             | <b>0.67</b>      | -0.01                  | 0.41                   | 0.33                 |
| Unemployment rate (%)                                     | <b>-0.73</b>     | 0.02                   | -0.39                  | 0.01                 |

Source: prepared by author.

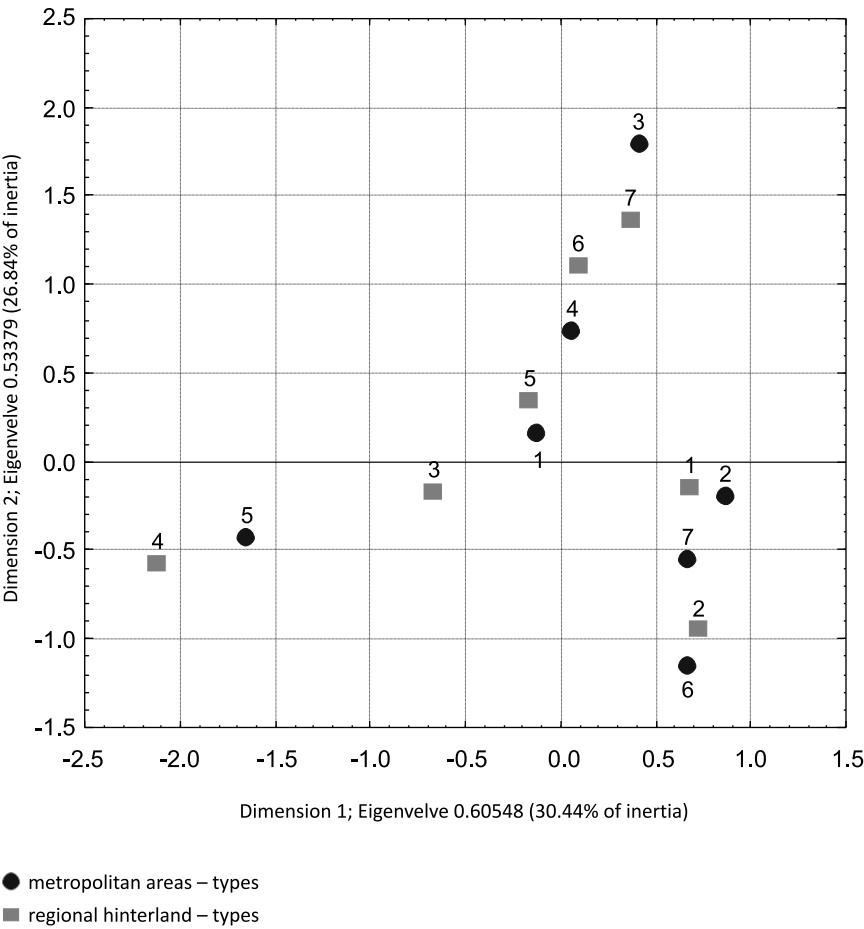
## ANNEX 5. PRINCIPAL COMPONENTS OF DIFFERENTIATION OF REGIONAL HINTERLANDS (VARIMAX ROTATION)

| Variables   | Components       |                           |                        |                      |
|---|------------------|---------------------------|------------------------|----------------------|
|   | 'Modern economy' | 'Developed labour market' | 'National growth pole' | 'Weak suburban zone' |
| <b>Principal component value</b>                          | 3.8              | 3.0                       | 2.6                    | 1.9                  |
| <b>Share of variance (%)</b>                              | 19.9             | 16.0                      | 13.8                   | 10.1                 |
| Population  | 0.10             | 0.15                      | <b>0.81</b>            | -0.06                |
| Density of population (person/sq km)                      | 0.34             | 0.23                      | <b>0.61</b>            | -0.15                |
| GDP per capita (EUR)                                      | <b>0.78</b>      | 0.43                      | 0.06                   | -0.14                |
| GDP per capita (respective country = 100)                 | 0.00             | 0.59                      | 0.30                   | 0.40                 |
| Population of the largest city                            | 0.06             | 0.06                      | <b>0.84</b>            | -0.16                |
| GVA in agriculture (%)                                    | <b>-0.67</b>     | -0.37                     | -0.08                  | 0.06                 |
| GVA in industry (%)                                       | -0.46            | 0.59                      | 0.04                   | -0.14                |
| GVA in services (%)                                       | <b>0.92</b>      | -0.22                     | 0.04                   | 0.07                 |
| Labour productivity in agriculture (EUR)                  | <b>0.70</b>      | 0.04                      | 0.45                   | -0.01                |
| Labour productivity in agriculture (% total productivity) | 0.16             | -0.30                     | 0.54                   | -0.46                |
| Labour productivity in industry (% total productivity)    | -0.03            | 0.12                      | -0.14                  | <b>0.69</b>          |
| Labour productivity in services (% total productivity)    | -0.28            | -0.23                     | 0.06                   | <b>0.70</b>          |
| GVA simple services (%)                                   | 0.03             | -0.01                     | -0.18                  | 0.59                 |
| GVA specialised services (%)                              | <b>0.68</b>      | 0.08                      | 0.42                   | -0.20                |
| GVA public services (%)                                   | 0.58             | -0.57                     | -0.11                  | -0.25                |
| Employees per 100 inhabitants                             | 0.21             | <b>0.75</b>               | -0.03                  | -0.04                |
| Activity rate (%)   | 0.01             | 0.56                      | 0.08                   | -0.12                |
| Unemployment rate (%)                                     | -0.22            | <b>-0.72</b>              | -0.01                  | 0.01                 |

Source: prepared by author.



**ANNEX 6. CORRESPONDENCE ANALYSIS  
OF METROPOLITAN AREAS AND REGIONAL  
HINTERLANDS**



## ANNEX 7. TYPOLOGY OF METROPOLITAN MACROREGIONS – SELECTION OF CASE STUDIES

| Typology<br>of macroregions               |          |                        | GDP per capita MA/RH ratio – change (1995-2004)   |   |   |                           |   |                            |
|---|----------|------------------------|---|---|---|---------------------------|---|----------------------------|
|   |          |                        | Growing   |   | Stable                                      |                           | Declining   |                            |
|   |          |                        | RH good<br>performance                            | RH weak<br>performance  | RH good<br>performance                      | RH weak<br>performance    | RH good<br>performance  | RH weak<br>performance     |
| GDP per capita MA/RH ratio – level (1995) | High     | MA good<br>performance | Budapest<br><b>Warsaw</b><br>Bucharest            | Talinn<br>Madrid<br><b>Stockholm</b><br>Ljubljana<br>Bratislava<br>Sofia<br>Edinburgh<br>Hamburg<br>Copenhagen<br>Paris   | Regensburg<br>Munich                        |                           | Graz<br><b>Toulouse</b><br>Lisbon   |                            |
|   |          | MA weak<br>performance |   |   | Linz  | Oslo<br>Aberdeen          | Dublin<br>Groningen<br>Porto<br>Central<br>Belgium<br>Frankfurt             | Vienna                     |
|   | Moderate | MA good<br>performance | Lyon<br>Netherlands<br>Nuremberg<br>Roma          | Helsinki<br>Vilnius<br>Gdańsk<br>Prague<br>Dresden  | Bordeaux<br>Milan                           |                           |   |                            |
|   |          | MA weak<br>performance |   |   | Salzburg                                    |                           | Szczecin<br>Saarbrücken<br>Leipzig/Halle                                    | Berlin<br>Hanover          |
|   | Low      | MA good<br>performance | London<br>Bristol<br>Florence<br>Padua/<br>Venice | Wrocław<br>Belfast<br>Varna<br>Athens<br>Zürich   | Magdenburg<br>Erfurt<br>Stuttgart<br>Aarhus |                           | Freiburg  |                            |
|   |          | MA weak<br>performance |   | Central<br>England<br>Bilbao/<br>Santander<br>Zaragoza<br>Thessaloniki<br>Cardiff<br>Newcastle<br>upon<br>Tyne<br>Liege<br>Genoa<br>Glasgow<br>Kingston-<br>upon-Hull | Valencia<br>Łódź<br>Bremen<br>Ruhr-Rheine   | Turin<br>Bergen<br>Naples | <b>Barcelona</b><br>Seville<br>Innsbruck<br>Bielefeld<br>Bologna/<br>Modena | Katowice-Żory<br>Göttingen |

## **ANNEX 8. STRUCTURE OF IN-DEPTH INTERVIEW**

### **PART 1: METROPOLITAN REGION AND ITS CONSTITUENTS**

1. What is the spatial range of the metropolitan centre's (city's) influence on the following aspects in its surrounding area?
2. Is there a commonly accepted delimitation of the city's metropolitan area and what are its criteria?
3. Does the dominant city have an administrative or statistical counterpart reflecting the area of its influences (metropolitan region)?
4. Does the existing administrative division on the regional level (NUTS2) and subregional level (NUTS3) correspond to the city's influence areas, i.e.: a) the metropolitan area, b) the metropolitan macroregion?

### **PART 2: RELATIONS BETWEEN THE METROPOLIS AND THE REGION**

1. What are the most important examples of links between the metropolis and its surrounding region?
2. Are there large differences between the metropolis and the remaining part of the metropolitan region, of the following type: a. economic, b. social?
3. Does the metropolis and its surrounding region become homogenous in respect of: a) economic structure b) social structure?
4. Are there examples of cooperation / competition of public administration within the metropolitan region? Which one dominates?

### **PART 3: FACTORS DETERMINING ECONOMIC RELATIONS BETWEEN THE METROPOLIS AND THE REGION**

1. What are the most important factors determining the economic links between the metropolis and its surrounding region?
2. Are the factors mutually related?

### **PART 4: IMPORTANCE OF THE LINKS FOR METROPOLITAN REGION'S DEVELOPMENT**

1. What are the most important examples of the positive influence of the metropolis on its surrounding region?
2. What are the most important examples of the negative impact of the metropolis on its surrounding region?
3. Do the metropolis and its surrounding region mutually need each other?
  - a. Does the metropolis need the region?
  - b. Does the region need metropolis?

### **PART 5: STRENGTHS AND WEAKNESSES OF THE METROPOLIS AND THE REGION**

1. What are the most important strengths and weaknesses of the metropolis (the metropolitan area)?
2. What are the most important strengths and weaknesses of the region surrounding the metropolis?

3. Is it possible to show a relationship between strengths and weaknesses of the metropolitan area and the metropolitan region?

**PART 6: ACTIVITIES OF THE PUBLIC ADMINISTRATION**

1. Are the actions of various actors coordinated in:
  - a) the metropolitan area
  - b) the metropolitan macroregion?
2. Do the actions of public authorities take into account intraregional differences?
3. What actions are taken in order to increase the positive influence of the metropolitan centre on its surrounding region?
4. What actions are taken in order to limit the negative impact of the metropolitan area on its surrounding region?

**PART 7: DEVELOPMENTAL PERSPECTIVES**

1. Will the differences between the metropolis and the region increase or diminish?
2. What is going to be the main cause of this process?

## SECTION 1 Location

## SECTION 2 Metropolitan centre's influence

[illegible]

[illegible][illegible]

|   |                           |                          |                          |                          |                                    |                          |                          |                          |                          |
|---|---------------------------|--------------------------|--------------------------|--------------------------|------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| – locate their trade offices in the council area  | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| – locate their services outlets in the council area   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| – locate its warehouses or similar facilities in the council area   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>9. Please indicate whether there are following facilities within your council area and whether these have had a positive, neutral or negative impact on the development of your council area</b> | <b>Please tick if yes</b> | <b>Number</b>            |                          |                          | <b>Impact on your council area</b> |                          |                          |                          |                          |
|   |                           | Large                    | Average                  | Small                    | Positive                           | Neutral                  | Negative                 | Difficult to say         |                          |
| – complexes of multi-family homes inhabited by the Glaswegians*   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – fenced complexes of single-family homes inhabited by Glaswegians*   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – single-family homes inhabited by Glaswegians*   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – recreational houses belonging to Glaswegians  | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – allotments belonging to Glaswegians   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – accommodation (conference) facilities offering services to inhabitants of Glasgow and Glasgow-based companies   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – agrotourist farms   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – private nursing homes for old-age pensioners from Glasgow   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – distribution centres handling Glasgow-based enterprises   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| – disposal sites receiving waste from Glasgow   | <input type="checkbox"/>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |

\* The term refers to inhabitants of Glasgow who have moved to the municipality in the last five years

## SECTION 3 Cooperation

| 10. Please indicated if the council cooperates with the following organisations and where appropriate rate the quality of this cooperation | Please tick if yes       | Assessment of the cooperation |                          |                          |                          |                          |
|--|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|  |                          | Very good                     | Good                     | Average                  | Bad                      | Very bad                 |
| Community councils   | <input type="checkbox"/> | <input type="checkbox"/>      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Local council  | <input type="checkbox"/> | <input type="checkbox"/>      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Scottish government  | <input type="checkbox"/> | <input type="checkbox"/>      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Glasgow City Council   | <input type="checkbox"/> | <input type="checkbox"/>      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| 11. Please indicate the areas in which your council currently cooperates or plans to cooperate with Glasgow City Council from the list below | Currently                | In the future            | Difficult to say         |
|--|--------------------------|--------------------------|--------------------------|
| Transport infrastructure   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Public transport   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Environmental protection   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Waste management   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Spatial management plans   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other (what?) .....  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



## ANNEX 10. QUESTIONNAIRE FOR ENTERPRISES

### SECTION 1. Basic information

|  |   |                              |   |                              |                          |
|--|---|------------------------------|---|------------------------------|--------------------------|
| <b>1. Type of the main activity of the enterprise</b>          | Manufacturing   | Industry (or NACE 2004 code) | Services  | Industry (or NACE 2004 code) |                          |
|  | <input type="checkbox"/>  | .....                        | <input type="checkbox"/>  | .....                        |                          |
| <b>2. Location of the enterprise (see the map)</b>             | Glasgow City within administrative borders                              | <input type="checkbox"/>     | <b>2a. Please estimate a distance to the centre of Glasgow (km)</b> |                              |                          |
|  | Glasgow metropolitan area (ie Lanarkshire, Renfrewshire, Durbantonsire) | <input type="checkbox"/>     |   |                              |                          |
| <b>3. What is the number of employees in the enterprise?</b>   | 1-9   | <input type="checkbox"/>     | <b>4. For how many years is the enterprise economically active?</b> | up to 2 years                | <input type="checkbox"/> |
|  | 10-24   | <input type="checkbox"/>     |   | 3-5 years                    | <input type="checkbox"/> |
|  | 25-49   | <input type="checkbox"/>     |   | 6-10 years                   | <input type="checkbox"/> |
|  | 50-249  | <input type="checkbox"/>     |   | 11-20 years                  | <input type="checkbox"/> |
|  | 250 and over  | <input type="checkbox"/>     |   | 20 and over                  | <input type="checkbox"/> |
| <b>5. Is there foreign capital invested in the enterprise?</b> |   |                              | yes   | <input type="checkbox"/>     |                          |
|  |   |                              | no  | <input type="checkbox"/>     |                          |

## SECTION 2. Spatial relations

[illegible]

|   |                          |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| location of basic services providers (e.g. cleaning, security services, etc.)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of higher-order services providers (e.g. advertising, accountancy, consulting, etc.)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of consumers / clients   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of competitors   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| staff recruitment area  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| sources of investment capital   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| sources of information on innovations   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>10. What changes in the share (%) of the metropolitan region (ie. South Western Scotland and Southern part of Highlands and Islands except Glasgow Metropolitan Area) have occurred in the last three years regarding:</b> | No relations             | Share increase           | No change                | Share decline            | Difficult to say         |
| location of providers of goods  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of basic services providers (e.g. cleaning, security services, etc.)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

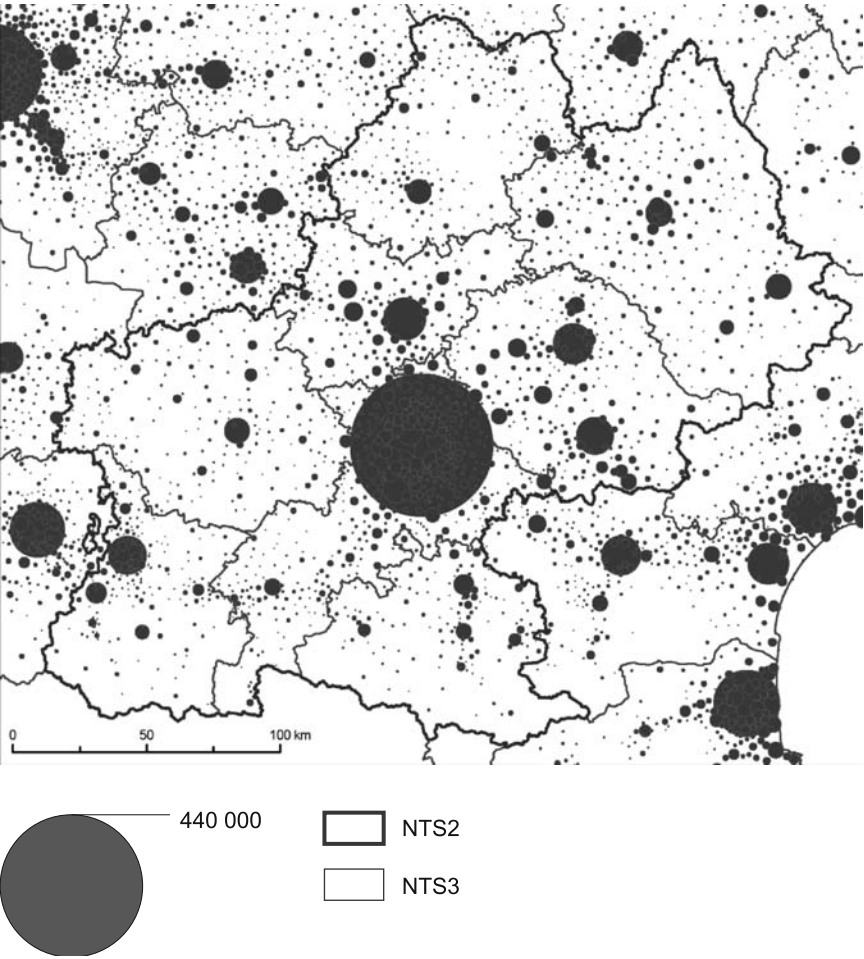
|   |                          |                          |                          |                          |                          |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| location of higher-order services providers (e.g. advertising, accountancy, consulting, etc.)                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of consumers / clients   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of competitors   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| staff recruitment area  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| sources of investment capital   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| sources of information on innovations   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>10a. What changes in the share (%) of foreign markets have occurred in the last three years regarding:</b> | No relations             | Share increase           | No change                | Share decline            | Difficult to say         |
| location of providers of goods  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of basic services providers (e.g. cleaning, security services, etc.)                                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of higher-order services providers (e.g. advertising, accountancy, consulting, etc.)                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of consumers / clients   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| location of competitors   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| staff recruitment area  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| sources of investment capital   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |



## SECTION 4. Innovativeness

[illegible]

**ANNEX 11. SETTLEMENT STRUCTURE  
AND CHANGE IN POPULATION NUMBER  
IN ANALYSED METROPOLITAN MACROREGIONS**



**Figure 1a.** Midi-Pyrénées – population 2006

Source: prepared by the author based on INSEE data.

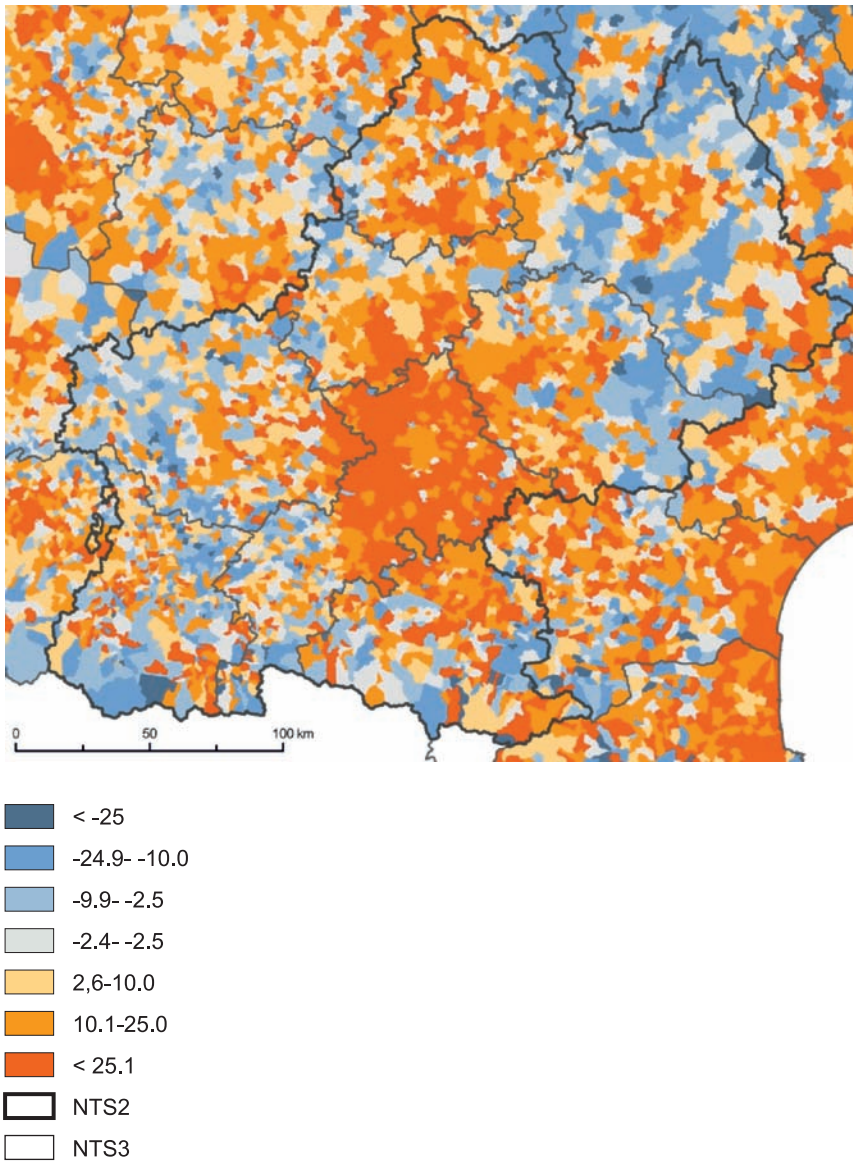


Figure 1b. Midi-Pyrénées – population change in % (1990-2006)

Source: prepared by the author based on INSEE data.



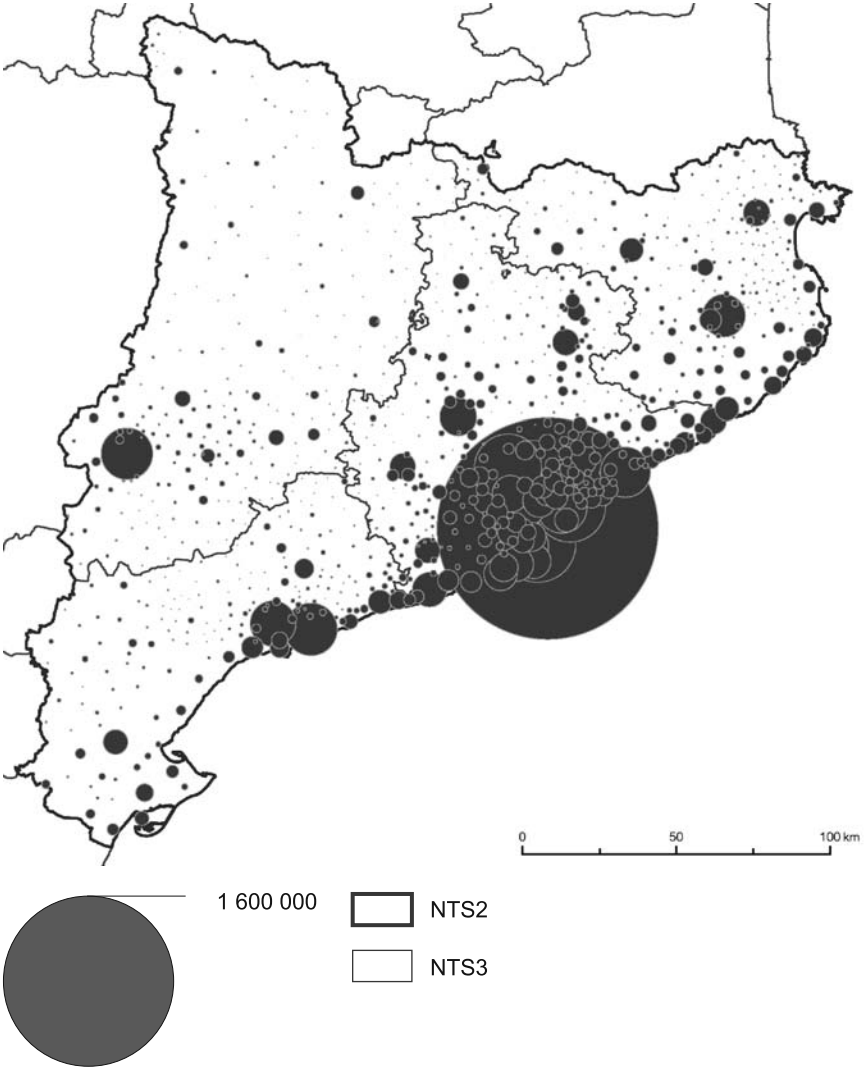


Figure 2a. Catalonia – population 2006  
Source: prepared by the author based on INE data.

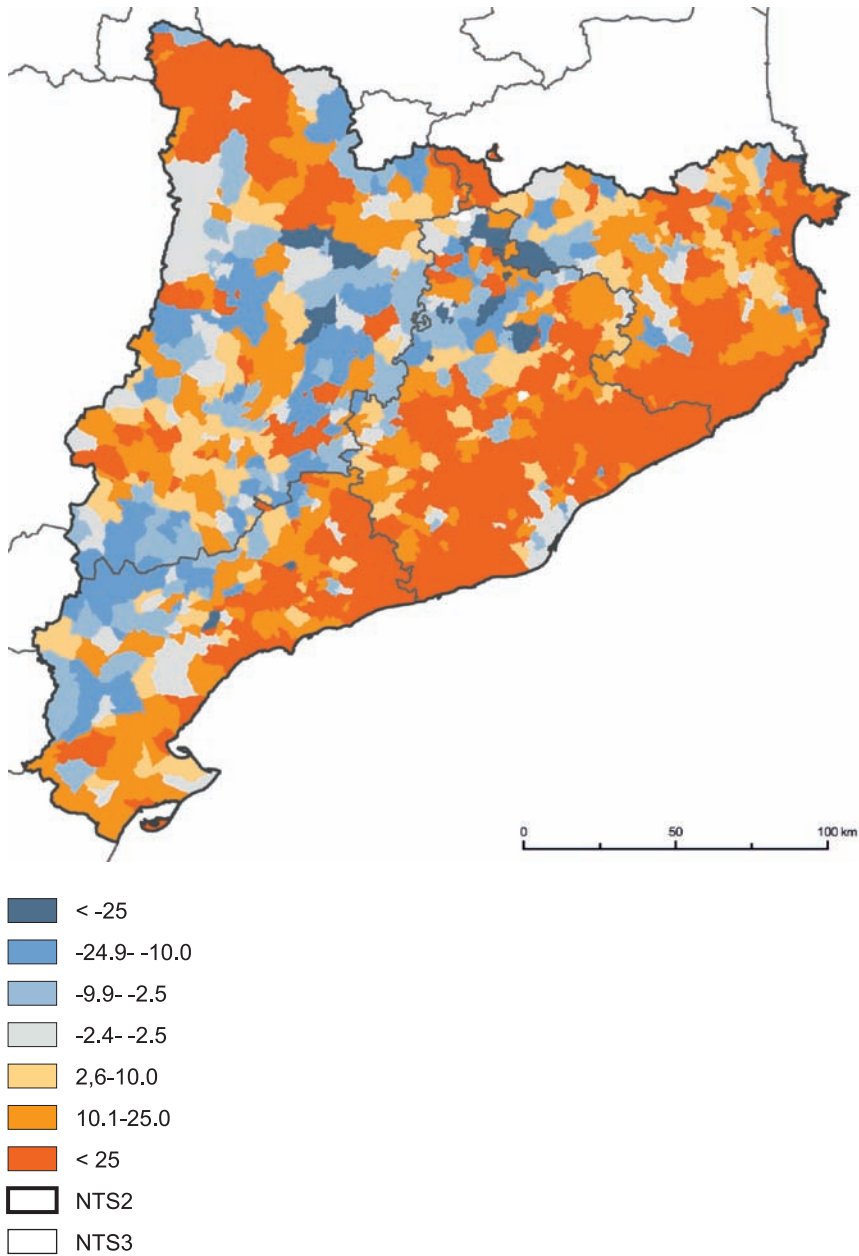


Figure 2b. Catalonia – population change in % (1991-2006)

Source: prepared by Adam Płoszaj based on INE data.

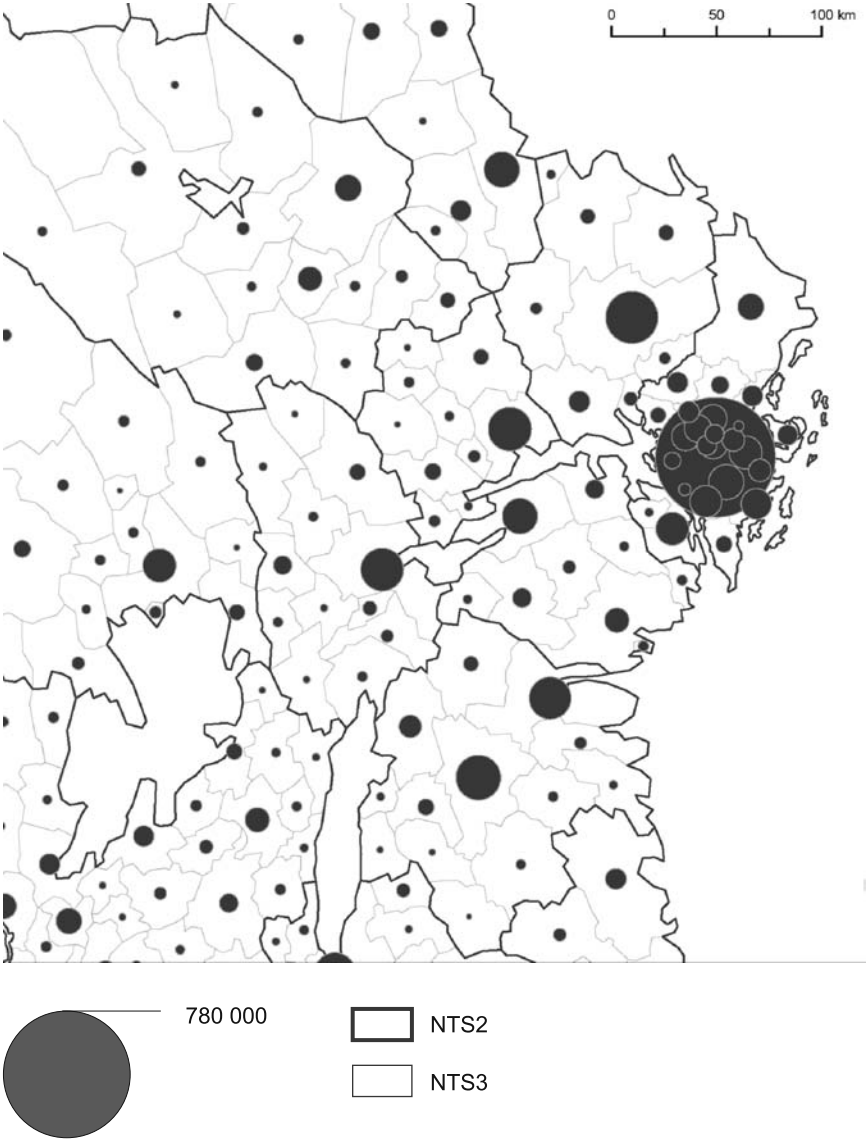


Figure 3a. Mälardalen region – population 2006

Source: prepared by the author based on SCB data.

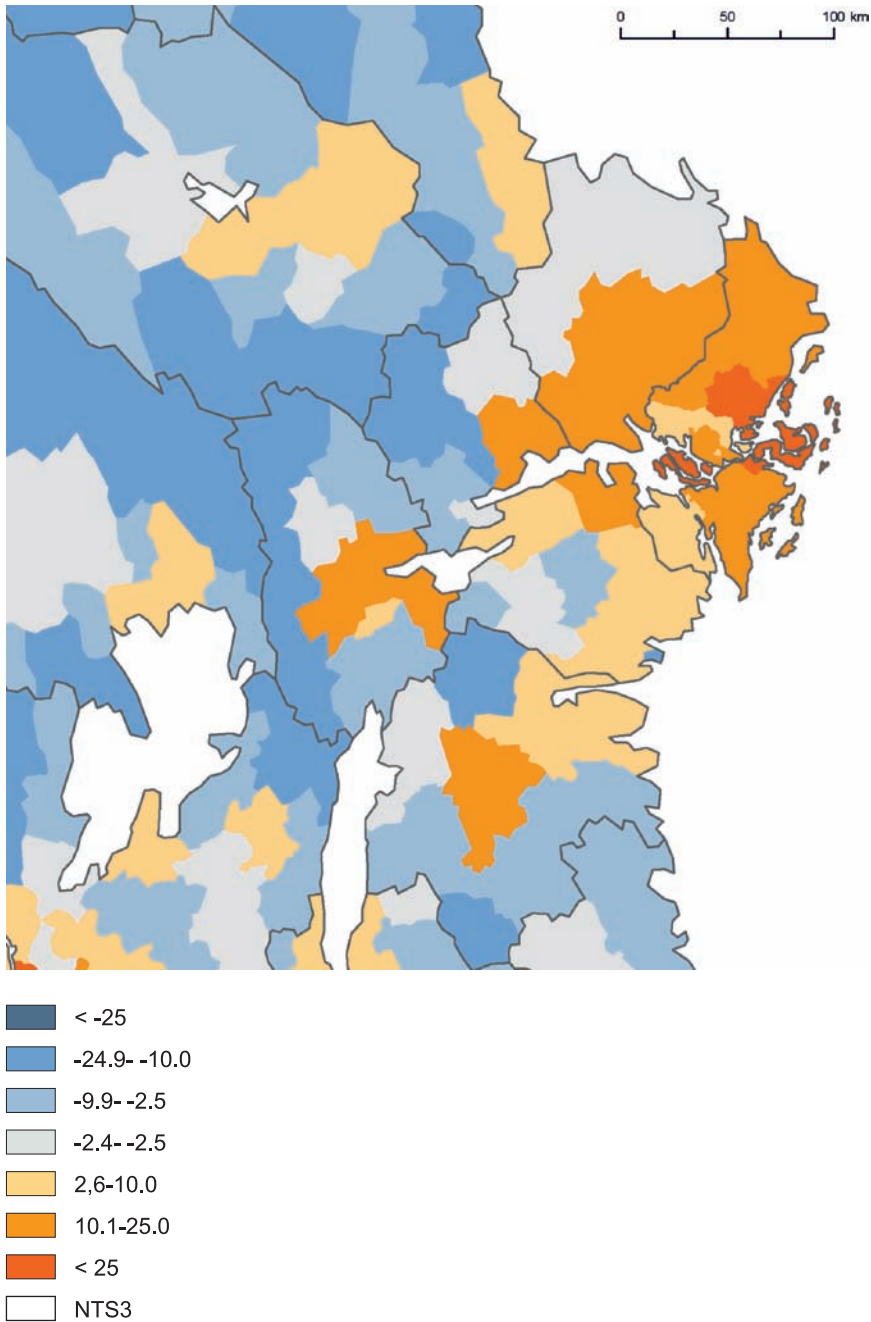


Figure 3b. Mälaren region – population change in % (1990-2006)

Source: prepared by the author based on SCB data.

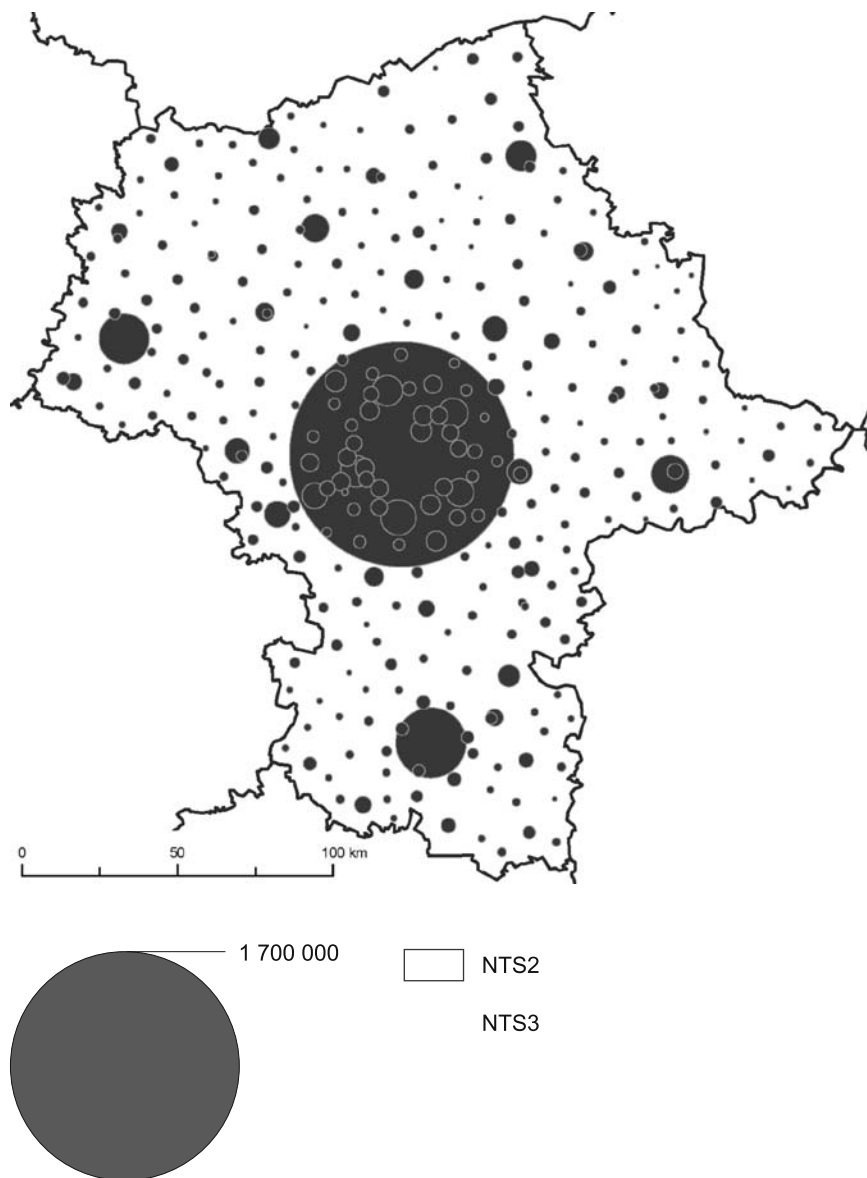


Figure 4a. Mazowieckie voivodship – population 2008

Source: prepared by the author based on GUS data.

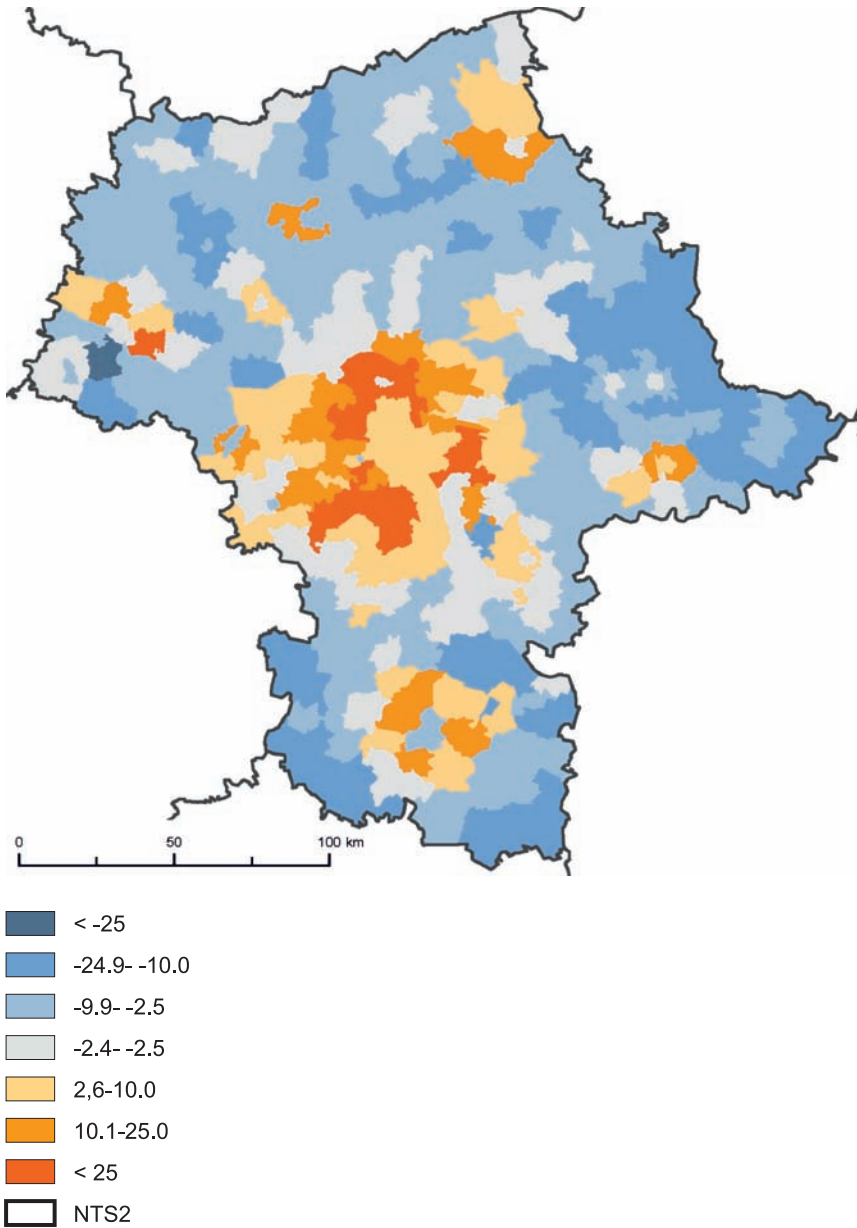


Figure 4b. Mazowieckie voivodship – population change in % (1995-2008)

Source: prepared by the author based on SCB data.

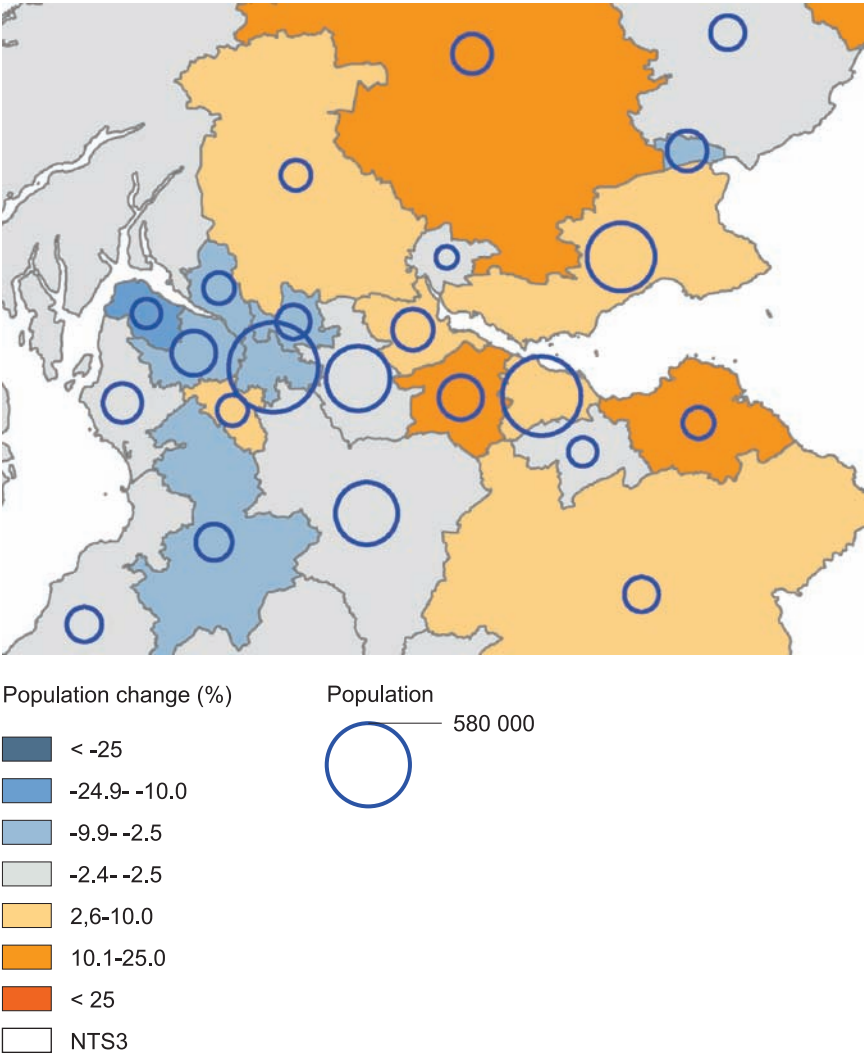


Figure 5a. West Scotland – population 2006 and population change in % (1990-2006)

Source: prepared by the author based on GROS data.



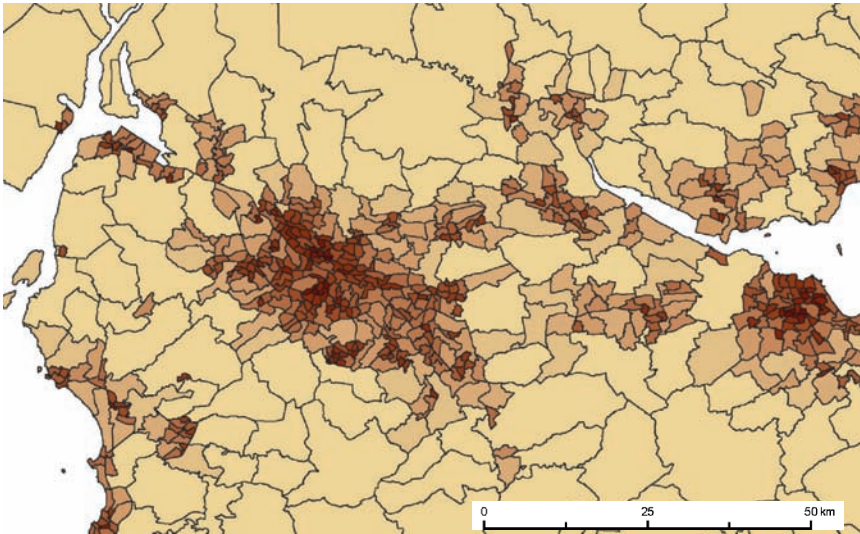


Figure 5b. Glasgow Metropolitan Region – population density 2001

Source: prepared by the author based on GROS data.



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