Development of metropolitan and non-metropolitan regions: growing disparities in the Europe of 28

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Abstract

Within the article, new observations on the gap between metropolitan and non-metropolitan regions are presented. The economic performance of a country mostly emanates from its metropolitan regions. As these regions profit from a highly dynamic routine, they are growing rapidly. From the outside, assumptions about the prosperity of a nation is often presumed to stay in steady proportion to the development of its economic lead. However, not only the gap between metropolitan and non-metropolitan regions is in no steady proportion, this difference also varies when observing capital city metropolitan regions and second-tier metropolitan regions, meaning metropolitan regions of a country other than the capital. The article concludes that differences between these categories are slightly shrinking, but the gaps are still enormous. Nevertheless, the dynamics of these gaps are largely overseen and the assumption that non-metropolitan regions of a country are developing in a fixed relation to metropolitan regions needs a closer investigation.

Keywords: Metropolitan region, non-metropolitan region, economic development

Introduction

The battle for the first rank in the global competition is fought more and more intensively among metropolitan regions, where economic interactions are concentrated (Beckmann, 1995; Göddecke-Stellmann *et al.*, 2010). Glaeser (2011) talks about the 'triumph of cities' and declares the United States as an urban nation, grounded on the success of its urban development.

Scholars like Glaeser created a focus for academic research on cities or metropolitan regions when one wanted to investigate on the economic wealth of a country. On the contrary, the authors of this article suggest to draw a picture of the

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economic situation of the whole country by differentiating between metropolitan and non-metropolitan regions.

In the past decades, the observation of single metropolitan regions resulted from an intensified competition among different metropolitan regions. This is the result of the growing international interdependence of economies, which is exacerbating the competition between locations. This naturally affects all regions; however, especially metropolitan regions are particularly exposed to this location competition and must exist internationally (Adam *et al.*, 2002). This heightened competition among metropolises has grown and thus intensified due to globalization. In fact, outstanding economic functions as well as economic power, meaning the significance and scope of market participants, are globally seen most frequently concentrated in smaller regional pockets (Eurostat, 2019a).

The paper at hand investigates whether the pulling power of a prospering metropolitan region is able to entail a whole nationwide economy growth or if metropolitan regions are racing ahead the non-metropolitan regions. A separate observation on the different development of capital city metropolitan regions and other metropolitan regions will be presented as well.

The paper is organised as follows, the first section briefly summarises the background of the paper. Section two presents basic data on (economic) growth by types of metropolitan regions. Section three gives further insights into the divergence of metropolitan regions. The conclusion section sums up the findings.

1. Background

By classical definition, a metropolitan region is regarded as the cultural, economic, political, and social focal point of a country. A more modern understanding sees metropolitan regions as higher-ranking places in the global economic system. Hereby, the focus is rather on the specific function of the metropolises as highlighted locations for international trade and hubs for financial and information transfers (Adam *et al.*, 2002; Derudder *et al*., 2016).

Furthermore, the economic importance qualifies metropolitan regions as objects of investigation in the research on economic growth. In the 2018 revision on world urbanization prospects by the UN, 74 percent of the European population[1] is classified as living in urban areas, with growing tendencies. Worldwide, 55 percent of the population lives in urban regions and the UN prognosticates an increase to 68 percent by 2050 (United Nations, 2019).

Since every member country of the European Union has its own definition of a ‘town’ or ‘city’ (and sometimes metropolitan region), it is more difficult to agree on common (measurable) hard criteria of a metropolitan region. The definition of a

[1] „Europe” as a geographic region (i.e., Africa, Asia, Europe, Latin America and the Caribbean, Northern America and Oceania).

metropolitan region varies with regard to the minimum number of inhabitants, jobs and commuters (i.e. functional dimension), or political decision. Since the minimum thresholds were set arbitrarily, there is a lack of harmonization of definitions at the European level that restricts international comparison (European Economic and Social Committee, 2007). In the following part of this paper, metropolitan regions are defined by the Nomenclature of Territorial Units for Statistics (NUTS, French *Nomenclature des unités territoriales statistiques*) (Eurostat, 2019b). [2] Metropolitan regions are NUTS 3 regions representing all agglomerations of at least 250.000 and more inhabitants. These agglomerations were identified by using the Urban Audit's functional urban area (FUA). Each metropolitan region is represented by at least one NUTS 3 region. If in an adjacent NUTS 3 region, more than 50 percent of the population also lives within this agglomeration, it is included in the defined metropolitan region (Eurostat, 2019c).

These metropolitan regions are considered to be 'engines' of the social, cultural and economic development of a country.[3] This is due to the high effectiveness in the exchange of knowledge and therefore, a great output in innovation (Derudder *et al*., 2016). In the system of metropolitan regions, they are able to attract (and hold) high-skilled labour, which is regarded as a major condition for regional employment, growth and economic welfare (Florida, 2002; Wedemeier, 2012). The metropolitan regions are important sites for science and research and hubs for trade, transport and information. These economies of scale and scope are leading to economic power and hence, matters of decision-making and control are concentrated in these centres.

However, it is questionable whether an improvement of the 'engine' can automatically spill over to national economies and, moreover, if non-metropolitan regions are developing in a fixed relation to the metropolitan regions. These dynamics will be the research analysis of this paper.

The need for an analysis on the differences between metropolitan, non-metropolitan regions and their (favourable or unfavourable) development has also been declared by the European Economic and Social Committee: „[…] an analysis could enable some EU policies to be adjusted in order to provide adequate support for specific regional developments and requirements, including those in metropolitan areas." (European Economic and Social Committee, 2004, p. 3).

[2]NUTS regions are basic regions for the application of regional and European policies adopted by the statistical offices and Eurostat.

[3] Ministerial conference on spatial planning (MKRO) in Germany; decision of 8 March 1995.

2. Growth disparities between metropolitan regions and non-metropolitan regions

In the following, data on the gross domestic product (GDP), the development of population and labour force and also the productivity will be presented as measures for the prosperity of a region. GDP is the aggregate for measuring economic output. It does not, however, reflect costs of living which is typically measured by purchasing power parity (PPP). Other measures for considering regional disparities would be the regional knowledge production (Kirankabes and Erkul, 2019) or the social progress (Stiglitz *et al*., 2010). However, the application for this paper is to simply present growth differences of competitiveness between regions.

Hereby, we distinguish between metropolitan, non-metropolitan regions and an average of the 28 member states of the European Union (EU28). However, France, the Netherlands and Poland will be partly excluded due to missing data. In the second part, we will distinguish between capital city metropolitan regions and second-tier metropolitan regions (Eurostat, 2019d).

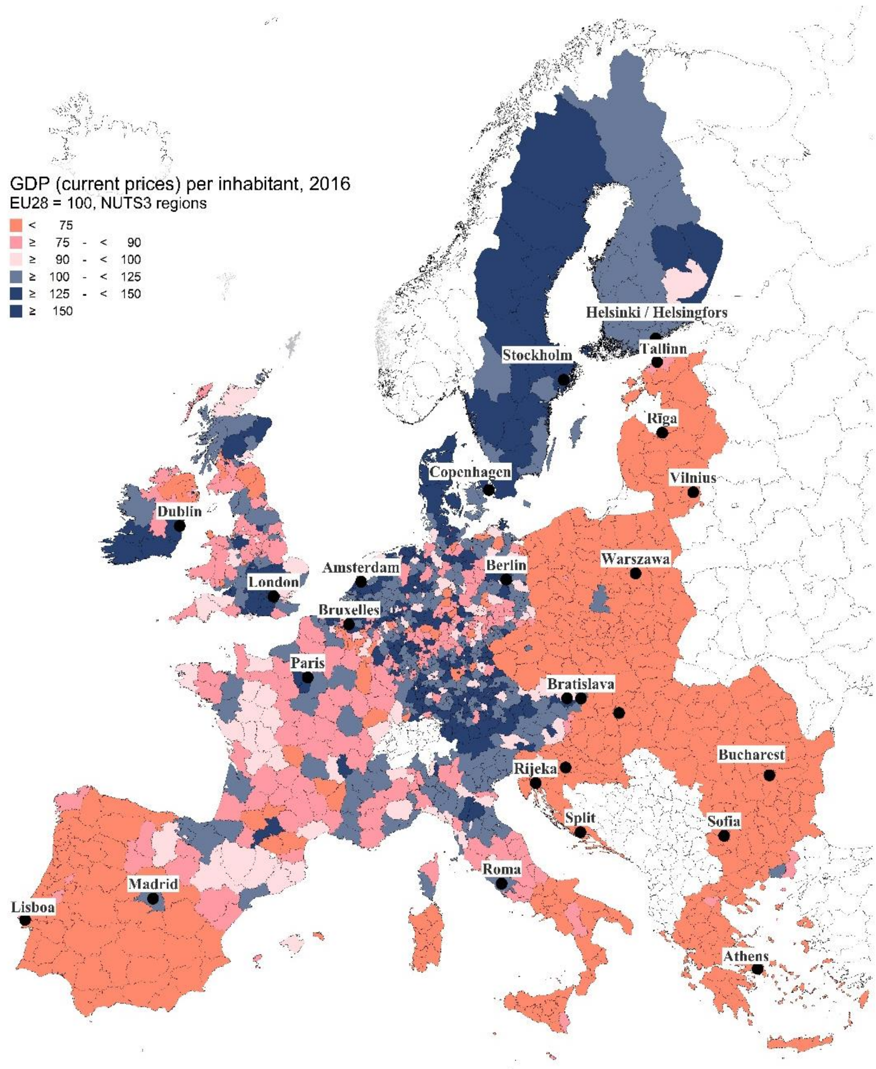
The GDP at market prices in the EU28 was valued 15.9 trillion EUR in 2018 (Eurostat, 2019e). There are enormous differences between EU regions, caused by factors like availability of resources, transformation/technological change (i.e. Schumpeterian models of quality ladders), as well as relocation and outsourcing of manufacturing and service, socioeconomic developments; geographic proximity or remoteness (i.e. diffusion of knowledge; openness of economies; economics of agglomeration), and such factors as capital city metropolitan regions or non-metropolitan regions. Further explanations are the accumulation of human capital and innovations (i.e. product, process, incremental, radical) (Barro *et al.*, 2004; Eurostat, 2019d; Bröcker, 2012).

Figure 1 shows the levels of the GDP per inhabitant across NUTS level 3 regions compared to the EU28 average. In total, 797 of 1.348 NUTS level 3 regions classify as non-metropolitan regions. Furthermore, 450 units qualify as second-tier and 101 units can be grouped to capital city regions. Therefore, a bigger share of the area is presumed to be non-metropolitan rather than metropolitan.

To sum up, only 556 out of the 1.348 regions (for which data is available for 2016) had a level of GDP per inhabitant equal to or above the EU28 average. This means that wealth creation was concentrated in relatively small regional spots, while a larger share of regions had lower levels of GDP per inhabitant than the average. Hereby, only 256 of 797 non-metropolitan NUTS level 3 regions have had a GDP level above average whereas 300 of 551 metropolitan regions (second-tier and capital city regions) have had a GDP level as high as EU28 average or higher. Thus, these small and concentrated centres of high wealth creation are rather located in metropolitan regions, especially in capital city metropolitan regions (57 of 101 capital city regions have a GDP per inhabitant above the average).

Figure 1 shows that most EU Member States seem to have a monocentric pattern of economic wealth. This means that the capital city region is the central hub of economic activities. This is most visible in eastern EU Member States: for example, the metropolitan region Bratislava (122 percent) and Prague (119 percent) have a GDP level well above the average, while much lower levels of economic activity were recorded in their surrounding regions.

Figure 1. GDP per inhabitant 2016



Source: own illustration based on Eurostat data (2019)

However, there are exceptions to this pattern, as Germany and Italy show a more polycentric development (Eurostat, 2019d). This is underlined by the observation that only German non-metropolitan areas can be found in the highest 82 regions having a GDP level of more than 166 percent compared to the EU28 average. Therefore, the economic significance of a capital city region is higher in strongly centralized political systems, standing in contrast to rather federally organized countries such as Germany (Claval, 2000).

Table 1. Stylized facts for metropolitan and non-metropolitan regions, 2016[*]

	EU28				
		Metropolitan regions			Non-metropolitan regions
			Capital city metropolitan regions	Second-tier metropolitan regions	
GDP in m EUR	11,594,801	7,901,413	2,581,889	5,319,524	3,607,641
growth 2010 to 2016	17.8%	19.1%	21.8%	17.9%	14.2%
EU28 share		68.1%	22.3%	45.9%	31.1%
GDP per capita	29,805	33,951	39,171	31,888	23,117
Labor force in k	179,676	114,413	35,705	78,708	65,882
growth 2010 to 2016	2.9%	4.5%	7.1%	3.3%	0.3%
EU28 share		63.7%	19.9%	43.8%	36.7%
Productivity	64,532	69,060	72,311	67,586	54,759
growth 2010 - 2016	14.5%	14.0%	13.7%	14.1%	13.9%
Population in k	389,023	232,731	65,914	166,817	156,062
growth 2010 to 2016	1.4%	2.7%	4.3%	2.0%	-1.1%
EU28 share		59.8%	16.9%	42.9%	40.1%

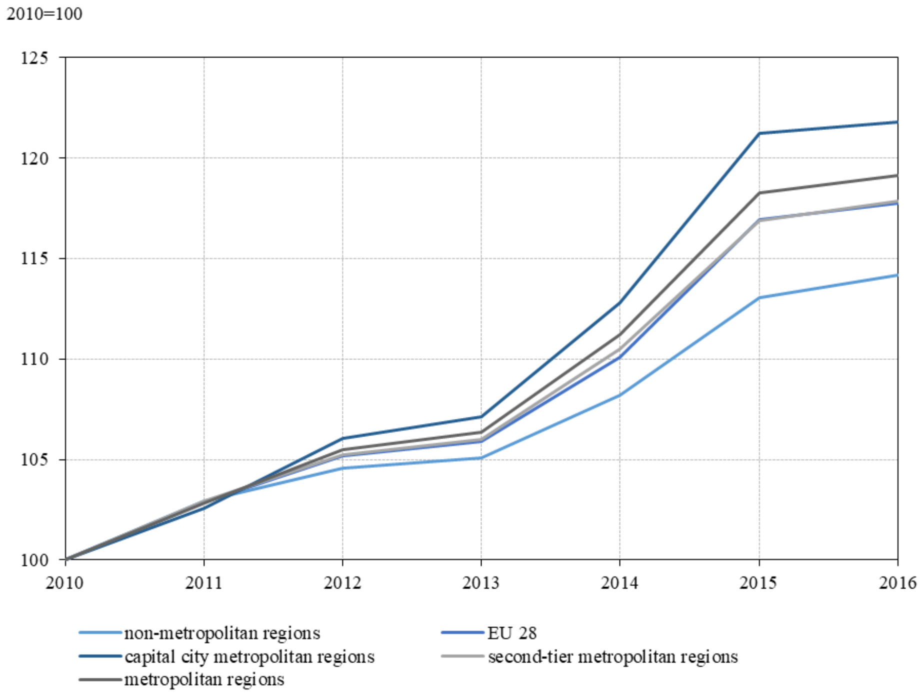
[*] Excluding France, the Netherlands, and Poland; due to missing data.
Source: own illustration based on Eurostat data (2019)

Analysing stylized facts of the European Union divided into metropolitan and non-metropolitan regions, in 2016, roughly 70 percent of the EU28's GDP is generated in the metropolitan regions (metropolitan regions: 7,903,413 m EUR; non-metropolitan regions: 3,607,641 m EUR; EU28: 11,594,801 m EUR) (table 1).

To put these numbers in relation to the population distribution, 60 percent of population of the EU28 live in metropolitan regions. However, the share of labour force in metropolitan areas is only 63.7 percent. In metropolitan regions, the GDP per capita was 33,915 EUR in 2016, whereas it was only 23,117 EUR in non-metropolitan regions. Furthermore, the authors separately calculate for capital city metropolitan regions and second-tier regions. Capital city metropolitan regions have a GDP per capita almost double as high as non-metropolitan regions (capital city metropolitan areas: 39,171 EUR; non-metropolitan areas: 23,117 EUR) (table 1).

This impression is reinforced by observing growth rates. When comparing the GDP of the year 2016 to 2010, we can see that the growth in GDP in metropolitan regions is higher than in non-metropolitan regions. Whereas the metropolitan regions growth was 19.1 percent in 2016 compared to 2010, non-metropolitan regions grew in the same time interval only by a rate of 14.2 percent. By looking at these figures (table 1 and figure 2), it can be noticed that in the past years, a more rapid economic growth has taken place in metropolitan regions. This observation becomes even more evident when considering the distinction of capital city metropolitan regions and second tier metropolitan regions, where capital city metropolitan regions grow fastest (Eurostat, 2019d).

Figure 2. GDP growth by type of metropolitan regions, 2010-16



Excluding France, Netherlands and Poland due to missing data.
Sources: Eurostat (2019), own illustration.

3. Divergence of metropolitan regions

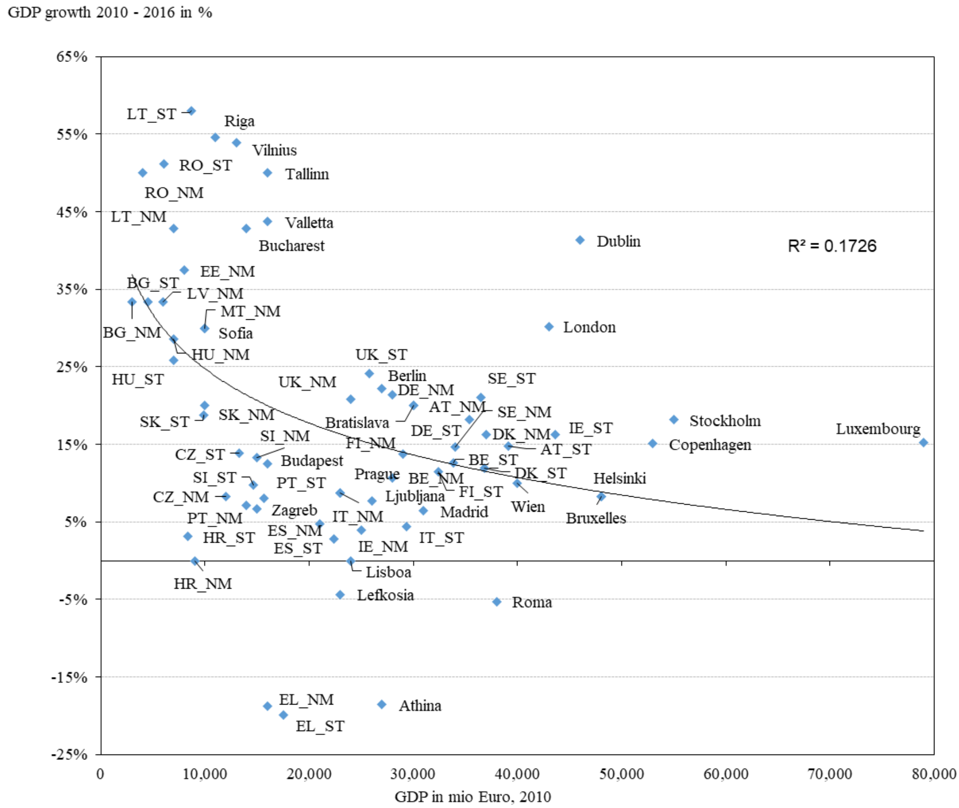
At national level, the expansion of metropolitan regions, and especially capital city metropolitan regions might have often hidden much slower growth rates in other non-metropolitan regions. These assumed divergence tendencies might be largely driven by the continued growth and concentration of the knowledge based (services) sector in city agglomerations. Today, the most successful places seem to be particularly concentrated in idea-producing industries (Glaeser, 2008; Wedemeier, 2012). Hereby, high productivity is concentrated in capital cities, but also in second-tier metropolitan regions. This is because of the density of specialized, business-oriented services, concentration of creative and innovative activities, and a high level of developed hard- and social infrastructure which attracts the most highly-skilled employees, thus generating higher income. Large shares of regional concentrated labour forces in idea-producing and creative sectors pushes regional concentration further in the already highly agglomerated regions (i.e. spill-over effect and size of labour market) (Derudder *et al.*, 2016; Eurostat, 2019d; Suedekum, 2006; Hüning *et al.*, 2016; Wedemeier, 2014).

This could fuel a type of development where 'old' industrial regions and rural regions can be 'left behind' to some degree. When analysing the dynamics of a prospering region, references to growth theories are standard. They investigate which factors influence economic development and to what intensity. A key assumption of (neoclassical) growth models is the conditional convergence, when the growth rate of an economy is associated to the difference between other economies' level of income and its own steady state. Another assumption is that of absolute convergence, stating that low income economies tend to grow faster than high income countries (Barro *et al.*, 2004; Schlitte, 2012).

However, when considering the growth of productivity, rates for metropolitan and non-metropolitan regions such as the EU28 do not differ as significantly as expected (years 2010-16). They mostly increase by around 14 percent. This can be explained by shrinking stocks of population and labour force in non-metropolitan regions and a slight increase in the numbers of labour force in metropolitan regions: The effect of growing GDP is compensated by higher growth rates in labour force (table 1).

In Figure 3, the simple correlation for the GDP level in 2010 and the growth from 2010 to 2016 is presented. The R^2 value is relatively small (approximately 17 percent) which does not support the assumption of convergence.

Figure 3. GDP growth 2010-16 and total GDP in 2010



[1] Exlcluding France, the Netherlands, and Poland due to missing data.
..._NM = Non-metropolitan regions
..._ST = Second-tier regions
Sources: Eurostat (2019); own illustration.

Hereby, the observations cannot be grouped into categories of metropolitan or non-metropolitan regions. It is rather noteworthy how the observations can be clustered into regional country groups, e.g. leading capital city metropolitan regions such as Stockholm, Copenhagen or Helsinki in contrast to capital city metropolitan regions of the three Baltic States (Estonia, Lithuania, and Latvia) that are lagging behind. The findings of the breakdown suggest also different results for the Central and East European countries (high growth rates and low GDP). Overall, there is no evidence that (absolute) convergence is to apply to regions within a country rather than between countries (Barro *et al*., 2004). The disparities between the metropolitan regions are – with exceptions of e.g. Dublin, London, Stockholm and their non-metropolitan regions – not growing within Europe. But there seem to be relatively large growth disparities within the countries.

Conclusion

The presented economic data of metropolitan and non-metropolitan regions indicates that they are not developing at the same rate; consequently, a growing gap can be observed. When categorizing metropolitan regions into capital regions and second-tier regions, we can see that capital city metropolitan regions are growing relatively strong. Certain persistent growth disadvantages of second-tier metropolitan regions could be assumed. Cardoso *et al.* (2017) empirically present the results for this assumption. They argue that this observation especially applies to countries with a dominant capital and a centralised urban system. However, we did not find any clear statistical indication. For instance, the capital city metropolitan regions of the three Baltic States grow faster than the non-metropolitan regions. But, also the second-tier metropolitan regions outperform the growth of non-metropolitan regions.

It is often the case in scientific research that more questions than answers are produced. The paper at hand does not suggest causalities in growth dependencies. For this, much deeper research analysis is needed. A group specific observation (Southeastern, Central Europe etc.) could give more insight. Another limitation of this paper is that its statistical work is based exclusively on GDP data and not on other wealth measures as PPP, disposable income, or social development.

However, throughout the research, all findings have been based on GDP data as this is usually equated with the wealth development of a region. When looking at the level of GDP in individual regions, we mostly, with few exceptions, find a rather monocentric pattern. This leads to the assumption that the GDP is mostly concentrated in metropolitan regions. Starting from this, examining the growth rates for the past years gives a more detailed picture on the dynamics of this gap development.

Displaying the growth of GDP since 2010 for capital city metropolitan areas, a relatively clear picture of second-tier metropolitan and non-metropolitan regions can be drawn. Capital city metropolitan regions and even second-tier metropolitan regions show a considerably larger growth.[4] The growing gap might be explained by considering that the main economic performance and innovation of a country mainly emanates from its largest metropolitan regions. The gaining importance of the service-based, creative, and innovation sectors can be assumed as one of the driving factors for this development.

As a result, one has to consider that the prosperity of metropolitan regions might have often hidden a much lower economic development in non-metropolitan regions. From the outside, assumptions about the prosperity of a nation are often based on the development of its economic lead.

[4] Findings for German cities show that the cities develop in a stable equilibrium to each other (Kerner *et al*., 2018).

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References

Adam, B. and Göddecke-Stellmann, J. (2002), Metropolregionen – Konzepte, Definitionen und Herausforderungen, *Informationen zur Raumentwicklung*, 9, pp. 513-525.

Barro, R.J. and Sala-i-Martin, X. (2004), *Economic growth – Mathematical models*, 2nd edition, Cambridge, Massachusetts: The MIT Press.

Beckmann, M.J. (1995), Economics Growth in a Central Place System, in: Giersch, H. (ed.), *Urban Agglomeration and Economics Growth,* Berlin and Heidelberg: Springer, pp. 107-115.

Bröcker, J. (2012*), Theoretische Grundlagen: Räumliche Wachstumstheorie*, in: Frisch, M. and Bröcker, J. (eds.), *Ökonomische Geographie*, München: Vahlen, pp. 157-175.

Cardoso, R.V. and Meijers, E.J. (2017), Secondary Yet Metropolitan? The Challenges of Metropolitan Integration for Second-Tier Cities, *Planning Theory & Practice*, 18(4), pp. 616-635.

Claval, P. (2000), The European system of capital cities, *GeoJournal*, 51(1/2), pp. 73-81.

Derudder, B., Conventz, S., Thierstein, A. and Witlox, F. (2016), *Hubs Cities in the Knowledge Economy: Seaports, Airports, Brainports*, London and New York: Routledge.

European Economic and Social Committee (eds.) (2004), *Opinion of the European Economic and Social Committee on 'European Metropolitan Areas: Socio-economic implications for Europe's future'*, (2004/C 302/20), Brussels.

European Economic and Social Committee (eds.) (2007), *Opinion of the European Economic and Social Committee on European metropolitan regions: Socio-economic implications for Europe's future,* (2007/C 168/02), Brussels.

Eurostat (2019), *Database on general and regional statistics* (retrieved from https://ec.europa.eu/eurostats).

Eurostat (2019a), *Eurostat statistics explained, Territorial typologies for European cities and metropolitan regions* (retrieved from https://ec.europa.eu/eurostat/).

Eurostat (2019b), *Glossary: NUTS Regions,* (retrieved from https://ec.europa.eu/eurostat/web/nuts/background).

Eurostat (2019c), *Glossary: Metro regions*, (retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Metro_regions).

Eurostat (2019d), *Eurostat regional yearbook, 2019 edition,* Luxembourg: Publication Office of the European Union.

Florida, R. (2002), *The rise of the creative class and how it's transforming work, leisure, community, and everyday life*, New York: Basic books.

Glaeser, E.L. (2008), *Cities, agglomeration, and spatial equilibrium*, Oxford and New York: Oxford University Press.

Glaeser, E.L. (2011), *Triumph of the City, How our greatest invention makes us richer, smarter, greener, healthier, and happier*, New York: Penguin Books.

Göddecke-Stellmann, J., Kawka, R., Lutter, H., Pütz, T., Schön, K.P.M., Schmidt-Seiwert, V. and Spangenberg, M. (2010), *Metropolräume in Europa*, Bundesamt für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (BBR), Bonn.

Hüning, H. and Wedemeier, J (2016), Die Innovationsfähigkeit deutscher Metropolregionen – ein Vergleich, *Wirtschaftsdienst*, 96(12), pp. 921-925.

Kerner, P., Nitt-Drießelmann, D. and Wedemeier, J. (2018), Städteranking: Dynamik von Städten und strukturelle Pfadabhängigkeit, *Wirtschaftsdienst*, 98(4), pp. 291-295.

Kirankabes, M.C. and Erkul, A. (2019), Regional knowledge production in Central and East European countries: R&D factor productivity and changes in performances, *Eastern Journal of European Studies*, 10(1), pp. 25-44.

Schlitte, F. (2012), *Regional disparities and growth in the European Union: Economic integration, convergence and skill-specific employment*, IAB-Bibliothek, 333, Bielefeld: Institute für Arbeitsmarkt- und Berufsforschung.

Suedekum, J. (2006), *Human capital externalities and growth of high- and low-skilled jobs*, IZA Discussion Paper 1969, Institute for the Study of Labor (IZA), Bonn.

Stiglitz J. E., Sen A. and Fitoussi J-P. (2010), *Mismeasuring our Lives: Why GDP Doesn't Add Up*, New York: The New Press.

United Nations (UN) (2019), *World Urbanization Prospects, The 2018 Revision*, New York (retrieved from https://population.un.org).

Wedemeier, J. (2012), *Germany's Creative Sector and its Impact on Employment Growth - A Theoretical and Empirical Approach to the Fuzzy Concept of Creativity: Richard Florida's Arguments Reconsidered*, Frankfurt am Main: Peter Lang Verlag.

Wedemeier, J. (2014), Creative Professionals, Local Amenities and Externalities: Do Regional Concentrations of Creative Professionals Reinforce Themselves Over Time?, *European Planning Studies*, 23(12), pp. 2464-2482.