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C O N T E N T

Creative economy in post-socialist countries

Book review section

Creative capacity of European countries

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Abstract

In the paper[4] we study creative capacity of 28 European countries in the period 2005–2014. We construct a creativity index based on the 3Ts concept of talent, technology and tolerance as the key components of the creativity. Our index is measured and calculated with both the cross-section and the time series dimensions, which is an important contribution compared to other studies. We have demonstrated relatively stable rankings of the countries in time, even though the creative capacity measured by our creativity index was gradually growing in time with varying rate of growth for individual countries. We have also shown evidence that the creative capacity is clustered geographically. The creativity index was compared to World happiness index, GDP per capita and Human development index. We have replicated earlier cross-sectional analyses and shown the relatively strong correlation. However, we show that the picture is different for changes within individual countries. Here we demonstrated lack of correlation between creativity and GDP per capita or World happiness index. JEL: O10, O30, O34, C10

Keywords: creativity index, 3Ts concept, European comparison

Introduction

Creativity is a complex phenomenon and a subject of study in psychology, sociology and economy. Creativity in economic view can be generally defined as human activity focused on the creation of an intangible asset. Such asset has the characteristics of novelty, innovativeness or rareness. Analysing the process of creativity and measuring it by economic indicators has developed through several concepts and approaches. Some of the concepts are derived from complex theoretical analysis and their use is limited by data availability. Other concepts are based on the combination of indicators accessible from the statistic resources and from the expertise.

Empirical studies provide several creativity indices as proxy variables for the creative capacity of the respective economies. This paper focuses on these creativity indices. In the existing literature they are constructed in the form of cross-section data. We construct the creativity index in the form of panel data, i.e. with the cross-section and time series dimensions.

The contribution of our paper to the existing literature can be seen in the three areas. Firstly, we construct creativity index with both the cross-section and the time series dimensions. Secondly, we provide an open source creativity index, describing variables with their source and their weights. Thirdly, we analyse creative capacity of 28 European

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countries[5] and analyse geographical dimension of creativity.

   The paper is structured as follows. The first part presents an overview of the existing literature related to creativity in economics and of creativity indices. The second part describes a methodology including the selection of the variables and the construction of our European 3T creativity index (3TCI). The third part provides empirical results of measuring the creative capacity of 28 European economies; we examine also the associations between the European 3TCI and measures of happiness, economic performance and human development here. The last part of the paper gives conclusions.

Economic dimension of creativity and literature review

Adam Smith (1776) recognized to the role of human capital ("acquired and useful abilities of all the inhabitants") as a "fourth factor of production" in addition to land, labour, and capital. Unlike traditional, tangible factors of production, the creativity is essentially different; it is limitlessly renewable resource which can be continuously recharged and re-energized. Creativity is a complex phenomenon and could be defined in several dimensions and disciplines of psychology, sociology and economy. Schumpeter, J.A. (1911) defines the creativity as "dynamic process of innovations, which is endogenous in relation to the economy." He is one of the first researchers who acknowledged the economic dimension of the creativity. Creativity in connection to economics can be generally defined as human activity focused on the creation of an intangible asset. Such asset has the characteristics of novelty, innovativeness or rareness. Amabile, T.M. (1983) and Weisnberg, R.W. (1988)

broadened the economic understanding of the creativity as the part of production of ideas and inventions, which are new and useful for solving the economic issues. Martin, L. and Wilson, N. (2016) connect the philosophy of critical realism to entrepreneurial opportunity theory and suggest that ontological examination of entrepreneurship is required for identifying new types of empirical research, leading both to theoretical development and to practical entrepreneurship.

   Lundvall, B.A. and Johnson, B. (1994) attempted to define the relation between the formation of creative ideas of individuals and the way of their absorption in (or their support to) the private and the public sectors. Not only the creation of ideas, but also the speed and the ability of their absorption play an important role. Florida, R. (2002, 2005) defined the "creative class" as a key driving force for economic development of post-industrial cities. He distinguished 3 groups of creative occupations: creative core, creative professionals and bohemians and presented "The 3Ts theory" for economic growth: technology, talent and tolerance. Florida emphasized the role of the creative individuals who ensure knowledge and innovation spill-overs within a city or a region as opposed to the concept of spill-overs between companies and sectors. Knudsen, B. *et al.* (2007) connected this influence of the creative class with the endogenous growth theory. According to Glaeser, E.L. (2004) the creative capital is strongly connected with human capital, which is traditionally measured by level of education; the majority of creative class has achieved high level of education. Empirical studies of Marlet, G. and van Woerkens, C. (2004), McGranahan, D. and Wojan, T. (2007), Florida, R. *et al.* (2008) confirmed that the indicators for the creative class and education are both good predictors of urban and regional growth and that the indicators for the creative class perform better than the indicators for education. We can conclude that both the creative class and traditional educational attainment are good proxies to measure human capital.

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[5] Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

Human creativity is considered a key driving force of the economy of cities. Florida's concept of creative class and creative cities has been discussed both by the academics and by the policy makers of city development. Agglomeration theories view the concentration of firms in the cities due to business networks and labour market proximity and due to knowledge spill-overs. Florida suggests that the main reason is creative people who invent and run innovative enterprises and who become facilitators of economic growth and urban restructuring. Bohemians and artists co-create liberal and tolerant cultural environment to which creative class is attracted. Critique of Florida argues about the novelty of his idea. Glaeser, E.L. (2004) claims that agglomeration theory already explained the role of cities and clusters for economic growth based on creativity. Pratt, A.C. (2008) claims that the idea of creative cities is another label for a quality of the urban life, which is not any novelty.

Florida's definition of creative class has been significantly questioned. His classification is rather broad using aggregate groups of occupations including non-creative jobs, too (Markussen, A. 2006). Based on empirical analysis of German regions Krätke, S. (2010) argues that even though the concentration of scientifically and technologically creative occupations positively impacts regional economy, such concentration of business, finance and trade professionals has no significant influence. Markussen, A. (2006) finds that scientists, engineers and managers frequently live in suburban areas and they may not want to live and spend their time with bohemians and artists. Glaeser, E.L. (2004) explains such location preferences of creative people by 3S's (skills, sun, sprawl) as opposed to Florida's 3Ts. McLean, H. (2014) suggests that the racial and gender aspects are often neglected in the creative city policies; she demonstrates that feminist arts activism uncovers the multiple exclusions of creative city policies and practices in Toronto; thus, tolerance is not truly practiced.

Peck, J. (2005) is very critical of creative-city strategies based on Florida's concepts viewing them as policies creating neo-liberalized urban policy environment, which "focus on short-term projects such as funding competitions or development schemes rather than progressive and programmatic goals such as poverty alleviation or environmental sustainability" (Peck, J. 2005, 764). Inequalities can increase during creativity-led urban development, because policymakers seem to prefer certain social groups and funds for urban development support only selected locations in the cities (McDowell, L. 2017; Wilson, D. 2017). Florida, R. (2017) explains inequalities in the cities as the result of the in-built structure of our economy and expects policymakers and politicians to deal with social inequality. He suggests that the densest and most innovative cities are the places with the highest level of inequality, while cities that are economically stagnant maintain their middle class.

Academic studies in European context suggest that Florida's concept of creative cities is valid to certain degree but there are differences between Europe and North America which need to be taken into consideration. Empirical research of Boschma, R. and Fritsch, M. (2009) in regions of 7 European cities confirmed that tolerance and openness are strongly linked with concentration of the creative class. However, the impact of city infrastructure with culture and leisure facilities was insignificant. Job opportunities were closely connected with concentration of the creative people, too. Asheim, B. (2009) points out the differences in migration in Europe and USA – number of cities in Europe for work force to migrate is significantly smaller. Barriers of mobility in Europe include language, institutional differences and labour markets' structures. European economies are more closely connected to local labour markets, the social ties are stronger and the real estate market works differently than in USA (Fidrmuc, J. 2004). Big cities seem to attract creative class and grow as centres of creative industries (Egedy, T. and Kovács, Z. 2009); however, the concept of creative cities does not work in smaller city regions (Asheim, B. 2009). Small economies are even more specific – their capital plays much more important role compared to large economies (Rehák, Š. 2014).

Creative industries are perceived as the special assets in global competitiveness by governments and legislators. On the European level the development of creative and cultural industries has been supported for past 15 years. European cultural and creative sectors have been recognized as sources of economic growth and job opportunities (see further European Parliament resolution P7_TA-2013-0368). As reported in the Opinion of the European Economic and Social Committee CCMI/137 the contribution from creative and cultural industries to European GDP in the period 2008–2011 amounts to between 4.4 per cent (for the purely creative, core industries alone) and 6.8 per cent (including associated non-core industries). Their contributions to employment stand respectively at 8.3 million jobs, or 3.8 per cent of the total active population of the EU for the purely creative core industries, and 14 million including the strongly dependent (non-core industries), or 6.5 per cent of the EU's total active population. This makes them the EU's third largest employer following construction and the beverages sector.

Policies adopted recently in EU include support for networking of creative people (European Creative Hubs Network Project Evaluation Summary Report 2018), support for cultural and creative industries to use advanced digital technologies (Mid-term evaluation of the Creative Europe programme 2018), access to finance for cultural organisations and creative SMEs (Good Practice Report: Towards More Efficient Financial Ecosystems 2016). These and other efforts are a part of Europe 2020 Strategy and they combine different mechanisms to support economic growth and creation of new job opportunities based on creativity.

We suggest that each economy has its creative capacity or creative potential. It is determined by diverse components. The vital ingredients and key determinants are creative talented and educated people, access of individuals and organisations to modern technologies on the one hand; country's investments into innovations, accumulated tacit and explicit knowledge through patents

and research on the hand. Finally, an essential component is the open atmosphere allowing individuals to pursue new ideas and the environment tolerant to differences and novelties. We are interested in measuring such creative capacity and propose to capture it with a composite index, which allows for comparison among economies.

Measuring creativity through the set of indices developed in the last decade. There is a strong inspiration from the Florida's 3Ts theory; he is also one of the pioneers of the creativity index as a quantitative measure suitable for comparison between countries. Other authors introduced different creativity indices; some of them incorporated also factors of the social and cultural environment, others added additional emphasis on arts and culture. *Table 1* provides a basic overview of creativity indices.[6]

Euro-Creativity Index was introduced by Florida, R. and Tinagli, I. (2004). It is constructed from Technology Index, Talent Index and Tolerance Index. The Euro-Creativity Index has extended and adapted the Florida' s concepts of the creative class and its indicators to the European context. This index was calculated for 14 European countries. Florida, R. *et al.* (2011) broadened the previous work and created the Global Creativity Index (GCI) in similar 3Ts design. It was calculated as cross-section for 82 nations in 2011 and for 139 nations in 2015. The data used for its composition are from the longer periods (5 to 10 years) although different years are used for the different variables.

Hui, D. *et al.* (2004) introduced Hong Kong Creativity Index (HKCI). In this index the four forms of the capital (structural/institutional, human, social and cultural) are the determinants of the creativity growth. Accumulated effects of the interplay between these determinants are the manifestations of the creativity in terms of the outcomes or the outputs. Manifestation of the creativity is measured

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[6] These are the main creativity indices developed for countries which differ from each other to certain degree. There are other indices which are slight modifications or which are designed for specific cities.

Table 1. Overview of creativity indices

Index	Key concept	Specifics
Euro-Creativity Index	Defines 3 areas to measure creativity based on 3Ts' theory: Talent, Technology and Tolerance. Each area defined by 3 indicators totalling in 9 creativity indicators.	Contains 2 additional measures of short-term trend: Euro-Creative Trend Index and the Euro-Creativity Matrix
Hong Kong Creativity Index	It is built on 5Cs with over 100 indicators: 1. Structural/institutional Capital, 2. Human Capital, 3. Social Capital, 4. Cultural Capital, 5. Manifestations of Creativity.	It captures the characteristics of the socio-cultural parameters and illustrates the interactions of various creativity factors.
Composite Index of the Creative Economy	Creative capacity is defined in 3 dimensions: Innovation, Entrepreneurship and Openness. Each dimension offers 3 indicators thus 9 in total.	It introduces a novel method – endogenous weighting. Each entity has its own unique set of the most appropriate weights.
European Creativity Index (only theoretical design)	It is composed of 32 indicators divided among 6 sub-indices: 1. Human capital, 2. Openness and diversity, 3. Cultural environment, 4. Technology, 5. Regulatory incentives to create, 6. Outcomes of creativity.	Index aims to combine culture-based indicators in existing frameworks related to creativity, innovation and socioeconomic development.
Global Creativity Index (GCI)	Technology, Talent and Tolerance indices form overall index. Technology is constructed from 3 variables, Talent and Tolerance from 2 each. GCI is thus created from 7 variables.	The research uses comparison of GCI with 6 measures of economic and social progress (GDP per capita, Income Inequality, Global Competitiveness Index, Global Entrepreneurship Index, Human Development Index, Happiness/life satisfaction)
Creative Space Index (CSI)	9 groups of indicators: 1. Talent, 2. Openness, 3. Cultural Environment and Tourism, 4. Technology and Innovation, 5. Industry, 6. Regulation and Incentives, 7. Entrepreneurship, 8. Accessibility, 9. Liveability	Authors used endogenous weighting method and 37 variables in 9 groups.

through the economic contribution of the creativity and the inventive activity of the economic sector in more than 20 indicators. Each of the four forms of the capital is defined by 20–30 indicators. The four forms of the capital and the manifestation of the creativity together compose the creativity index for Hong Kong.

Composite Index of the Creative Economy (CICE) has been developed by Bowen, H.P. *et al.* (2006) to benchmark and evaluate the creative capacity of the given regions. The endogenous weighting method has been introduced to determine the weight each sub-dimension should contribute to the total value of the CICE. This method isolates achievement on the underlying dimensions as the source of a higher or lower CICE score value. CICE measures the creative capacity of nine regions of Europe and North America from among a network of creative regions named Districts of Creativity.

Kern, P. and Runge, J. (2009) proposed the design of the European Creativity Index as a part of study made for the European Commission to evaluate an impact of the culture on the creativity. The concept was built upon the indicators related to the culture-based creativity and their inclusion into the existing socioeconomic indicator schemes (i.e. European Innovation Scoreboard). This index remained only as a theoretical concept.

Correia, C.M. and Costa, J.S. (2014) designed Creative Space Index (CSI) as cross-section index for 26 European countries using data from the period 2005–2012 and made comparison of their index with GCI. They used endogenous weighting technique in the fashion of Bowen, H.P. *et al.* (2006) and used 9 groups of indicators.

There are several approaches to creativity. One is to compare cities or regions another is to compare higher units such as countries. Since the countries are well-defined political units with specific histories ethnical background, they represent interesting units of analysis. Individual countries decide their own policies and how to implement them in economy, educational system, R&D and other areas. These decisions have significant impact on the creativity. Country comparison can help in understanding the effectiveness of policies and of approaches to harness the creativity.

All creativity indices have been calculated as cross-section data most commonly using indicators' average of periods of several years. We construct European 3TCI including a time dimension covering period 2005–2014 measuring creativity of 28 European countries. We follow the idea of 3Ts developed by Florida which we consider the most suitable for the comparison of the creative dimension of the different countries.

Aim of our study is to compose the creativity index which enables the cross-country comparison and also captures the dynamic changes in time. Our focus is on 28 European countries and our objective is geographic comparison of the creativity. Next we aim to find whether higher levels of creativity are associated with happiness, economic prosperity and human development.

Methodology

A composite indicator is a measure that combines several observed variables into a single number. If it comprises a temporal dimension in that it is measured over time in equal intervals, it can reveal trends and changes in time. The creativity is a multidimensional and complex issue. The composite indicators combining several observed variables or dimensions into one measure are a possible tool for measuring complex multidimensional concepts such as creativity.

The main advantage and strength of the composite indicators is the ease of interpretation when compared to the multiple dimensions of a complex phenomenon they represent. At the same time, since composite indicators are unidimensional figures, they facilitate a simple comparison while retaining all the information value of the underlying variables or dimensions. It is easier to compare a single number than battery of several variables. The potential limitation of the composite indicators is the fact that they may disguise important variations in their subdimensions, especially if the construction is not transparent enough. Another possible weakness lies in a simplistic interpretation. Finally, if an important dimension is omitted or ignored, it may lead to biased conclusion or policy. The alternative to a composite index would be a set or battery of several indicators. The advantages of the composite indicators are the disadvantages of a set of indicators and vice versa. The choice of one or the other should be made based on the objective of the analysis. Since the goal of our paper is to compare the creative capacity of European countries, the set of individual indices would not serve this purpose and that is why we opt for the composite index.

Florida's first creativity index (Florida, R. 2002) was constructed for metropolitan areas and its original calculation is very

simplistic.[7] Nathan, G. (2007) points out inadequacy of using the *Gay index* to measure tolerance; the index basically measures the number of households where the members of the household are of the same gender. Cities with many college or university students who share rented apartment may display biased results. Marlet, G. and van Woerkens, C. (2007) conclude that Florida's creative class is theoretically the same as human capital, even though they acknowledge that Florida's creative class measure is a better measure of human capital then levels of education. Glaeser, E.L. (2004) found that human capital was a better predictor of population growth in the set of US metropolitan areas analysed by in Florida; he also demonstrates that presence of skills in the metropolitan area may have a greater impact on new idea production rather than bohemians as suggested by Florida.

Creativity indices measured on a country level are described in the previous section. Hoelscher, M. and Schubert, J. (2015) in their comprehensive review and comparison of creative indices indicate that one of the shortcomings is that most indices are too narrowly focused on the economy and science. They hold that the creativity and innovation are also heavily based in cultural contexts, therefore the supportive cultural background has a positive impact on them, too. Runco, M.A. (2004) encouraged interdisciplinary and multi-perspective approach in constructing creative indices to avoid capturing creativity only in limited way.

Construction of European 3T creativity index

Selection of variables

Composite indices sometimes express inputs and other times outputs or processes. Our creativity index represents both inputs and out-

puts. Since our objective is to model creative capacity, we do not view this approaches as conflicting. If we take the number of scientific and technical journal articles as example (one of our indicators), it is a measure of the output. However, as far as the creative capacity of the economy is concerned, higher number of such publications reflects the creative environment and thus contributes to momentum. On the other hand, inputs such as public spending on education (if spent effectively) create a potential for future creative work. That is why we see output and input indicators as complementary rather than contradictory.

The creativity index design proposed by Florida, R. and Tinagli, I. (2004) is adopted in this study. Thus, our European 3T creativity index consists of three indices – Talent, Technology and Tolerance, each composed of 3 sub-indices. We consider it a balanced design. In *Table 2* the description of each sub-index with corresponding indicators (variables) is presented, along with the unit of measurement of the original underlying variable and exact source. We use 19 indicators compared to 9 indicators used by Florida and Tinagli. European 3TCI is calculated for 28 countries and 10-year period 2005–2014 due to data availability.

Talent index is comprised of the creative class, human capital and scientific talent. The creative class of our index consists of three groups of creative people following Florida, R. and Tinagli, I. (2004): creative core, creative professionals and bohemians. Overview of the creative class composition according to ISCO-88 code within the 3 groups is in *Table 3.*

The indicator is calculated as a proportion of labour force employed in the three groups of creative occupations. In addition to labour force with advanced education we are adding a new indicator to human capital sub-index: public spending on education. We propose this indicator because it is a measure of governmental investment into human capital which should bring results in the future. Our scientific talent index includes three variables: researchers in R&D (per one million people), human resources in science and technology and scientific and

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[7] There are four factors of creativity index used for 268 metropolitan areas and the creativity index is calculated by subtracting the areas' rank order in each category from number 1076.

Table 2. European 3T creativity index – indices, sub-indices, variables, their weights and sources

W1	Index	W2	Sub-index	W3	Indicator (unit of measurement)	Source
1/3	Talent	1/3	Creative Class	1	Employed in creative occupations (share of labour force)	Eurostat (lfsa_egais)
		1/3	Human Capital	1/2	Labour force with advanced education (% of total labour force)	WDI (SL.TLF.ADVN.ZS)
				1/2	Public spending on education, total (% of GDP)	WDI (SE.XPD.TOTL.GD.ZS)
		1/3	Scientific Talent	1/3	Researchers in R&D (per one million people)	WDI (SP.POP.SCIE.RD.P6)
				1/3	Human resources in science and technology (per one million people)	Eurostat (tsc00025)
				1/3	Scientific and technical journal articles (per 1,000 of labour force)	WDI (IP.JRN.ARTC.SC)
1/3	Technology	1/3	Innovation	1/2	Patent applications filed through the Patent Cooperation Treaty, residents (per 1,000 of labour force)	WDI (IP.PAT.RESD)
				1/2	Patent applications to the European Patent Office (per one million of inhabitants)	Eurostat (sdg_09_40)
		1/3	High Tech innovation	1/2	European high-technology patents (per one million of inhabitants)	Eurostat (tsc00010)
				1/2	Royalty and license fees, receipts (BoP, % of GDP)	WDI (BX.GSR.ROYL.CD, NY.GDP.MKTP.CD)
		1/3	R&D	1	Research and development expenditure (% of GDP)	WDI (GB.XPD.RSDV.GD.ZS)
1/3	Tolerance	1/3	Attitudes index	1/3	Tolerance of homosexuality (1 to 10, 10 is high degree of justification)	EVS (question f118)
				1/3	Tolerance of people of different race (percentage of intolerant respondents)	EVS (question f117)
				1/3	Tolerance of immigrants and foreign workers (percentage of intolerant respondents)	EVS (question f127)
		1/3	Values Index	1/3	Non-acceptance of bribing (1 to 10, 10 is high degree of justification)	EVS (question a124_02)
				1/3	Non-acceptance of lying (1 to 10, 10 is high degree of justification)	EVS (question a124_06)
				1/3	Control of corruption (score ranging from -2.5 to 2.5)	WGI (CC_EST)
		1/3	Self Expression Index	1/2	Voice and accountability (score ranging from -2.5 to 2.5)	WGI (VA_EST)
				1/2	Control over life and freedom of choice (1 to 10, 10 is a great control)	EVS (question a173)

Notes: Abbreviations W1, W2 and W3 stand for weights corresponding to index level (W1), sub-index level (W2) and indicator level (W3). Sources of data: Eurostat, WDI (World Development Indicators, World Bank), EVS (European Values Study), WGI (Worldwide Governance Indicators, World Bank). In the last column, after the source of each variable, the information in parentheses gives closer identification of corresponding table (Eurostat), indicator (WDI, WGI) or survey question (EVS) where the variable originates from.

Table 3. Creative class composition according to ISCO-88 code

Group of creative people	Occupations ISCO-88 code
Creative core	211. Physicists, chemists and related professionals 212. Mathematicians, statisticians and related professionals 213. Computing professionals 214. Architects, engineers and related professionals 221. Life science professionals 222. Health professionals (except nursing) 231. College, university and higher education teaching professionals 232. Secondary education teaching professionals 233. Primary and pre-primary education teaching professionals 234. Special education teaching professionals 235. Other teaching professionals 243. Archivists, librarians and related information professionals 244. Social science and related professionals
Creative professionals	111. Legislators 112. Senior government officials 113. Traditional chiefs and heads of villages 114. Senior officials of special-interest organisations 121. Directors and chief executives 122. Production and operations department managers 123. Other department managers 131. General managers 223. Nursing and midwifery professionals 241. Business professionals 242. Legal professionals 246. Religious professionals 311. Physical and engineering science technicians 312. Computer associate professionals 313. Optical and electronic equipment operators 314. Ship and aircraft controllers and technicians 315. Safety and quality inspectors 321. Life science technicians and related associate professionals 322. Modern health associate professionals (except nursing) 323. Nursing and midwifery associate professionals 324. Traditional medicine practitioners and faith healers 331. Primary education teaching associate professionals 332. Pre-primary education teaching associate professionals 333. Special education teaching associate professionals 334. Other teaching associate professionals 341. Finance and sales associate professionals 342. Business services agents and trade brokers 343. Administrative associate professionals 344. Customs, tax and related government associate professionals 345. Police inspectors and detectives 346. Social work associate professionals 348. Religious associate professionals
Bohemians	245. Writers and creative or performing artists 347. Artistic, entertainment and sports associate professionals

technical journal articles. The last indicator is a new addition compared to Florida, R. and Tinagli, T. (2004). We include it because it measures the results of research work and of scientific talent and is the foundation of the future development of research work.

Technology index contains innovation, high tech innovation and research and devel-

opment sub-indices. Compared to Florida, R. and Tinagli, T. (2004) we add just one new indicator which is royalty and license fees. It captures the economic benefits from patents and other proprietary rights and it can further stimulate (high tech) innovation.

Tolerance index is the one we modified the most when compared to Florida, R. and Tinagli, T. (2004). It is composed of attitudes index, value index and self-expression index. Attitudes index is measured with three indicators very similar to the original design. Value index comprises of non-acceptance of bribing, non-acceptance of lying (from EVS) and control of corruption (from Worldwide Governance Indicators – WGI). It is very different to Florida and Tinagli who based the sub-index on comparing the degree to which a country is based on traditional versus secular values. We selected the indicators which we believe are better expression of the value system of a society. Self-expression index uses two new indicators. One of them is "Voice and accountability score" from the WGI. It captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. The second one is "Control over life and freedom of choice" coming from the EVS. It measures the degree how much people perceive they have completely free choice and control over their lives. The Florida, R. and Tinagli, T. (2004) self-expression index is based on similar set of questions from the World Values Survey covering attitudes toward self-expression, quality of life, democracy, leisure, the environment, trust and more.[8]

Coping with the missing data issue

Since our intention was to construct the creativity index in the form of panel data, there was a necessity to deal with the fact that not all data for the desired variables were avail-

able. Two specific issues regarding this point had to addressed: firstly, regarding the data from the European Values Study and secondly, the missing data from the other sources.

The missing data problem for variables originating from the European Values Study[9] was specific in that there were only four waves of the study conducted within the span of nearly 30 years – the first study was undertaken in 1981 and the last in 2009, with three rather isolated observations per country in case of the countries under research. Moreover, the data were collected via extended surveys and thus there is possibility of biases. However, they gave a good measure regarding the trends in the shifts of preferences and ideas of the citizens of the individual countries. That is why to compensate for the years when no survey was conducted and at the same time to compensate for the possible selection bias the fitted values from simple logarithmic trend models were used instead[10].

The qualitatively different was the missing data issue for the remaining 13 variables from other sources. We had 104 missing values in the dataset which represents less than 3 per cent of data. The biggest proportion of missing values for a single variable was slightly less than 15 per cent. In general, this was one of the criteria we considered for variables selection – the proportion of missing values had to be below 20 per cent. We have dealt with these in the following three ways. Firstly, where possible, we replace the missing data with values from the same or nearly same variables from other sources (17 missing values). Secondly, we replaced

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[8] Study on values realized in the countries of Europe by EVS research network is not included in each of the data-sets of World Values Survey.

[9] This relates to six variables used in tolerance index, see *Table 2* for details.

[10] Using imputation by logarithmic time trend makes sense also from the perspective of the gradual change in time. The underlying concepts of attitude and values regarding the whole country is not expected to change in abrupt or erratic way – that is why smoothing the values using the trend function may well correspond to reality. As far as a functional form is concerned, we utilize the logarithmic function which decreases the rate of growth or decline in time. To the best of our knowledge the damped trend functions are one of the most reliable forecasting tools. The attitudes or values may change because of a random shock in the future (such as the recent migrant waves) but no forecasting method is immune to this.

the missing values by the directly preceding known value from the same variable and the same country (77 missing values). Thirdly, we replaced missing values in the beginning of the time series with the following value – this was the case for the missing values on the beginning of the time-series (10 missing values).

Normalization of variables

Each variable is measured in different units of measurement and even though the "size" effect of the economy is eliminated (each variable is expressed either as a score or as a ratio) in order to construct the overall indicator as a linear combination of the variables each value needs to be transformed to the score between 0 and 10, 10 being the highest value, meaning the best impact on the creative capacity of the economy. Two points are necessary for the linear transformation to be performed. Instead of minimum corresponding to 0 and maximum corresponding to 10 (for certain variables where the high value suggests the low creative capacity it is reversed – these variables are percentage of intolerant respondents to people of different race and immigrants, and also justification of bribing and lying) we decided to take the 5th percentile to be transformed to 0 and the 95th percentile to 10 in order to eliminate the potential influence of outliers[11]. Technically the linear transformation is performed according to the following equation:

$$y = a + bx,$$

where y is the value of the score, x is the value of the variable, a and b are the constants calculated for each indicator separately based on the following terms:

$$a = \frac{10 * 5^{th}\ percentile}{5^{th} - 95^{th}\ percentile}$$

$$a = \frac{10}{95^{th} - 5^{th}\ percentile}$$

The above normalization in reality corresponds to two consequent transformations – the first one is winsorization, and the second one is min-max normalization. The winsorization helps to deal with extreme values. And the min-max transformation is one of the frequently used methods of normalization when creating the composite indices (see OECD, 2008).

Determination of weights

When forming any composite index, the determination of weights is of the great importance. We use the three levels of weights (see *Table 2* for details) – the first level is the level of three indices, the second level refers to the nine sub-indices and the last one corresponds to individual indicators (or variables). In this stage of work, the decision was made to use the equal weights on all three levels. In this way, all indices and sub-indices have the same weights and so do the variables within sub-indices. We consider this method to be appropriate in our situation. We prefer to keep the theoretical concept of 3T creativity index rather than to employ empirical weighting and grouping based on statistical methods such as principal component analysis. Also, most composite indicators employ equal weights (OECD 2008, 31).

Comparison with other indices

Representative variables used for happiness, economic performance and human development

We decided to explore association between creativity index and two important dimension of human life – economic prosperity and happiness of population. We choose GDP per

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[11] The values of the 5th and the 95th percentiles were selected as a compromise – if the minimum, resp. maximum are not extreme values and represent potentially useful benchmark, the 5th, resp. 95th percentile are reasonably close and the difference would be relatively small. If, on the other hand, the minimum, resp. maximum are extreme values, the values of the 5th, resp. 95th percentiles will eliminate their adverse influence on the index.

capita as a proxy of economic performance, World Happiness Index as a proxy of happiness and Human development index as a proxy of both. At this stage, the analysis is just exploratory. We are not inferring anything about the direction of causality, we primarily focus on statistical relationship. Also, the previous research used similar justification of the usefulness of the creativity index. Nevertheless, the examination of causality is a potentially fruitful topic for future research.

GDP per capita is the standard measure of economic output.[12] GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

The World Happiness Index published in World Happiness Report is used as a proxy of citizens' happiness. World Happiness Report[13] is compiled by a group of independent experts on the basis of the Gallup World Poll survey. The report provides World Happiness Index representing six key variables – income, healthy life expectancy, social support, freedom, trust and generosity. These variables explain major national-level differences in life evaluations. The respondents in the surveys the index is based on are asked to assess their life situation on a 0 to 10 scale, 0 being the worst possible life and 10 being the best they can imagine[14]. The important feature of the index is its time-series dimension enabling to explore not just cross-sectional differences among the countries but also changes within a single country.

Human development index (HDI) is yet another representative variable that measures the economic performance and citizens'

happiness in a balanced fashion. It combines three important dimensions: long and healthy life (life expectancy index), knowledge (education index), a decent standard of living (GNI index). Even though there is some overlap with GDP per capita, the HDI is often used for assessment of countries' development and not only for economic growth.

Measure of association between the creativity and happiness, economic performance and human development

To study associations between creativity and economic performance and happiness we use Pearson's correlation coefficient.[15] It measures the degree of linear association between the two variables. The Pearson's correlation coefficient is the most commonly used measure of bivariate correlation. There are two forms of the centring of variables, which are usually used in the modelling, namely the grand mean centring and the group mean centring. Grand mean centring uses one and the same mean value for the whole sample. Group mean centring considers the different groups within the sample and thus calculates with one mean value for one group of the sample. Since we deal with panel data the group mean centring seems to be the preferred option. We compute correlations both by years thus capturing "between" dimension (measuring differences between countries) and by individual countries capturing "within" dimension (measuring differences in time).

Empirical results

Creativity of European countries

Construction of European 3TCI enables us to compare creativity of 28 European coun-

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[12] We use GDP per capita in constant 2010 USD.

[13] For the up-to-date information see http://worldhappiness.report/ed/2018/

[14] The method of measurement used in the surveys is sometimes called Cantril Self-Anchoring Scale, or Cantril ladder. That is why the world happiness index is sometimes called life ladder.

[15] Based on Long's review of research methodologies in creativity studies, not limited only to creativity in entrepreneurship or in economics (Long, H. 2014), correlational techniques were utilized most widely to analyse quantitative data.

tries among themselves and since the index is computed in period of ten years we can explore the time dimension, too. *Table 4* presents average values of European 3T creativity index along with its three sub-indices for 28 European countries for three sub-periods within the time-period 2005–2014 along with the country rankings.

The top 4 creative countries based on European 3CTI are Sweden, Finland, Denmark and Iceland in all three sub-periods; on the other end of the spectrum the bottom four countries are always Croatia, Slovakia, Bulgaria, Romania. In general, the ranking of countries is fairly stable across the sub-periods. The greatest fall was experienced by Greece when in the first sub-period 2005–2008 its rank was 20 while in 2012–2014 the rank was 24. Interestingly, the average values of its creativity index were very similar in all three sub-periods.

Based on countries ranking we can observe the interesting clustering. The top 5 countries are those from Scandinavia plus Iceland. The following 8 are from Western Europe. 11 of these 13 countries are the old member states of EU and 2 of them are members of European Economic Area (EEA). Slovenia ranks 14 and marks the half of the sample. The following 3 countries are from Southern Europe. 10 post-socialist countries are at the end of the table, along with the sinking Greece. With certain level of simplification, we can say the ranking of creative capacity represented by European 3T creativity index is North, West, South and East. *Figure 1* presents European 3T creativity index map (average values for three sub-periods) and partially illustrate the above-mentioned clustering.

Next we analyse changes of creativity in time within each country, using period of ten years. *Figure 2* shows the evolution of the European 3T creativity index in time. In this figure, we created 4 groups (with 7 countries each) based on average value of the creativity index within the ten-year period (2005–2014). This way the groups are relatively homogenous in terms of level of the
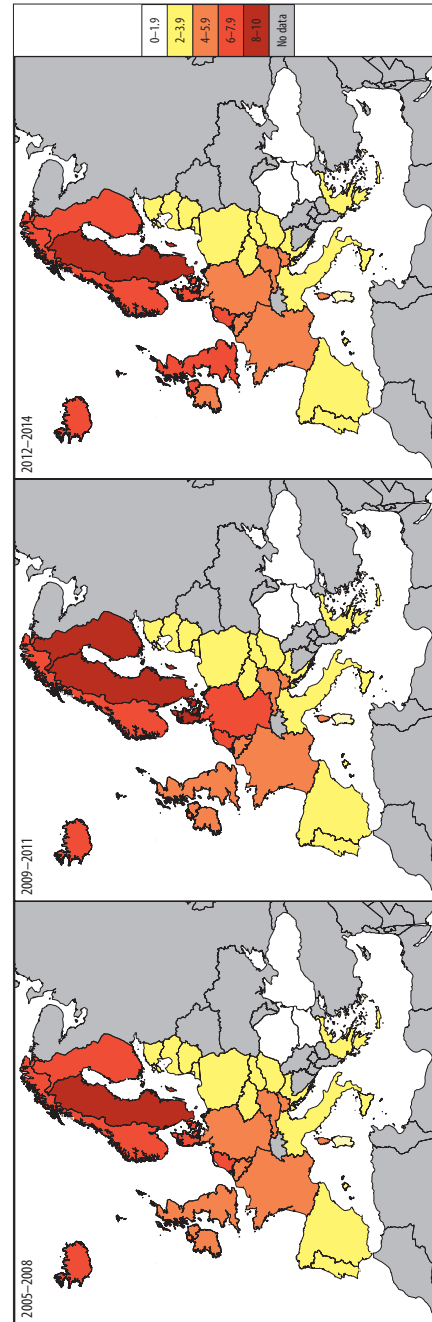

Fig. 1. Average values of European 3T creativity index for 28 European countries. The maps are coloured based on the average values of European 3T creativity index for a given country and sub-period.

Table 4. Average values of European 3T creativity index along with rankings for 28 European countries for three sub-periods

Period 2005–2008			Period 2009–2011			Period 2012–2014		
Country	Creativity Index		Country	Creativity Index		Country	Creativity Index	
	value	ranking		value	ranking		value	ranking
Sweden*	8.23	1	Sweden	8.37	1	Sweden	8.68	1
Finland*	7.98	2	Denmark	8.30	2	Denmark	8.35	2
Denmark*	7.86	3	Finland	8.09	3	Finland	8.28	3
Iceland*	7.40	4	Iceland	7.61	4	Iceland	7.41	4
Netherlands*	6.63	5	Norway	6.82	5	Norway	7.03	5
Norway*	6.47	6	Netherlands	6.77	6	Netherlands	6.94	6
Germany*	5.96	7	Germany	6.29	7	Germany	6.43	7
United Kingdom*	5.83	8	United Kingdom	5.89	8	United Kingdom	6.07	8
Austria*	5.31	9	France	5.56	9	Luxembourg	5.96	9
France*	5.23	10	Luxembourg	5.48	10	Belgium	5.77	10
Luxembourg*	5.09	11	Austria	5.42	11	Austria	5.75	11
Belgium*	5.07	12	Belgium	5.40	12	France	5.74	12
Ireland*	4.67	13	Ireland	5.38	13	Ireland	5.41	13
Slovenia	4.18	14	Slovenia	4.99	14	Slovenia	5.28	14
Spain*	3.72	15	Spain	4.16	15	Spain	4.04	15
Italy*	3.41	16	Estonia	3.65	16	Portugal	3.80	16
Portugal*	3.09	17	Portugal	3.51	17	Estonia	3.60	17
Estonia	2.90	18	Italy	3.26	18	Italy	3.20	18
Hungary	2.81	19	Hungary	3.08	19	Hungary	3.11	19
Greece*	2.74	20	Lithuania	2.92	20	Latvia	3.05	20
Czech Republic	2.52	21	Latvia	2.81	21	Lithuania	3.03	21
Latvia	2.45	22	Czech Republic	2.75	22	Czech Republic	2.94	22
Lithuania	2.33	23	Greece	2.75	23	Poland	2.88	23
Poland	2.23	24	Poland	2.57	24	Greece	2.72	24
Croatia	2.16	25	Croatia	2.39	25	Croatia	2.66	25
Slovakia	2.08	26	Slovakia	2.15	26	Slovakia	2.07	26
Bulgaria	1.41	27	Bulgaria	1.57	27	Bulgaria	1.77	27
Romania	1.35	28	Romania	1.51	28	Romania	1.47	28

Notes: The table shows ranking of 28 European countries based on the average values of European 3T creativity index for three sub-periods within time-period 2005–2014. *Countries were the EU and EEA member states before 2004.
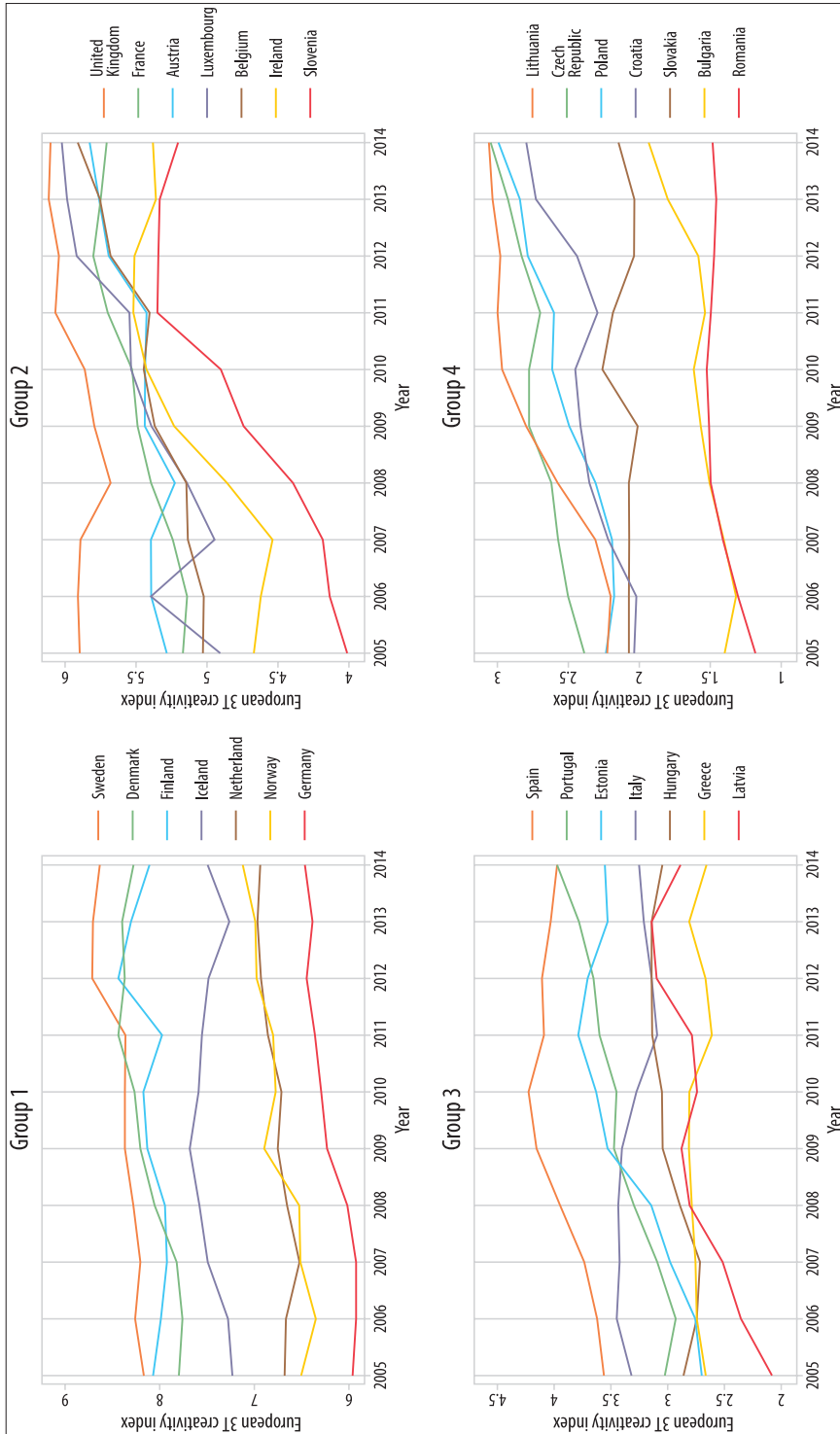
Fig. 2. Time-series plots for European 3T creativity index. The groupings of the countries are determined by the average value of the European 3T creativity index during the ten-year period – the group 1 comprises the first seven countries, group 2 the set of following seven countries, and so on.

creativity. The charts reveal that for majority of countries the creativity index increases in time. However, in each group where the level of creative capacity measured by our index is stagnating (e.g. Iceland in the group 1, Greece in the group 3, Slovakia and Romania in the group 4). Even though we have shown in the previous paragraphs that countries' ranking is relatively stable within the analysed periods, growing trends suggest that ranking may change in the longer term which is important observation for stagnating countries.

Association between European 3T creativity index, World happiness index, GDP per capita and Human developments index

In order to explore the relationship between European 3T creativity index and three indices representing happiness (World happiness index), economic situation (GDP per capita) and human development (Human development index) we use Pearson correlation coefficient. The structure of the data (time-series and cross-section dimension) enables us to look at this problem from two perspectives.

The first one is to explore the correlation between countries. This approach is suitable for data without time-series dimension (e.g. Florida, R. *et al.* 2015). The calculated Pearson's correlation coefficients for each year in the sample are shown in *Table 5*, Panel A.

The correlation coefficient of European 3T creativity index and World happiness index takes on values from 0.77 to 0.90 and it is statistically significant at the usual 5 per cent significance level for each year. The correlation coefficient between the European 3T creativity index and GDP per capita is also statistically significant for each year with somewhat smaller values ranging from 0.71 to 0.75. This suggests that countries with higher values of the European 3T creativity index have on average higher values of happiness and higher values of GDP per capita. The relationship is stable and seems to hold for each year within the sample. This find-

ing is not new and has been documented in earlier literature (Hassan, I. and Tucci, C.L. 2010; Florida, R. *et al.* 2015). As far as the relationship between the European 3T creativity index and Human development index is concerned, the cross-sectional correlation coefficients are relatively high and stable with values ranging from 0.87 to 0.90. Again, this demonstrates strong relationship between the two variables.

The second approach is focused on the relationship between the variables of interest within the same country. The values of the within country correlation coefficients are displayed in *Table 5*, Panel B. The results are rather unstable in terms of direction of relationship, its strength and its statistical significance, especially for the first two indices. There are several potential reasons for this observation. Firstly, when compared to the cross-sectional correlations the number of time-series points is at most ten and often less because of the missing data for World happiness index. Secondly, the changes within countries are much smaller than those between countries. Thirdly, there may be time lags involved in that the changes of one variable may be associated with the changes in the other one with some lag. Even though the examination of causality is a potentially very interesting research topic, given the small number of time periods in the sample we refrain from inferences about the causality among the variables involved. On the other hand, the relationship between the European 3T creativity index and HDI is relatively strong for majority of countries. This may be caused by partial overlap between the two indices along the dimension of talent/education indices.

Clusters of countries based on European 3TCI, World happiness index, GDP per capita and Human developments index

One of the questions we try to answer in the paper is related to the geographic distribution of the creativity index. We have already dem-

Table 5. Correlation coefficients between European 3T creativity index and World happiness index (WHI), GDP per capita and Human development index (HDI)

Panel A: Cross-sectional correlations				Panel B: Time-series correlations			
Year	Correlation coefficient			Country	Correlation coefficient		
	WHI	GDP pc	HDI		WHI	GDP pc	HDI
2005	0.83*	0.73*	0.89*	Austria	0.01	0.49	0.66*
2006	0.90*	0.74*	0.88*	Belgium	-0.74*	0.31	0.90*
2007	0.77*	0.71*	0.88*	Bulgaria	0.74	0.77*	0.91*
2008	0.78*	0.72*	0.87*	Croatia	-0.07	-0.13	0.89*
2009	0.84*	0.72*	0.87*	Czech Republic	0.20	0.59	0.97*
2010	0.86*	0.73*	0.87*	Denmark	-0.72*	-0.64*	0.81*
2011	0.86*	0.73*	0.89*	Estonia	0.12	-0.04	0.80*
2012	0.87*	0.74*	0.89*	Finland	-0.46	-0.59	0.42
2013	0.85*	0.75*	0.89*	France	-0.26	0.24	0.90*
2014	0.83*	0.75*	0.90*	Germany	0.78*	0.77*	0.90*
Average	*0.84*	*0.73*	*0.88*	Greece	0.26	0.40	0.21
				Hungary	-0.42	-0.32	0.82*
				Iceland	-0.65	0.03	-0.18
				Ireland	-0.53	-0.53	0.18
				Italy	0.78*	0.64*	-0.68*
				Latvia	0.49	0.50	0.83*
				Lithuania	-0.30	0.65*	0.71*
				Luxembourg	-0.22	-0.26	0.69*
				Netherlands	-0.42	-0.15	0.83*
				Norway	0.17	-0.50	0.82*
				Poland	0.12	0,94*	0,91*
				Portugal	-0.60	-0.66*	0.98*
				Romania	0.14	0.87*	0.96*
				Slovakia	0.40	0.21	0.18
				Slovenia	0.39	-0.23	0.84*
				Spain	-0.78*	-0.52	0.71*
				Sweden	0.24	0.35	0.76*
				United Kingdom	-0.54	0.07	0.57
				Average	*-0.07*	*0.12*	*0.65*

Notes: The tables show the Pearson correlation coefficients between the European 3T creativity index and World happiness index (WHI), GDP per capita and Human development index (HDI). Panel A shows correlation between countries in each year and their average. Panel B shows correlation between the creativity index and World happiness index (resp. GDP per capita, or HDI) within each country and their averages. *Statistically significant coefficients with p-value lower than 5 per cent.

onstrated that the levels of creativity are clustered within certain regions. The highest levels are in the countries of Northern and Western Europe. The countries in another group belong to one of the two categories: they are either post-socialist countries that joined EU later (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Croatia, Bulgaria, Romania) or they are southern countries and older members of EU (Greece, Italy, Portugal and Spain). Slovenia is an interesting case in that it is between the two groups.

The charts in *Figure 3* show the association between the European 3T creativity index and happiness for three sub-periods. The clustering of the countries partially confirms the earlier assignment into the four groups. The earlier member countries of EU and EEA are located in the upper right corner of all charts with both the higher levels of happiness and value of creativity index. The Southern older EU members show an interesting pattern in time in that they moved closer to those from Eastern and Central Europe.

Fig. 3. Association between European 3T creativity index and World happiness index. The scatterplots show the association between average values of European 3T creativity index and average values of World happiness index for given period. The colouring is based on the EU/EEA membership before 2004 (green: earlier members, orange: entrants after 2004).

The charts in the *Figures 4* and *5* show the relationship between creativity index and the GDP per capita, resp. HDI. Here the separation between the older EU/EEA members from North-West and the rest of Europe is

also visible. The countries from Northern and Western Europe are again in the upper right corner with high levels of GDP per capita, resp. HDI and the European 3TCI, too. The countries from the Southern Europe are located above those from the Central and Eastern Europe with exception of Slovenia, i.e. the southern countries have higher level of GDP per capita and HDI but in terms of creativity they are within the range of creativity of Central and Eastern European countries.

Discussion

The comparison of creativity index with other indices is not new and has been used before. The previous studies (e.g. Florida, R. *et al.* 2011) also related the level of creativity to GDP, life satisfaction and HDI and shown significant associations. This may have suggested that the increase in creativity or creative capacity causes the increase in the overall economic performance, life satisfaction and HDI.[16] However, the above results were obtained using the cross-sectional data and we have replicated this result in our study. Moreover, we have extended this analysis using time-series dimension and demonstrated, that this is not the case for changes within a single country – the GDP per capita and creativity index are not correlated. The same holds for World happiness index. Interestingly, as far as the Human development index is concerned, we have shown that there are some links between the creativity and human development within the most of the countries, even though this result needs to be confirmed or refuted using the longer time period and more elaborate methods such as regression or causal analysis.

The analysis of creative capacity using the European 3T creativity index revealed that

[16] Results of comparison of Global Creativity Index - GCI (see Florida, R. *et al.* 2011) using cross-section correlations: GCI and GDP per capita 0.84, GCI and Global Competitiveness Index 0.79, GCI and Global Entrepreneurship Index 0.81, GCI and Human Development Index 0.82, GCI and Life satisfaction 0.74.

Fig. 4. Association between European 3T creativity index and GDP per capita. The scatterplots show the association between average values of European 3T creativity index and average values of GDP per capita for given period. The colouring is based on the EU/EEA membership before 2004 (green: earlier members, orange: entrants after 2004).
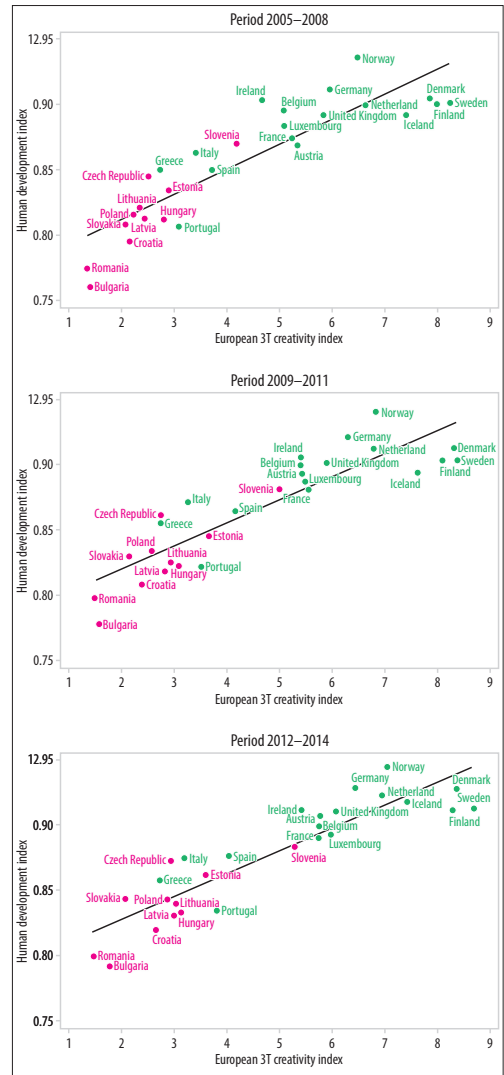
Fig. 5. Association between European 3T creativity index and Human development index. The scatterplots show the association between average values of European 3T creativity index and average values of Human development index for given period. The colouring is based on the EU/EEA membership before 2004 (green: earlier members, orange: entrants after 2004).

the country rankings are relatively stable in time. On the other hand, the creativity index grows gradually for most of the countries, albeit with a different rate of growth. Perhaps the ten-year period is relatively

short for the changes in rate of growth to manifest in the rankings. Countries wishing to stay in the forefront or to advance compared to their peers need to take this into account.

Relatively stable rankings and general slow rate of growth suggest that the change occurs rather slowly. We suppose it is because of cultural background, political and economic history of a country. If the policy makers wish to influence the overall creative capacity of a country, perhaps the quickest way would be to work on smaller units, such as regions or cities.

Our analyses suggest that creativity is not distributed randomly over European countries. Possible explanations of this finding may be the common history and exchange of ideas and concepts, mutual trade, sharing economic and political practises resulting in spill-over effects. We assume that historically such spill-over effects occurred regionally and the question is to what degree will the cooperation within the EU help some countries to grow faster, learning and inheriting from the most advanced ones.

Conclusions

We study the creative capacity of 28 European countries in the period 2005–2014 in this paper. We constructed European 3T creativity index based on Florida's 3Ts concept and calculated the index in the format of panel data. Unlike other studies comparing the creativity of countries we add time dimension.[17] Talent, technology and tolerance indices were also calculated individually. The paper provides open source creativity index, describing variables with their source and the weights of individual variables and sub-indices.

We have demonstrated relatively stable rankings of the countries in time, even though the creative capacity measured by the European 3T creativity index was gradually growing in time with varying rate of growth for individual countries. We have also shown evidence that the creative capacity is clustered geographically, even after more than ten years of cooperation within EU. Whether this changes in the future is an open question.

The creativity index was compared to World happiness index, GDP per capita and Human development index. We have replicated earlier cross-sectional analyses and shown the relatively strong correlation. However, one of the important contributions of our study is the addition of time-series perspective where we show that the picture is different for changes within individual countries. Here we demonstrated lack of correlation between creativity and GDP per capita or World happiness index.

Even though the above findings are relatively new, our study is not without any limitations and our approach is not without any issues. The first limitation is the assumption that it is possible to represent creative capacity using a single number. This is the implicit assumption in each study that deals with construction of any composite index. However, without this assumption the country comparison would be much more complicated. The second limitation lies in the choice of the 3T concept as a reference design of a comprehensive creativity index. Possibly one can make arbitrary choices in selection of individual variables or composite index construction design. We tried to be transparent, allowing future amendments and modifications. Another limitation is a relatively short period of 10 years in the construction of the index. Consistent collection of data will help in forming longer time series thus future research could examine causality among creativity and other variables of economic performance, wealth or indicators of quality of life. Lastly, we have used relatively simple methods of analyses (correlations and graphical analysis).

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[17] Studies measuring the creativity of countries constructed their indices only as cross-sectional. See Florida, R. and Tinagli, I. (2004), Florida, R. *et al.* (2011), Correia, C.M. and Costa, J.S. (2014).

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The rise of film production locations and specialised film services in European semi-peripheries

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Abstract

The research on a creative economy has been gaining momentum globally in the recent years, but the associated concepts such as the cultural economy, the creative class, creative cities and so on, have typically been urban or national in orientation. There is evidence showing that many important developments in creative industries take place now in almost all parts of the globe. One of the creative industries which may serve as a vivid example of the complex interplay between the global core and the local periphery is film industry. The paper aims to discuss rise of film production locations and specialised film services in European global semi-peripheries. Globalisation of film industry involves the expansion of production away from the established and globally recognised centres, such as Hollywood or Western Europe. While some researchers refer to this development as a 'runaway production', this paper examines it through a broader look to core-periphery relations and points out their implications and consequences from the perspective of European countries (with a focus on post-socialist countries of East Central Europe).

Keywords: creative industries, film industry, film services, core-periphery, semi-periphery, Europe

Introduction

Core-periphery relations can be useful in explaining some processes taking place in creative economy. Creative industries are currently under a global shift (Flew, T. 2013). It means they spread outside the core and they play an increasingly important role especially in so-called semi-peripheries. Semi-peripheral countries contribute to the production and export of a variety of goods, including cultural and creative goods (UNDP/UNCTAD 2010; UNDP, UNESCO 2013). They are marked by above average cultural producers, as exemplified by Argentina, China, India, Brazil, Mexico, Indonesia, and Iran, but also smaller countries such as Poland, Czech Republic and other East-Central European countries (UNDP/UNCTAD 2010). Not only semi-peripheral countries contribute to increasingly globalised creative economy, but creative industries have become substan-

tial part of the local and regional development in those countries. Many studies have pointed out the role of creative industries in post-socialist transformation of Central and European countries (Švob-Đokić, N. 2005; Egedy, T. and Kovács, Z. 2009; Stryjakiewicz, T. and Męczyński, M. 2010; Rumpel, P. *et al.* 2010; Slach, O. *et al.* 2013; Musterd, S. and Kovács, Z. 2013; Stryjakiewicz, T. *et al.* 2013, 2014; Chapain, C. and Stryjakiewicz, T. 2017). Our paper tries to build on that research output and extend the existing knowledge by exploring how core-periphery relations matter for globalising creative industries. We will present this role using the case of European film industry (with a focus on post-socialist countries of Central and Eastern Europe).

The paper is structured as follows. First, we will indicate the role of peripheries and semi-peripheries in the global value chain of creative industries. It will serve as a de-

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parture point to show the global shift in one the most internationalised among all creative industries, notably the film industry. We will then analyse three main aspects of contemporary global landscape in film industry: the global spread of film production infrastructure, such as film studios, the rise of international collaboration in film production, and the emergence of cost-cutting incentives, or policies intended to attract international film production. The paper is an attempt of synthesis of current knowledge and existing knowledge, using some data on film industry to illustrate the main arguments. Therefore, a multimethod approach was used, mixing qualitative and quantitative data on current processes in film industry.

The role of peripheries and semi-peripheries in the global value chain of creative industries

The value chain in the creative economy can be divided into two main parts related to the generation and capture of values. Basically, we can say that value production corresponds to production processes, while value capture is related to distribution and consumption. Each of these stages requires various resources and competences: creativity, knowledge or skills (Santagata, W. 2010). This chain is schematically presented in *Figure 1.* The curve on the graph shows what added value brings in the individual stage of the value chain. These approximate values were determined by the reconstruction of value chains in various creative industries, which had been analysed by many researchers. They include, among others, publishing industry (AT Kearney 2010), film (Finney, A. 2010; Kehoe, K. and Mateer, J. 2015), music (Meisel, J.B. and Sullivan, T.S. 2002), video games (Kerr, A. 2006), performing arts (Brecknock, R. 2004; Walmsley, B. 2011), and media (Doyle, G. 2002; Falkheimer, J. and Jansson, A. 2006). In addition, a number of value chain analyses referring to the creative sector as a whole was taken into account (Hearn, G.

et al. 2007; Bakhshi, H. and McVittie, E. 2009; Santagata, W. 2010; PWC 2011; Walmsley, B. 2011; Lampel, J. and Germain, O. 2016).

The process of value creation begins with (1) *the conceptual phase,* which starts with the idea for a creative good (such as film, song, or video game) and ends with the development of a project on how the good should look at the end. Santagata, W. (2010, 15–18) argues that the conceptual phase is preceded by the selection process of creators and that it is actually the first stage of the entire value chain.

When the concept is accepted, the second stage begins; it is related to (2) *financial and organizational work.* This stage is aimed at determining the profitability of a given venture, as well as financing possibilities. Not all ideas or products have a chance for commercial success. At this stage, therefore, the assessment of the possibility of marketability of a given product occurs. The knowledge is a key competence here, especially knowledge of the particular market or the specificity of the industry.

The next stage is (3) *pre-production*, that is preparatory work. The production of creative goods, especially complex ones, is often expensive (e.g. recording in a professional music studio, or making films outdoors), therefore its proper preparation is to ensure the rationalization of expenses. The business knowledge regarding the organization of creative ventures as well as knowledge of legal issues are also crucial here. As this phase also includes preparation for the creative work with other people, social skills and networks are important at this stage.

Proper production of a given good is the next phase (4), during which the good is created is created - song, advertisement, film, video game, theatrical performance. The production of each of these goods is different from each other, because their specificity is different. Nevertheless, the production of each of them requires a great deal of creativity, artistic and literary knowledge and skills in a given field of art or other activity. Each of the creative professions (singer, painter, sculptor, architect, advertising specialist, fashion designer, screenwriter, etc.) has a specific
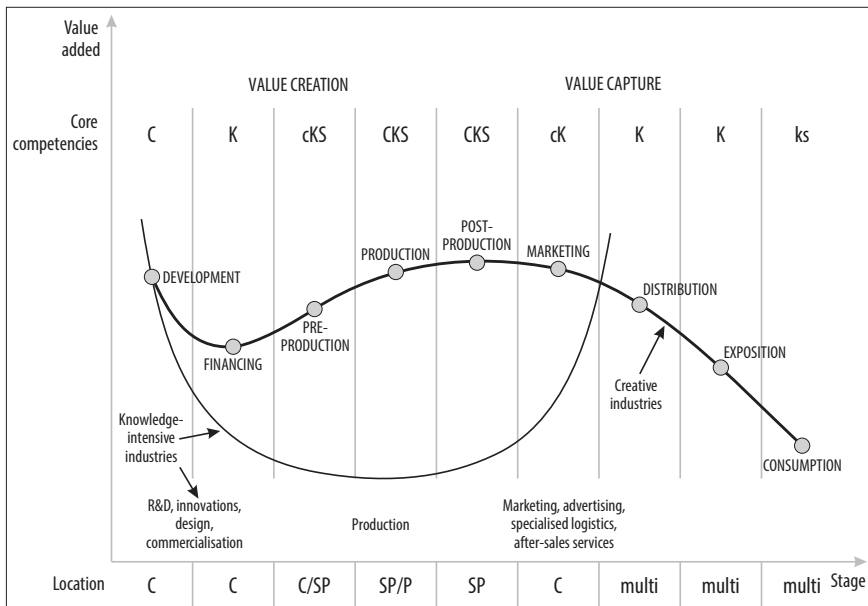
Fig. 1. Value chain in creative industries and the role of core-periphery location. – Location: C = *core*: developed countries, global cities, traditional centres of cultural production; SP = *semi-peripheries*: developed or developing countries, emerging centres of cultural production; P = *peripheries*: developing countries, local centres of cultural production; multi = dispersed location in multiple places. Core competencies: C = creativity (very important); c = creativity (moderately important); K = knowledge (very important); k = knowledge (moderately important); S = skills (very important); s = (moderately important). *Source*: Own elaboration based on Alcácer, J. (2006), Kerr, A. (2006), Hearn, G. *et al.* (2007), Mudambi, R. (2008), Bakhshi, H. and McVittie, E. (2009), Finney, A. (2010), Santagata, W. (2010), PWC (2011), Walmsley, B. (2011), Kehoe, K. and Mateer, J. (2015), Lampel, J. and Germain, O. (2016), Stachowiak, K. (2017)

combination of competences – skills and knowledge, whose creative use leads to the creation of the original good.

The next link in the value chain is (5) *post-production*. It occurs mainly in industries that produce complex creative goods. This is the stage in which this good must be "pieced together" from the parts produced at the production stage. In the case of audio-visual industries, this is the period after the end of the photos and sound recordings and lasts until the emission copies of the film are made. In the music industry, it refers to works after recording, related to sound processing and the preparation of a model version of the album. In publishing, it includes, for example, the correction or preparation of a book

cover. It is a stage requiring large amounts of knowledge, skills and competence. For example, in the production of a film at this stage, special effects are created, which in high-budget films, using advanced technologies, are often the main aesthetic value of the film. Hence, in such cases it is the stage with the highest added value, which is reflected in the amount of expenditures on post-production activities (in the case of many blockbuster film post-production accounted for around 25% of the film budget). The finished good is then prepared for release on the market.

This stage therefore applies to (6) *promotional activities and advertising* when the product brand is shaped, its identity is carried out and advertising campaigns are implemented.

Promotion and advertising start the process of value capture. (7) The *distribution of goods* ensures that they reach the largest group of consumers. Part of it is often (8) *exposition*, which refers to making creative goods available to consumers. Due to its importance in creative activities, it is recognized as a separate link in the value chain, although it often runs parallel to consumption. A basis for the distinction of the exhibition phase is the role of the recipient's contact with the good or its creator. The vernissage, the premiere of a film, a book or art in the theatre, but also an ordinary exhibition of paintings in the gallery, a film screening or a concert of music are important elements of contact between the good and the audience. In this phase, there are also contacts between creators and audiences. The examples of activities included in the exposure phase are cinema activities in the film industry and activities related to the organization of concerts in the music industry. In both cases these activities are considered as separate market segments (respectively film and music).

The final link in the value chain is (9) *consumption*. Advanced forms of consumption of creative goods, in particular prosumption, interfere with creative processes, thus indirectly (and sometimes even directly) contribute to the creation of values.

Value chains of creative activities are now spatially disaggregated (cf. Mudambi, R. 2008), therefore issues related to the location of individual links in the value chain are of great importance. Along with the added value curve for creative industries, *Figure 1* presents, as a reference, a similar curve developed by Mudambi, R. (2008) for high-tech industries. The value added curve is U-shaped, which results from the fact that the initial links of the value chain of such products as computers, smartphones, consumer electronics, are created by research and development or engineering design that bring a lot of added value. The production of such goods consists in the production of components and assembly in special factories, most often performed according to a strict procedure designed in the

initial stages. The added value is therefore relatively small. The places of such production are most often factories in China, Taiwan or South Korea. Then the finished product is sold, which is accompanied by advertising and promotional campaigns, after-sales services and logistics, so the added value increases again. The case of creative industries is somewhat different. As it can be seen in *Figure 1*, the stages with the highest value added in the creative industries are production and post-production. Those are also the stages requiring skills, creativity and knowledge. Therefore, outsourcing production in the creative industries is not necessarily related to routine and low-skilled job. Many of production and post-production activities are taking place outside of the core locations.

In the mid-nineties the U.S. National Research Council published a report convergence of computing, communications, and entertainment (NRC 1995). The report formulated a significant forecast (NRC 1995, 14): *Established entertainment centres (i.e. Los Angeles, New York) are no longer secure in their hegemony. In the next few decades, they will find that the dominance associated with physical concentrations of specialists, facilities, and mystique will be subject to profound change in the developing digital convergence matrix. Location independent communities, improving microprocessor-based production tools and methods, and the rapid dissemination of many skills in expanding world markets, all undermine centrality. Just as "Detroit" is a metaphor, so it will be with "Hollywood" also*. This prediction has worked fairly quickly, at least with regard to Hollywood. Employment only in the film industry in Los Angeles and its surrounding areas fell in the period 1999–2002 from 155,000 down to 130,000, which is about 15 per cent (Scott, A.J. and Pope, N.E. 2007). The number of films produced in the Los Angeles region also fell, and in subsequent years the crisis deepened (Walls, W.D. and McKenzie, J. 2012; Christopherson, S. 2013). The film production has moved to new locations in Canada, mostly to British Columbia, which was dubbed as Hollywood North

(Gasher, M. 2002). Many other locations have emerged as satellite productions for global film network. These include South Africa, New Zealand, China, South Korea, Czech Republic, Romania or Bulgaria (Elmer, G. and Gasher, M. 2005; Christopherson, S. 2006; Lukinbeal, C. 2006; Johnson-Yale, C. 2008; Wasko, J. and Erickson, M. 2008).

While Hollywood is increasingly outsourcing of feature film and television production to foreign countries, the peripheral and semi-peripheral locations harbour "runaway production". Lukinbeal, C. (2006) analyses such a case of American production in Romania and notes that it relates to two key issues: economics and geographic realism. Where economics relates to keeping the cost of production down, geographic realism plays a role in determining the suitability of a location for a narrative. All locational decisions relating to film production deal both with geographic realism and economics. Lukinbeal, C. (2006) observes that in the end economics trumps geographic realism and foreign locational choices are determined by attitude that "A Tree is a Tree".

Moreover, it is worth to note that the global trade in cultural products has become far more de-centred at the advent of 21st century (UNDP/UNCTAD 2010). Sinclair, J. *et al.* (1996) identified the importance of geolinguistic regions and geo-cultural regions as sites of audio-visual trade. The success of Latin American telenovelas with audiences in the Spanish- and Portuguese-speaking worlds, Hong Kong produced "Canto-pop" and action or martial arts films in Chinese-speaking media markets, and Australian serial dramas or "soaps" in English-speaking markets, are commonly cited examples of "indigenization" or "hybridization" of global cultural forms, that have considerable appeal in regional submarkets. In his work on media capitals, Curtin, M. (2003, 2007, 2015) observed that while Hollywood remains the global exemplar, very significant sites of film and television production aimed at international markets can be identified in cities as diverse as Mumbai, Hong Kong, Seoul, Cairo, Beijing, Prague, Miami and Lagos.

Global shift in the film industry

Due to rapid digitalisation, both production and distribution of creative goods have been altered and became globalised. This changed the dynamics of many industries, influencing also the places where those activities are located and contributing to their specialisation. A good example of a creative industry undergoing global shift is the film industry. It is organised around various stages in the production chain: a preparatory stage (pre-production), shooting (production) and post-production. Some researchers also add the stages of the distribution of a film and its exhibition. While traditionally almost the entire chain of film production used to be concentrated in a single place (e.g. in Hollywood), today a growing number of stages are introduced in a variety of locations (Walls, W.D. and McKenzie, J. 2012; Mirrlees, T. 2013). In fact, the film production has recently emerged as a global production network. The term 'global' does not necessarily imply that such a network actually spans the entire world; rather, it suggests that it is geographically extensive and functionally integrated across national boundaries. As such, globalisation of the film industry involves the expansion of production away from its established centres, whether to other countries or to other locations within the same country. This has been reinforced by recent trends in the film industry, like cross-border film production or the rise of production networks through international co-production initiatives, which affect established production locations (Dahlström, M. and Hermelin, B. 2007). Some groups, notably from the US film industry, refer to this development as a "runaway production" (Elmer, G. and Gasher, M. 2005; Lukinbeal, C. 2006; Wasko, J. and Erickson, M. 2008; Johnson-Yale, C. 2008). While it is now generally agreed that the film industry is turning into a global network, there is a dispute among scholars on whether the nodes of this network tend to become less important than the linkages (Wasko, J. and Erickson, M. 2008). Nevertheless,
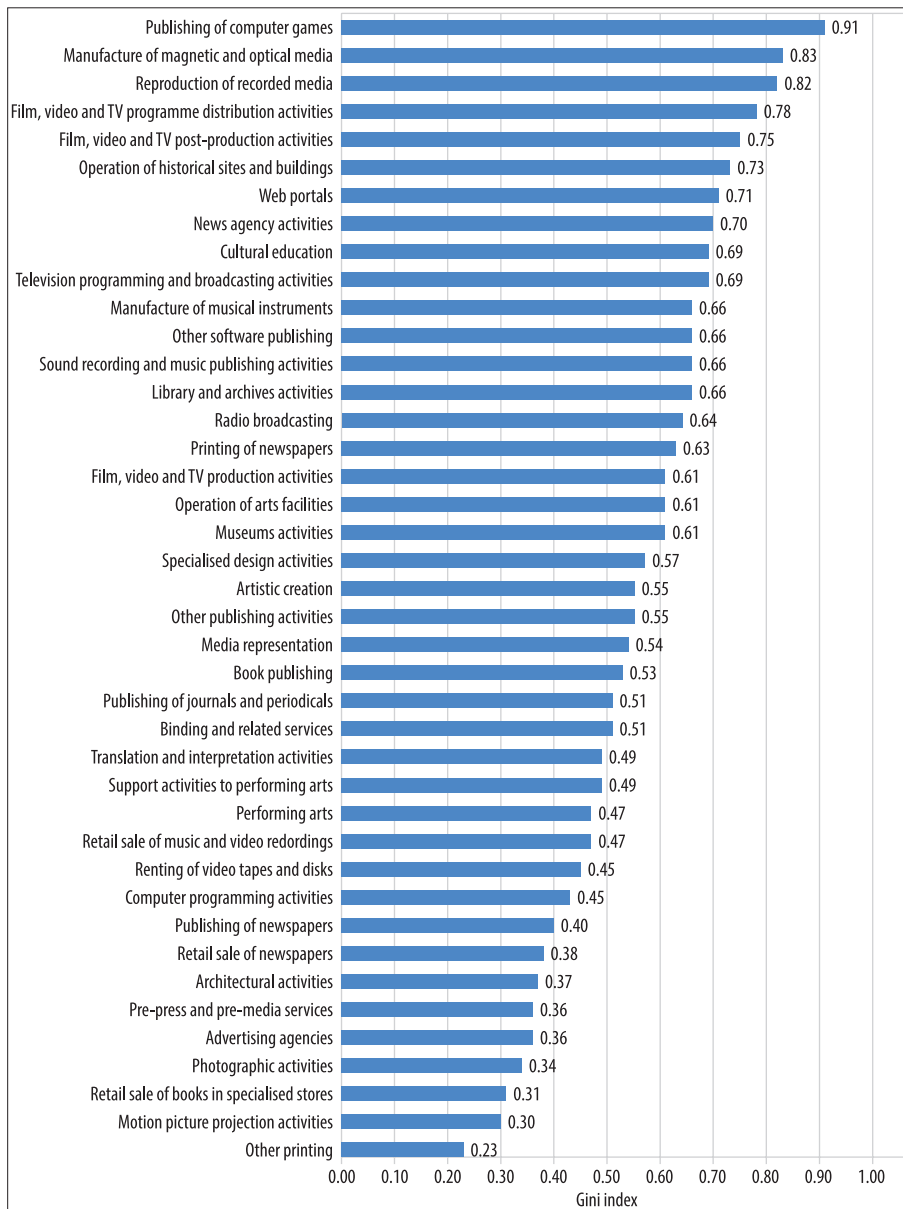
Fig. 2. Concentration of cultural and creative industries in Europe. Note: Due to data availability 129 regions in 17 countries are included: Austria, Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Luxembourg, Latvia, Lithuania, Portugal, Slovenia, Sweden, Switzerland. *Source*: Power, D. (2011, 28), modified.

the majority of film production industries is concentrated in a relatively small number of specialised places called film or media clus-

ters (Karlsson, C. and Picard, R.G. 2011). This is illustrated by *Figure 2*, where film and media sub-sectors tend to be one of the most

concentrated cultural and creative industries in Europe. Coᴇ, N.M. (2015) argues that film production has recently emerged as a global production network.

A new landscape of the global film industry includes: (1) the global spread of film production infrastructure, such as film studios and film clusters, along with the emergence of satellite production centres, (2) the rise of international collaboration in film production, and (3) the emergence of cost-cutting incentives, or policies intended to attract international film production. The case of the film industry shows that the location pattern of creative enterprises depends in particular on the branch of industry they belong, and on whether their activity is divided into stages in the production chain. We will elaborate on those three aspects of contemporary global film industry, focusing on Central and Eastern European countries considered as semi-peripheries. We want to show the dual nature of the processes involved: globalisation has created a variety of opportunities for film industries in these countries, but on the other hand they are still struggling to fully utilise all those possibilities.

Film studios as nodes of a global production network and their emergence outside the core

Individual value chains or production circuits are, themselves, enmeshed in broader production networks of inter- and intra-firm relationships, that is relationships between and inside firms. Such networks are, in reality, extremely complex structures with intricate links – horizontal, vertical, diagonal – forming multidimensional, multi-layered frameworks of economic activity (Coᴇ, N.M. and Yᴇᴜɴɢ, H.W-C. 2015; Dɪᴄᴋᴇɴ, P. 2015). In addition, global production networks (GPNs) are not simply technical–economic mechanisms through which the production, distribution and consumption of goods and services occur. They are „simultaneously economic and political phenomena (…), organizational fields in which actors struggle over the construction of economic relation-

ships, governance structures, institutional rules and norms and discursive frames (…). GPNs thus exist within the 'transnational space' that is constituted and structured by transnational elites, institutions, ideologies" (Lᴇᴠʏ, D.L. 2008, 944). Film studios are part of the global media landscape and can be thought as nodes of global film and media production networks. The actions of, and the interactions between, the five actor-centred networks shown in *Figure 3* – transnational media corporations, states and regions, creative workers, audiences, film studios – shape the changing geographical configuration of the global creative economy through their differential involvement in production circuits and networks.

Film studios oriented primarily to international production are parts of a mobile, fluid, slippery international production ecology shaped by broader industrial trends, such as: (a) international production levels, (b) the relative importance of particular markets, (c) the prominence of coproduction as an industrial norm, (d) the tendency toward agglomeration and the creation of multinational media corporations at one end of the scale and their interaction with a growing number of small firms at the other, and (f) the adjusted role and objectives of state and national government and of media policies (Gᴏʟᴅsᴍɪᴛʜ, B. and O'Rᴇɢᴀɴ, T. 2005). But the studios where much of this production takes place are also parts of a local, regional, or national production ecology or cultural sector, rooted
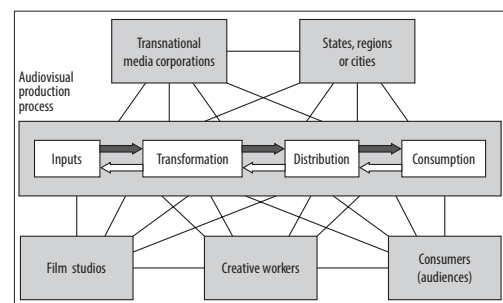

Fig. 3. Major actor-centred networks in the global film production. *Source*: Adapted from Dɪᴄᴋᴇɴ, P. (2015, 58)

or embedded in a place, featuring as employers or workplaces, as physical presences or landmarks in the built environment, as well as economic drivers. While we can trace the expansion of a competitive market for international production, we must acknowledge that it is always to some degree linked to the local production ecology of particular cities, regions, and countries. Studios seem to encourage the simultaneous existence of parallel and convergent dynamics. While some infrastructure developments, such as the studios built in Central and Eastern European countries, do focus to large extent on international production, understanding the contemporary studio complex as a part of film policy involves seeing it as a vehicle with the potential to bring the local and the international into a productive relationship. Indeed, there is an implicit and sometimes explicit assumption that "international production" will "cross-subsidize" domestic capacity in some way, through technological renovation, skills development, or some other mechanism (Moran, A. 1996).

Late 20th century and early 21st century have witnessed a global spread of film production infrastructure, such as film studios and film clusters, along with the emergence of satellite production centres. Stachowiak, K. (2018) have mapped and analysed 275 film studios from around the world (outside the US) which are part of a newly emerged international film production network. This mapping exercise has shown that the number of new film studios has increased significantly in the last decades (*Figure 4*).

Research carried out by Stachowiak, K. (2018) also shows, that many new establishments have more diversified capacity. They serve not only as production facilities, but also as post-production studios or pre-production services. In some cases, they can offer a coverage of almost whole value chain. *Table 1* presents the number of film studios by number of services offers (corresponding to value chain stages: pre-production, production or post-production). For example, a studio with two services offered can cover
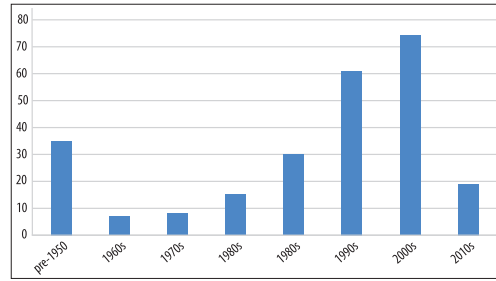
Fig. 4. Number of researched film studios focusing on international production by their establishment date (n = 275). *Source*: Stachowiak, K. (2018).

Table 1. Film studios* by number of services offered as per cent of all studios in the region, 2016

Region	Number of services offered			
	One	Two	Three	Total
Africa	53.8	30.8	15.4	100.0
South America	50.0	*41.7*	8.3	100.0
North America**	55.4	21.5	*20.0*	100.0
Australia	*66.7*	16.7	16.7	100.0
Asia	*59.3*	31.4	8.5	100.0
Europe	42.6	*41.0*	9.8	100.0
Together	54.2	31.3	12.0	100.0

*n = 275 **Excluding USA. *Source*: Stachowiak, K. 2018.

two out of three stages. Results shows that over a half of film studios in Europe and South America offers at least two services (usually production and post-production), what makes the more competitive on a global market. These include new establishment mostly in Central and Eastern Europe: Poland, Czech Republic, Bulgaria, Moldova, Ukraine as well as in Turkey.

International collaboration in European film industry

Co-productions are or great importance for international feature film production. Historically, co-productions firstly rose to prominence in the 1950s and 1960s, with US studios trying to take advantage of subsidies in Europe through co-production

structures (Kanzler, M. *et al.* 2008). After the decline of the European film industry in the 1970s, co-productions were revived by European Union legislation in the late 1980s and entered the second period of growth at the beginning of the 1990s. According to Morawetz, N. *et al.* (2007) more than 30 per cent of all films in Europe have been made as co-productions, although they are significantly more expensive than single firm productions, more complicated to execute, and do not necessarily enhance a project's potential to gain international market success. It was mainly due to the fact that, faced with the continuing decline of the European film industry, many European governments decided to revive co-productions in the late 1980s, bringing co-production agreements in line with the European Economic Community's (EEC) "open market" philosophy and allowing director, writer, cast or crew to come from any (then) EEC country. In the context of the burgeoning home video market and increased foreign sales, "co-production became a buzz-word on the tips of virtually every European independent producer's tongue" (Finney, A. 1996, 91).

Growth of co-production was further encouraged in the mid-1990s with the ratification of the European Convention on Cinematographic Co-production (Jäckel, A. 2003). In force since 1994, the agreement is a legal umbrella under which the 38 signature members of the Council of Europe can co-produce freely with each other. The convention has largely rendered bi-lateral treaties between signatory countries in Europe obsolete. The relative ease (in comparison to previous decades) with which projects can be set up legally as co-productions under the convention has certainly contributed, at least in part, to the continuous growth of co-productions in the last decade. Another important institution that has facilitated co-productions in Europe is Eurimages, the Council of Europe's fund for the co-production, distribution and exhibition of European cinematographic works. Set up in 1988/89, Eurimages has 37 member states (2017) and

has financially supported more than 1,100 films since its inception. Although criticized for being bureaucratic and having an elitist bias, Jäckel, A. (2003) states that Eurimages has greatly expanded the range and diversity of film projects (mainly though co-productions) in Europe over the past decade.

The co-productions framework in Europe along with globalisation of the film industry became an opportunity for "cinemas in transition", especially after 1989 (Portuges, C. and Hames, P. 2013). Despite a relatively small market potential as compared to countries with established film industries (such as the UK, France, Italy, Spain), East Central European cinematographies are trying to increase international collaboration. *Tables 2a* and *2b* present the number of national films produced in European countries against co-productions. For each country a ratio of co-productions (both major or minor) to national films was calculated to show the relative significance of international collaboration. It can be observed that many film industries of Central and Eastern European countries, especially smaller ones such as Slovakia or less developed such as Bulgaria and Romania, have tried to capture the international production *(Table 2a)*. Their co-production-to-national film ratios were higher than in established film industries such as French or German *(Table 2b)*.

Geographical distribution and supporting measures for film production in Europe

Geographical distribution of the film industry is uneven. The "Big Five" comprises most of this industry in the EU, namely France, Germany, Italy, United Kingdom (UK) and Spain. These five countries account for as much as 80 per cent of the film industry in Europe (Katsarova, I. 2014b). They enjoy more continuous film sector growth, investment in film projects, movie theatre popularity, and foreign market interest than the rest of Europe. However, when assessing the overall situation of the EU film industry, it is necessary to distinguish between these

Table 2a. Number of feature films and international collaboration in film production, 2003–2016

Films	A) East Central European cinematographies													
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Bulgaria														
National films	2	3	8	9	10	4	11	6	6	5	0	2	10	6
Major co-production	1	2	2	3	3	1	0	1	2	1	4	1	2	5
Minor co-production	1	3	3	3	6	2	4	3	1	2	0	0	5	7
Co-prod. / national, %	1.00	1.67	0.63	0.67	0.90	0.75	0.36	0.67	0.50	0.60	–	0.50	0.70	2.00
Czech Republic														
National films	10	19	17	28	18	18	21	16	21	23	19	21	20	24
Major co-production	4	1	4	1	5	5	8	4	4	5	8	8	7	17
Minor co-production	3	1	6	6	0	4	4	5	0	4	2	6	9	7
Co-prod. / national, %	0.70	0.11	0.59	0.25	0.28	0.50	0.57	0.56	0.19	0.39	0.53	0.67	0.80	1.00
Hungary														
National films	19	19	17	37	26	25	22	26	38	26	27	11	13	15
Major co-production	1	4	1	9	1	1	1	1	2	0	2	1	2	3
Minor co-production	1	3	8	0	1	4	4	9	4	1	3	3	3	1
Co-prod. / national, %	0.11	0.37	0.53	0.24	0.08	0.20	0.23	0.38	0.16	0.04	0.19	0.36	0.38	0.27
Poland														
National films	18	17	19	24	24	28	31	38	24	28	19	30	28	39
Major co-production	1	0	2	1	2	4	7	4	3	4	3	4	4	1
Minor co-production	1	3	2	2	8	8	4	2	8	10	3	3	3	6
Co-prod. / national, %	0.11	0.18	0.21	0.13	0.42	0.43	0.35	0.16	0.46	0.50	0.32	0.23	0.25	0.18
Romania														
National films	4	9	9	14	11	7	11	9	9	10	16	27	27	27
Major co-production	1	2	2	2	0	6	3	6	5	8	7	3	8	7
Minor co-production	13	10	9	2	3	1	2	4	5	2	3	7	1	7
Co-prod. / national, %	3.50	1.33	1.22	0.29	0.27	1.00	0.45	1.11	1.11	1.00	0.63	0.37	0.33	0.52
Slovakia														
National films	1	2	2	0	5	1	1	1	2	7	3	4	5	2
Major co-production	3	0	1	1	2	3	5	1	3	1	4	3	5	4
Minor co-production	4	1	4	2	3	3	7	2	3	5	7	3	5	8
Co-prod. / national, %	7.00	0.50	2.50	–	1.00	6.00	12.00	3.00	3.00	0.86	3.67	1.50	2.00	6.00

Source: Author's elaboration based on World Film Market Trends 2008, 2013, 2017.

five giants and the rest of European countries whose film industries are much weaker in terms of competitive position and capacity. In this respect, it is convenient to divide the overall European film market using the Kanzler's grouping system (Kanzler, M. *et al.* 2008), which splits it up into four regions, the Big Five, the rest of Western Europe, Scandinavia, and Central and Eastern Europe.

The biggest film service customers in Europe are the big six American studios, Warner Bros., The Walt Disney Company, Paramount Pictures, 20th Century Fox, Universal Studios, and Sony Pictures Entertainment. American film projects that have received big six funding, on average, have budgets exceeding 85 million euro, while the EU average is 11 million EUR for UK films, 5 million EUR for Germany and France, and just 300,000 EUR for film projects in such countries as Estonia and Hungary (Katsarova, I. 2014a). Thus, with money this vast at stake, it is easier to understand why countries are competing for foreign film production. Therefore, film tax incentives can be identified as one of the key government strategic tools of investment promotion, which have now become crucial for attracting film

Table 2b. Number of feature films and international collaboration in film production, 2003–2016

Films	B) Established cinematographies													
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Denmark														
National films	12	12	17	28	18	14	14	16	16	12	13	14	14	15
Major co-production	4	1	4	1	5	6	7	8	3	6	9	7	9	8
Minor co-production	3	1	6	6	0	6	7	7	6	9	9	7	8	8
Co-prod. / national, %	0.58	0.17	0.59	0.25	0.28	0.86	1.00	0.94	0.56	1.25	1.38	1.00	1.21	1.07
Italy														
National films	97	97	70	90	93	128	101	115	132	109	114	150	126	142
Major co-production	13	18	13	12	16	18	14	14	14	19	14	14	22	23
Minor co-production	7	23	15	15	14	9	18	13	9	16	7	7	5	7
Co-prod. / national, %	0.21	0.42	0.40	0.30	0.32	0.21	0.32	0.23	0.17	0.32	0.18	0.14	0.21	0.21
Germany														
National films	54	60	60	78	78	81	87	61	63	86	79	84	76	82
Major co-production	26	27	18	20	15	15	42	23	29	32	38	22	24	41
Minor co-production	n/a	n/a	25	24	29	29	20	35	31	36	37	43	45	43
Co-prod. / national, %	0.48	0.45	0.72	0.56	0.56	0.54	0.71	0.95	0.95	0.79	0.95	0.77	0.91	1.02
France														
National films	105	130	126	127	133	145	137	143	152	116	122	124	126	125
Major co-production	78	37	61	37	52	51	45	60	55	55	50	44	66	55
Minor co-production	29	36	53	39	43	44	48	58	65	42	38	37	47	44
Co-prod. / national, %	1.02	0.56	0.90	0.60	0.71	0.66	0.68	0.83	0.79	0.84	0.72	0.65	0.90	0.79

Source: Author's elaboration based on World Film Market Trends (2008, 2013, 2017).

projects fleeing the USA (OLSBERG, J. and BARNES, A. 2014; MELONI, G. *et al.* 2015). This promotion mechanism often runs parallel to state support, such as cash rebates, grants or fee-free locations (LUTHER, W. 2010). State support is often available only to citizens of particular country. Meanwhile, foreign operators can take advantage of cinema tax relief just by fulfilling the condition of spending most of the aid received in that country. So Americans, fleeing the already very expensive Hollywood and looking for space to make their film projects, happen always pay attention to three things: the geographical location required by the plot, the opportunity to assemble an experienced local team, and lower production costs. In this case, VISSER, G. (2014) even claims that securing financing can be considered the heart of the film industry. It is therefore not surprising that since 2014 there were 15 countries in Europe alone (UK, France, Germany, Hungary, Lithuania, Ireland, Belgium, Croatia, Czech Republic, Malta, Iceland, Poland, Serbia, Romania, and

Bulgaria) offering financial schemes for film projects (OLSBERG, J. and BARNES, A. 2014).

In the majority of EU countries there are clearly defined incentive systems and tax reliefs supporting both the development of domestic film industry and increasing the attractiveness of those countries for foreign film producers. In the EU since 2000, included as part of the European audio-visual strategy, these systems play an increasingly important role in shaping the development of national cinematographies and co-production. As of the end of 2014, there were 26 different types of tax incentives for audio-visual production in 15 European countries, including five in France alone. Seven of them were introduced in the last four years. In 2014, the new tax incentive systems were introduced by the Netherlands, Lithuania, Macedonia and Slovakia (OLSBERG, J. and BARNES, A. 2014, 23–26). Tax incentives introduced in 2010 in the Czech Republic and recently in Croatia brought an immediate dynamic increase in film production expenditure (in the latter

country by almost 200 per cent a year after the introduction) (Olsberg, J. and Barnes, A. 2014, 34). Tax incentives that support film production are also in force in Belgium, Ireland, Iceland, Luxembourg, Germany, Romania, Hungary, Italy and the United Kingdom.

Apart from tax incentives, EU countries use a wide range of support measures for audiovisual production. EU's Creative Europe program financial plan assumes to allocate 800 million EUR to support EU film projects. Incidentally, the EU film subsidy is only a supplementary source of funding for EU members in addition to the independent national film support mechanisms. It should be noted that depending on the local film support rules and the film project category a national funding mechanism is usually limited to 50 or 75 per cent of the total budget of a film project. In total, Europe provides around 3 billion EUR annually for industry support (European Commission 2013). This funding comes from over 600 national, regional and local programmes. The money is to provide conditions for the dynamic development and consolidation of the audio-visual industry through the creation of production enterprises with a solid foundation and a sustainable resource of human skills and experience. With this support, the EU has become one of the largest producers of films in the world. The EU cinema industry produced 1,299 feature films in 2012 compared to 817 in the US (2011), or 1,255 in India (2011). In 2012, Europe counted 933.3 million cinema admissions. Over one million people are employed in the audio-visual sector in the European Union (European Commission 2013). The support measures mentioned in this paragraph help retain over 373,000 workplaces and sustain 91,000 companies in the EU (Katsarova, I. 2014a).

Conclusions

Globalisation processes and technological change (digitalisation) have created a global film industry and accelerated global competition. Local film industries are forced to undertake necessary reforms if they want to compete successfully. Otherwise they will not be able to attract investment and also lose their talents. Due to historical circumstances and the relatively small local markets, the periphery and semi-periphery, such as most Eastern and Central European countries, have film industries dependent on public subsidies. They subsidise some of the production expenses of domestic producers or are used to attract foreign investment in the form of contract or location shooting. Inward subsidies and other incentives have often been discussed in connection with possible trade distortions and competition between locations that offer the highest level of incentives. However, financial incentives alone without the development of the complementary human resources and related infrastructures are not sufficient to yield local benefits except of short term ones (OECD 2008). For productions that are outsourced to more peripheral locations, arguably the greatest level of economic spin-off is obtained when studio and post-production facilities can be found in these locations too.

In order to keep up with structural changes in the global film industry, the semi-periphery has been adapted by increasing international collaboration, establishing new film studios or modernising old ones, and creating incentives aiming at international investors. However, the EU research reveals that the film industry in the Central and Eastern European region is not entrepreneurial enough. Solutions as co-production, encouraged financially by European subsidies, are used to increase international collaboration. A general analysis of the region reveals that more and more countries are producing cinematic output within international networks.

It is worth to note that many of the abovementioned incentives are not offered by national governments. In North America, for example, both US states and Canadian provinces have considerable independent tax-raising powers, and film and video producers can obtain tax incentives and other subsidies at local and regional levels

(Olsberg, J. and Barnes, A. 2014). These fiscal incentives can generate intense competition both between and within regions as well as countries. Often individual cities in the same country compete with each other to become attractive as production locations. Locally based schemes are popular and are considered in many cases to have realised returns to local economies that are well in excess of those from similar concessions granted to other types of industries. These new developments reflect the emergence of increasingly global production system in the film industry and an increasing role of peripheries and semi-peripheries in the global creative economy.

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How do various types of regions attract creative industries? Comparison of metropolitan, old industrial and rural regions in Czechia

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Abstract

In this paper we aim to describe and explain current spatial distribution of creative industries in Czechia. We ask to what extent are localisation patterns of creative industries influenced by specific local contexts. Therefore, we employed a typology of regions (close to local labour areas) that may explain spatial distribution of creative industries: metropolitan cores, metropolitan hinterlands, old industrial regions, urban and rural regions. We use general linear models combining the regional typology as a fixed factor and four covariates – employment density, density of cultural industries, mean firm size in creative industries and diversity of economic activities. We employed horizontal localisation quotient of regional employment in creative industries for the year 2014 as a dependent variable. Our main finding is that the regional typology explains a higher share of variability of the dependent variable (relative specialisation in creative industries) than any other explanatory variable. However, after exclusion of metropolitan cores, the model lost a significant amount of its explanatory power. Urban size/density and position in urban hierarchy are the key explanatory variables. We found only limited empirical evidence that regional contexts affect localisation of CI – regions of similar population/economic size do not differ significantly in spatial concentration of CI.

Keywords: creative industries, localisation, spatial distribution, metropolitan regions, old industrial regions, rural regions, Czechia

Introduction

There are several reasons why *creative industries* (CI) have been standing in the spotlight of economic and urban geographers. Positive effects of these industries on urban regeneration and stimulation of productivity growth and innovation performance in other sectors of the economy have been reported (Stam, E. *et al.* 2008; Müller, K. *et al.* 2009). Over-representation of CI in large urban areas (Lazzeretti, F. *et al.* 2008, 565) may contribute to spatially uneven development and an increasing gap in economic performance between metropolitan and non-metropolitan areas (Rodríguez-Pose, A. and Fitjar, R.D. 2013). City size and status – inherited, slowly evolving and hardly

changeable factors in a short time period – are among the key drivers of CI localisation (Musterd, S. *et al.* 2007; Musterd, S. and Gritsai, O. 2010). Most importantly, propensity of firms in CI to cluster into dense hubs suggests the key importance of local amenities and geographical proximity for their productivity and growth. Therefore, urbanization and localisation economies are most frequently mentioned as the key drives for clustering of CI in and around large cities (Lazzeretti, F. *et al.* 2008).

Despite consensus on the key role of agglomeration economies some principal questions remain unanswered (Gong, H. and Hassink, R. 2017). Do varieties in national institutional frameworks lead to distinct spatial patterns of CI at the regional level? How are

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current geographies of CI rooted in their historical development? To what extent can we explain the spatial patterns of CI by the urban hierarchy and what is the importance of the local contextual factors? What do we know about localisation of firms in CI that focus rather on standardized routine activities and are positioned in lower tiers of the global production networks? Most importantly, while there have been many studies focusing on the effects of various factors on the localisation of CI (e.g. urbanization and localisation economies, related variety, cultural heritage or creative class – Lazzeretti, F. *et al.* 2012), we still lack the theoretical framework and empirical evidence on how these effects interact in various local contexts and in various types of regions such as metropolitan, old industrial or rural (Tödtling, F. and Trippl, M. 2005).

In this paper we aim to fill the gaps and answer at least partly the above mentioned questions. Our primary goal is to describe and explain current spatial distribution of CI employment at inter-urban level (municipalities with extended competences – microregions roughly corresponding to local labour areas). Our primary research question is to what extent can we explain spatial distribution of CI in Czechia by the position and function of regions in national settlement system and their economic structure. We ask how and why do metropolitan cores, metropolitan hinterlands, urban regions, old industrial and peripheral regions differ in their ability to attract CI. In addition, we also examine potential collocation between creative and cultural industries (for definition and comparison see Tomczak, P. and Stachowiak, K. 2015) and collocation between CI, other knowledge-intensive business services and manufacturing industries.

The second section provides a theoretical discussion of the localisation factors of CI, while in the third section we summarize briefly the geographical and institutional context of Czech regions and previous empirical findings concerning the spatial distribution of CI. Fourth question is focused on the data and methods. Fifth section describes current spatial distribution of CI at microre-

gional level, while the sixth explains it using several regression models.

Theoretical framework

Spatial patterns and localisation factors of CI have been empirically documented and tested elsewhere (see e.g. Lazzeretti, F. *et al.* 2008, 2012; Polese, M. 2012; Rehák, Š. and Chovanec, M. 2012; Bertacchini, E.E. and Borrione, P. 2013; Slach, O. *et al.* 2013; Cruz, S.S. and Teixeira, A.A.C. 2015; Escalona-Orcao, A.I. *et al.* 2016; Danko, L. *et al.* 2017; Cerisola, S. 2018). There is a general consensus that CI tend to cluster in four types of locations: large urban agglomerations (Boix, R. *et al.* 2015; van Winden, W. and Carvalho, L. 2016) and their centres or inner cities (Spencer, G.M. 2015; Wood, S. and Dovey, K. 2015), metropolitan hinterlands (Felton, E. *et al.* 2010; Gregory, J. and Rogerson, C. 2018), smaller towns concentrating cultural heritage (Lazzeretti, F. *et al.* 2012), touristic centres/environmentally and residentially attractive regions including some rural and peripheral areas (Cruz, S.S. and Teixeira, A.A.C. 2015; Escalona-Orcao, A.I. *et al.* 2016). The authors mostly agree on the key role of urbanization economies related to diversity of industries, labour, infrastructure and institutions (Lorenzen, M. and Frederiksen, L. 2008), localisation economies resulting from specialisation, allowing for reduction of production/transaction costs, increased efficiency of factors of production and increased dynamic efficiency (Brazanti, C. 2015), cultural heritage and concentration of cultural industries (Lazzeretti, F. *et al.* 2008) and soft factors like local atmosphere, tolerance and amenities (Escalona-Orcao, A.I. *et al.* 2016) that may attract creative workforce and foster development of another key localisation factor: human capital endowments.[2]

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[2] Some other factors have been tested: telecommunication infrastructure, settlement factors (proximity to an urban marker or demographic status) and economic performance of the municipality (Escalona-Orcao, A.I. *et al.* 2016), the role of related variety (Lazzeretti, F. *et al.* 2008).

Our primary goal is not to test the effects of above mentioned localisation factors per se (this has been done by SLACH, O. *et al.* 2013). We try to determine how urbanization/locali-sation economies and other explanatory vari-ables affect spatial patterns of CI in different types of regions and to what extent local con-textual factors such as historical specialisation, institutional framework and current industrial structure matter. To answer these questions, we will first discuss how various types of (non) metropolitan regions may theoretically affect localisation pattern of CI. In the section 5 we provide empirical tests of these theoretical as-sumptions that are listed in *Table 1.*

Metropolitan cores provide generally the most favourable conditions for incubation, growth and clustering of CI. Combination of high population/firm density, large mar-ket, diversity of industries, labour and insti-tutions (LORENZEN, M. and FREDERIKSEN, L. 2008) stimulates localisation factors of CI both at the demand and supply side. Metropolitan cores are large enough to provide urbaniza-tion economies (RODRÍGUEZ-POSE, A. and FITJAR, R.D. 2013; PUGA, D. 2010) and locali-sation economies resulting from diversified specialization (FARHAUER, O. and KRÖLL, A. 2012). Intersection of morphological, func-tional and social diversity in some parts of inner cities can lead into the development of the so-called creative field (SCOTT, A.J. 2010; WOOD, S. and DOVEY, K. 2015), characteristic by clustering of creative firms with symbolic

knowledge base that require local buzz or noise (GRABHER, G. 2002) and unique local atmosphere conducive for dissemination of knowledge. In addition, large (capital) cit-ies often have a gateway function, providing access to knowledge transmitted through trans-local knowledge pipelines (KEEBLE, D. and NACHUM, L. 2002). Metropolitan cores concentrate all service industries that are the key customers for CI and other knowledge-intensive business services (CIARLI, T. *et al.* 2012). CI tend to require geographical prox-imity to their principal customers – corporate, headquarters, public institutions and firms in various (knowledge-intensive) business services that are disproportionately concen-trated in the largest urban agglomerations (KEEBLE, D. and NACHUM, L. 2002; GALLEGO, J. and MAROTO, A. 2015; ŽENKA, J. *et al.* 2017a).

Metropolitan hinterlands may attract CI by the combination of urbanization econo-mies available thanks to the proximity of metropolitan cores (effect of borrowed size – MEIJERS, E.J. and BURGER, M.J. 2017) and lower diseconomies of agglomeration (JACOBS, W. *et al.* 2014). Lower rents, proxim-ity to the place of residence, less congestion and less stressful lifestyle are among the key advantages of those areas (FELTON, E. *et al.* 2010; GRODACH, C. *et al.* 2014; MURPHY, E. *et al.* 2015). Economic activities with synthetic and analytical knowledge base are general-ly more prone to move to hinterlands than activities with a symbolic knowledge-base

Table 1. Expected CI in various types of regions

Type of region	Expected CI
Metropolitan cores	High concentration of all kinds of CI and knowledge-intensive business services; over-representation of CI with purely symbolic knowledge-base (publishing, media and advertising); high diversity of CI.
Metropolitan hinterlands	Higher specialisation in CI with partly synthetic knowledge base – printing and reproduction of recorded media, architecture, technical testing and other profes-sional services.
Urban regions	Similar industrial structure as in metropolitan cores; lower representation of CI, higher share of CI with synthetic knowledge base.
Old industrial regions	Limited presence of CI; specialization in technically related CI (printing and re-production of recorded media; architecture and technical analyses and testing).
Peripheral/rural regions	Minor presence of CI.

Source: Compiled by the authors.

(van Winden, W. and Carvalho, L. 2016). At the same time, routine and standardized lower value-added functions are expected to concentrate in hinterlands rather than skilled jobs and high value-added functions requiring face-to-face contacts with customers or suppliers (Merino, F. and Rubalcaba, L. 2013). Nevertheless, in some hinterlands creative jobs may flourish (Gregory, J. and Rogerson, C. 2018) and "the geography of creative industries is more complex than simple concentric-circle models – in which inner cities are the hub of creative industries activity, and in which that activity diminishes with distance from the inner core – suppose" (Felton, E. *et al.* 2010, 67).

Because urban density and land rents in Czech metropolitan cores are significantly lower than in Western Europe (Ženka, J. *et al.* 2017b), we expect significantly smaller concentration of CI into metropolitan hinterlands compared to metropolitan cores. In addition, we expect that various types of regions will differ in their industrial structure of CI – higher share of CI with purely symbolic knowledge base in metropolitan cores (publishing, media and advertising) and higher specialisation of hinterlands in CI with a partly synthetic knowledge base – printing and reproduction of recorded media, architecture, technical testing and other professional services.

Urban regions represent a residual and relatively heterogeneous category that is "somewhere between" the metropolitan cores and rural regions. Larger urban regions concentrate some metropolitan functions and should attract CI by similar mechanisms and localisation factors as metropolitan cores. However, smaller population size/density, higher rate of specialization (often on manufacturing industries) and limited presence of knowledge-intensive business services reduce the amount and intensity of CI clustering driven by urbanization economies (Ženka, J. *et al.* 2017b). Smaller urban regions are expected to show very limited concentration of CI. They are often highly specialized (could be in manufacturing, transport, tourism or public services) and rarely create

a favourable business environment for clustering of market-oriented CI, although they may succeed in attraction of cultural industries (Lazzeretti, F. *et al.* 2008; Cruz, S.S. and Teixeira, A.A.C. 2015). Polese, M. (2012) argued that smaller blue collar industrial cities dominated by large manufacturing firms are less oriented towards the arts, which is probably relevant for market-oriented CI as well.

Cities in old industrial regions (COIR) are generally less expected to attract and develop CI in comparison with metropolitan cities of similar population size (Rumpel, P. *et al.* 2010; Mossig, I. 2011). COIR are generally characteristic by lower diversity of economic activities and less developed generic assets, which are crucial for incubation of new firms and ideas (Boschma, R.A. and Lambooy, J.G. 1999). Births of firms in CI may also be hindered by concentrated firm structure (higher share of large firms), lower entrepreneurial activity, inadequate skill structure (magnified by outflows of highly skilled workforce – Martinez-Fernandez, C. *et al.* 2012) and traditional specialisation in heavy manufacturing industries that mostly supply industrial products to other companies and do not need creative inputs.

On the other hand, CI may emerge in COIR through diversification of manufacturing industries into technologically related knowledge-intensive business services (e.g. software, technical testing and analysis or design activities, see Birch, K. *et al.* 2010) that form a part of broadly defined market-oriented CI or their potential customers. However, probably the most important scenario[3] of CI growth in COIR is an implantation from other regions through offshore outsourcing or captive offshoring (Slach, O. *et al.* 2018). These investment flows are often motivated by the reduction of rents and wages (Hardy, J. *et al.* 2011), leading into the development of rather routine, standardized, lower skilled and lower value-added economic activities that are often represented by relatively large firms or subsidiaries. Combination of lower rents, morphological, functional and social diver-

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[3] See Martin, R. and Sunley, P. (2006) for theoretical discussion of various scenarios of regional delocking.

sity, attractive industrial premises (Hutton, T.A. 2004; Martinát, S. et al. 2018) and presence of universities can foster clustering of creative firms and workers in inner cities (Slach, O. et al. 2015) of COIR. To sum up, we expect smaller presence of CI in COIR, more concentrated firm structure and higher share of technically related CI – NACE 18 and 71.

There is a rich empirical evidence that CI develop and cluster also in some *rural and peripheral regions* (e.g. Escalona-Orcao, A.I. et al. 2016; Townsend, L. et al. 2017). Creative workforce can be attracted by a plethora of localisation factors including amenities, proximity to the place of residence, local cultural heritage including craft tradition or tourism incomes. Nevertheless, these localisation factors are relevant rather for cultural, artisan and artistic subjects than for purely market-oriented CI and for rural regions close to the metropolitan cores rather than for more distant areas. Therefore, rural regions are expected to concentrate minor share of total CI employment.

As already suggested, CI are heterogenous in their spatial organization, because (among others) they vary significantly in their prevailing knowledge base – see Plum, O. and Hassink, R. (2011) for discussion of the concept, the authors distinguish between analytical, synthetic and symbolic knowledge base. Knowledge bases differ in the character of innovation process, importance of face-to-face communication for knowledge sourcing and the importance of codified/tacit knowledge. The majority of CI (publishing, media, advertising) are characterised by a purely symbolic knowledge base: they require geographical proximity or their customers/suppliers in order to capitalize on local buzz and face-to-face communication. Therefore, they are expected to cluster in the cores and inner cities of the largest metropolitan regions. Technically related CI with a predominantly synthetic knowledge base (printing and reproduction of recorded media, architecture and technical analyses/testing) rely on knowledge sourcing and communication inside the value chains that are not usually local. Thus, this kind of CI are expected to show more dispersed spatial patterns.

Another important source of theoretical arguments was the concept of path dependence that is *intended to capture the way in which small, historically contingent events can set-off self-reinforcing mechanisms and processes that 'lock-in' particular structures and pathways of development* (Martin, R. and Sunley, P. 2006, 5). Current spatial concentrations of CI do not arise 'from scratch', but are rooted in a long-term development trajectory of the region, its historical industrial specialization and institutional context, infrastructural projects, political and business decisions and various other events in the past. Regions that were traditionally highly specialized in mining and manufacturing are generally less likely to develop a strong specialization in CI than diversified regions with high share of services (Slach, O. et al. 2018).

Data and methods

Empirical analysis of the spatial distribution of CI is based on the datasets from the Czech Statistical Office (CSO 2009, 2014). The datasets cover firm-level data aggregated into 2-digital industries (NACE rev. 2.0) and 206 spatial units – municipalities with extended competences (microregions). Localisation of CI was measured by the employment, which was available for the years 2009 and 2014, therefore for the (post)crisis period. The data cover roughly two thirds of total national employment, they are not available for several industries: mining and quarrying; energy, water distribution, sewerage and waste management; wholesale and retail trade, repair of motor vehicles and public services. Regional shares of CI are thus not related to the total employment of the region, but to the sum of employment in industries covered by microregional level data: agriculture, manufacturing and business services (NACE 49-53; 55-56; 58-64; 66; 68-75; 77-82). With the exception of mining and energy, the industries not covered by the datases show relatively even spatial distribution. Other indicators employed in our analysis come from public databases.

In order to ensure the compatibility of the results with our previous study mapping the spatial distribution of CI in Czechia for 2009 (Slach, O. *et al.* 2013) we employ the same definition and delimitation of market-oriented CI as we used in the former paper. CI are defined as economic activities … *concerned with the creation and provision of marketable outputs (goods, services and activities) that depend on creative and cultural inputs for their value* (Power, D. 2011, 32). Delimitation of CI is based on the sectoral approach (Gibson, C. and Kong, L. 2005), selection of particular industries departs from modified approach of Power, D. (2011). The group of CI includes NACE industries with a strong symbolic content: publishing activities (58), motion picture, video and television programme production, sound recording and music publishing activities (59), programming and broadcasting activities (60), architectural and engineering activities, technical testing and analysis (71), advertising and market research (73) and other professional, scientist and technical activities (74). Following Power, D. (2011) we also added printing and reproduction of the recorded media (18). This industry is tightly connected to the demand of CI firms, but it is more technically oriented: we can't thus expect different localisation patterns in comparison with above mentioned CIs. We tested also the effects of education (85) or cultural industries (90, 91, 93) on localisation of CI. However, spatial distribution of education and cultural industries was measured only by the number of economic subjects due to the unavailability of other indicators.

Spatial distribution of CI in Czechia was evaluated by the *horizontal location quotient (HLQ)* – for the definiton and construction see Fingleton, B. *et al.* (2004, 779–780). This indicator is an improved version of the localisation quotient, which takes into account the employment size of local/regional economy. It is defined as the number of jobs in the local industry that exceeds an expected number. The expected number equals to the number of jobs in local industry that would

be present if the share of the local industry in regional employment is the same as the share in the national economy, therefore if the localisation quotient is equal to 1. The *HLQ* is calculated from the standard localisation quotient:

$$LQ = \frac{E_{ij}/E_{in}}{E_j/E_n} \qquad (1)$$

In the second step E_{ij} is replaced by E_{ij_HLQ} computed as:

$$LQ = \frac{E_{ij\_HLQ}/E_{in}}{E_j/E_n} = 1, \qquad (2)$$

where E_{ij_HLQ} is the number of jobs making $LQ = 1$. Finally, *HLQ* is calculated:

$$HLQ = E_{ij} - E_{i\_HLQ}, \qquad (3)$$

HLQ was used also as a dependent variable in regression models. However, share of CI in regional employment yielded better results, so it was employed as the main dependent variable and *HLQ* as a supplementary variable.

The most important explanatory variable (fixed factor) used in all regression models was a nominal variable Type of region, distinguishing the metropolitan cores, metropolitan hinterlands, urban regions with metropolitan functions, metropolitan old-industrial regions, non-metropolitan old industrial regions. Although these groups of regions are relatively internally homogeneous, their ability to attract CI still varies. To capture these internal differences, we tested also the effects of selected covariates that may contribute to better explanation of inter-regional differences. After several pre-tests and model calibrations we decided to use employment density per a hectare of built-up area and diversity of local industrial structure as proxies for urbanization economies. While the latter reflects diversity of economic structure as the essence of urbanization economies (Parr, J.B. 2002), the former captures the effects urban size/density that should increase productivity (Ciccone, A. and Hall, R.E. 1996) and innovation perfor-

mance, stimulate the local buzz (Storper, M. and Venables, A.J. 2004) and efficiency of local labour markets (Puga, D. 2010). Moreover, this indicator explained more variability than population size or sophisticated indicators of the position in urban hierarchy, calculated from the population/economic size and accessibility (Ženka, J. *et al.* 2017a). We employed also two indicators of localisation economies – average size of firms in creative industries and the density of firms in education and cultural industries to capture potential knowledge spillovers and other positive effects related to the existence of local cultural milieu.

We ran a general linear regression model in order to explain current spatial distribution of CI in Czechia and its post-crisis development. Dependent variable was the share of CI in regional employment, explanatory variables *(Table 2)* included the *type of region* (TYPE),

cluster in and around large urban regions the diagnostic tests did not find a significant autocorrelation, so it was not necessary to employ spatial lag or spatial regression models.

Types of regions in Czechia were delimited according to Ženka, J. and Slach, O. (2018) *(Figure 1)*. Prague and Brno were marked as metropolitan regions (based on the approach of OECD 2012). Ostrava is also a metropolitan core, but we classified both Ostrava and Ústí nad Labem as the cores of old industrial regions Ostravsko and Ústecko. Rural regions were defined by the index of rurality (inspired by Novotný, L. *et al.* 2015), which is based on three criteria: dispersion of the settlement, low population density and low spatial productivity, which suggests higher share of agriculture and limited presence of high value-added knowledge-intensive economic activities (see Ženka, J. *et al.* 2017c for details).

$$\text{Index of rurality} = \frac{\text{settlement dispersion} + 2 * \text{population density} + 2 * \text{spatial productivity}}{5}$$

employment density (DENS), number of firms in education and culture industries per a hectare of built-up land and *average firm size* in CI (SIZE). The dependent variable and all covariates were transformed by natural logarithmic transformations. Despite tendency of CI to

Dispersion of the settlement was expressed by the share of municipalities with less than 3,000 inhabitants. Population density was calculated using population per one hectare of built-up area, spatial productivity by value added per one hectare of built-up area.

Table 2. Variables employed in regression models

Variable	Proxy indicator and year	Abbreviation	Source of data
Share of CI	Share of CI in regional employment in %, 2014	CI	CSO (2014)
Importance of CI	Horizontal localisation quotient of CI, 2009, 2014	HLQCI	CSO (2014)
Growth of CI	Index of employment growth in CI, 2009–2014 (2009 = 100)	GRCI	CSO (2009), CSO (2014)
Type of region	Type of region according to Ženka, J. *et al.* 2017c	TYPE	Ženka, J. *et al.* (2017c)
Employment density	Number of jobs in CI per one hectare of built-up area, 2014	DENS	CSO (2014), CSO (2018a)
Economic diversity	Herfindahl-Hirschmann index of local employment, 2014 (inverse values)	DIVERS	CSO (2014)
Cultural industries	Number of firms in education (85) and cultural industries (90, 91, 93) per one hectare of built-up land	CULT	CSO (2018b)
Firm size structure	Herfindahl-Hirschmann index calculated from employment size categories in CI, 2014	SIZE	CSO (2018c)

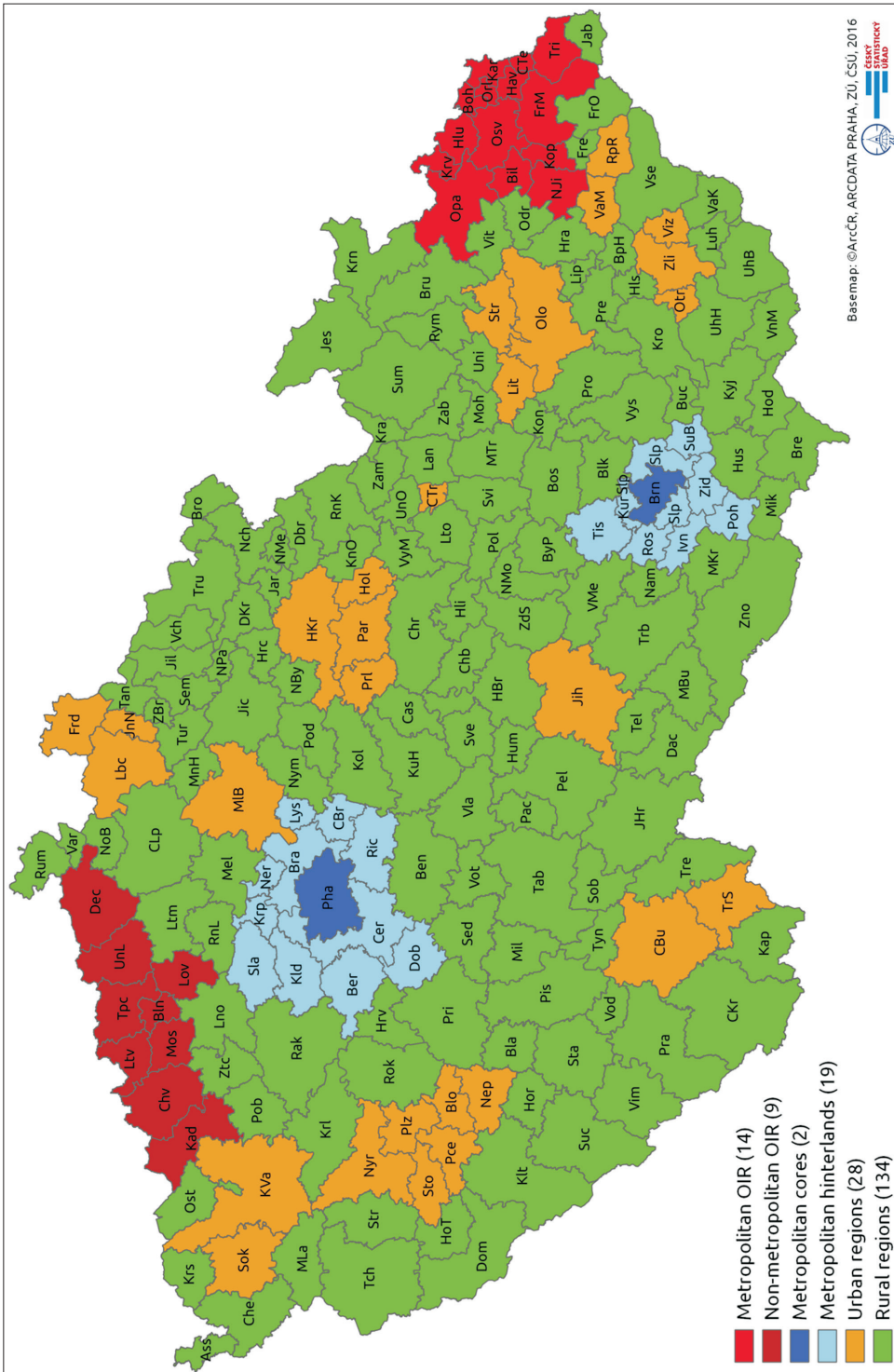*Source*: Compiled by the authors.

Fig. 1. Metropolitan cores and hinterlands, old industrial, urban and rural regions in Czechia. *Source:* Ženka, J. and Slach, O. (2018).

Table 3. CI in metropolitan, urban, old industrial and rural regions, 2014

Regions	CI employment, persons	Specialisation in CI, %	CI employment	Total employment	Number of firms in education and cultural industries
			% share in Czechia		
Metropolitan cores	55,576	10.0	51.2	26.0	20.5
Metrop. hinterlands	6,733	5.5	6.2	5.7	8.2
Urban regions	18,087	4.3	16.7	19.9	10.5
Metropolitan OIR	8,116	4.1	7.5	9.3	8.1
Non-metrop. OIR	3,188	3.4	2.9	4.4	2.9
Rural regions	16,766	2.3	15.5	34.6	49.9
Czechia	*108,465*	*5.1*	*100.0*	*100.0*	*100.0*

Source: CSO 2014.

Residual category of urban regions includes larger regional cities with metropolitan functions (Plzeň, České Budějovice, Olomouc, Liberec *etc.*), smaller industrial regions dominated by a single large manufacturing firm (e.g. Mladá Boleslav, Jihlava), transport hubs (Děčín, Česká Třebová) or regions specialized in capital-intensive industries apart from old industrial regions (Sokolov, Valašské Meziříčí etc.)

Results

CI jobs in Czechia are heavily concentrated in metropolitan cores of Prague (41.4%) and Brno (9.8%). If we sum all three metropolitan regions (including Ostravsko as metropolitan OIR), we get more than 55 per cent share in national employment in CI. Since 2009 there has been relatively significant increase in geographic concentration of CI – in 2009 three largest units accounted for 49.8 per cent in national CI employment (Slach, O. *et al.* 2013; Slach, O. and Ženka, J. 2017). Increasing concentration was, however, fuelled only by the relatively growing share of Prague in national CI employment, while the position of Brno and Ostrava slightly deteriorated.[4] Metropoli-

tan regions of Prague and Brno experienced a deconcentration of jobs from the cores towards hinterlands, although the numbers are relatively modest. In 2014 metropolitan hinterlands concentrated only 6.2 per cent of jobs in CI, although their relative specialization is above national average *(Table 3)*. The latter contrasts with a dynamic socio-economic development of Czech metropolitan hinterlands in the last two decades (Maier, K. and Franke, D. 2005; Šimon, M. 2017).

Empirical results of Slach, O. *et al.* (2018) did not support theoretical assumption that COIR should in the post-crisis period at least partly reorient from traditional mining and manufacturing industries towards CI. While employment in traditional mining and manufacturing industries declined in the period 2009–2014, COIR experienced a process of reindustrialization that was driven by an expansion of the automotive industry and some related services – transport, warehousing, employment activities or office administrative and business supporting activities (Slach, O. *et al.* 2018).

Ranking of microregions according to their CI employment is primarily driven by their position in urban hierarchy *(Figure 2)*, which almost perfectly corresponds to population size. Only 18 per cent of all microregions show higher share in national CI employment

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[4] In the post-crisis period 2009–2014 absolute CI employment at national level decreased by 5 per cent, in urban and rural regions fell by 9 per cent, metropolitan hinterlands grew by 6 per cent, Prague and COIR

Ostravsko stagnated. COIR Ústecko experienced a sharp decline in CI employment by 25 per cent (827 jobs were lost) – see also Slach, O. and Ženka, J. (2017).
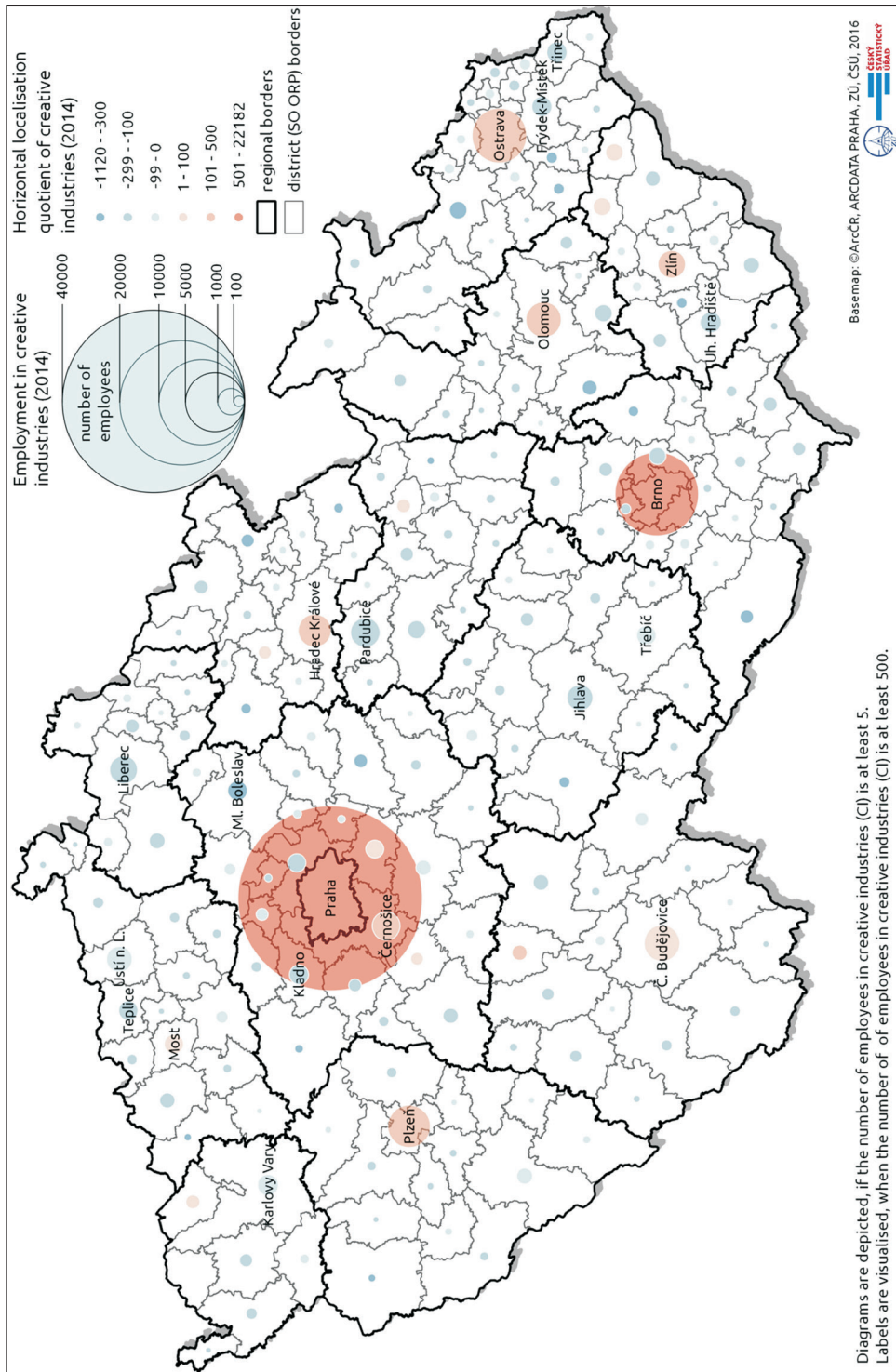
Fig. 2. Spatial distribution of CI employment in Czechia (2014) *Source:* CSO 2014.

compared to their share in population – most of them are located in Prague metropolitan region. On the other hand, Brno and Ostrava show the largest gap in comparison to their population weight (despite high values of horizontal location quotient), the same holds for majority of urban regions with metropolitan functions and also for old industrial regions.

As already noted by Slach, O. *et al.* (2013), it is possible to distinguish between two major groups of CI *(Figure 3)*. The first group includes printing, architectural and engineering activities and other professional, scientific and technical activities (NACE 18, 71, 74), while publishing, media and advertising (NACE 58, 59, 60, 73) belong to the second group. While the former industries are

characteristic by a mix of knowledge bases (symbolic and synthetic) and show more dispersed patterns, the latter have almost purely symbolic knowledge base and are heavily concentrated into the metropolitan cores. The higher share of activities and knowledge with synthetic knowledge base, the higher rate of spatial concentration of employment.

Printing and reproduction of recorded media (industries with significant portion of manufacturing production and technical activities) are by far the most dispersed and significantly represented in metropolitan hinterlands (Beroun, Pohořelice) and some old industrial (Český Těšín) and urban regions (Plzeň, Zlín, Olomouc etc.). Media form the second extreme industries heavily concen-
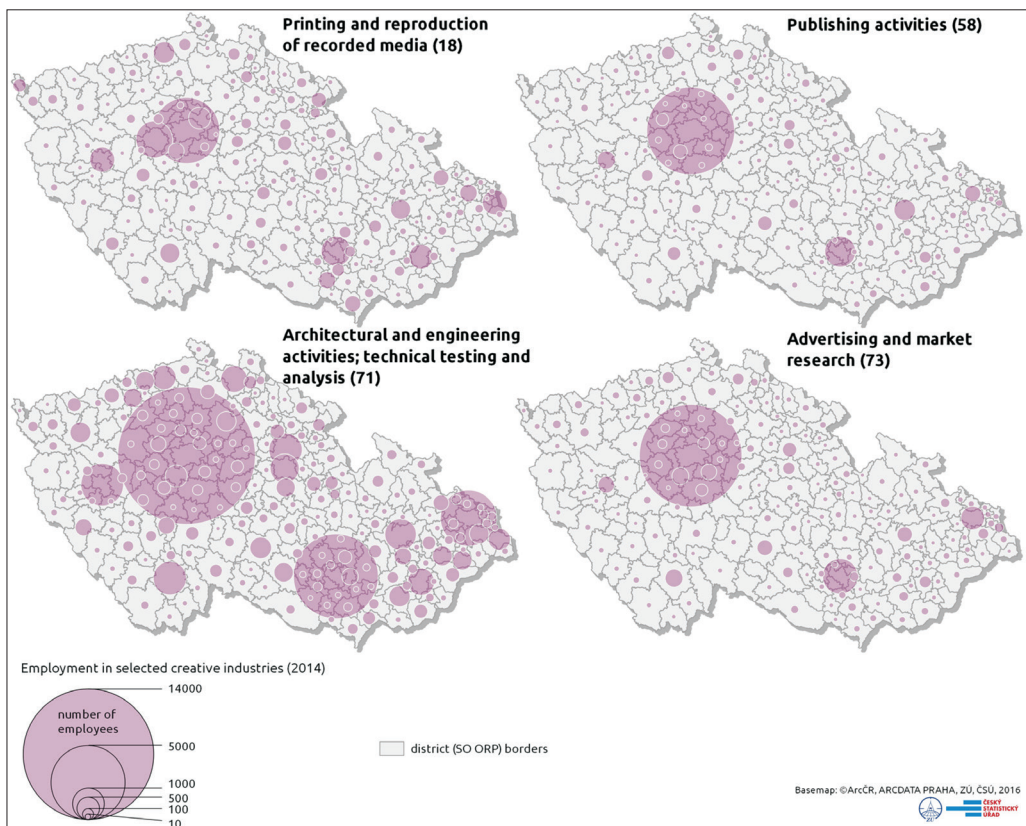

Fig. 3. Spatial distribution of employment in selected CI (2014). *Source*: CSO 2014.

trated in Prague, while other professional, scientific and technical activities are somewhere between these two extremes *(Figure 4).*

As we have expected, analysed types of regions differ relatively significantly in the industrial structure of CI. There are two common features – high share of architectural and testing activities (NACE 71) and comparable shares of other professional, scientific and technical activities in employment. Printing is over-represented especially in metropolitan hinterlands and also in rural and non-metropolitan old industrial regions, which are characteristized by a high specialisation in industries with (partly) synthetic knowledge base. Metropolitan cores, on the other hand, are distinct by higher representation of publishing and media, although even in Prague and Brno the first group of CI (NACE 18, 71, 74) clearly dominate in terms of employment.

We employed four general linear models in order to explain spatial distribution of CI. While the first two models aim to test the effects of selected explanatory variables on regional specialisation in CI as a dependent variable, the third model explains localisation patterns of advertising and market research representing industry with purely symbolic knowledge base, the fourth focuses on architecture and testing as an industry with the mix of symbolic and synthetic knowledge-base. Specialisation in CI is measured by the horizontal localisation quotient, so the size of local economic base matters. Therefore, in the first model we include all 206 microregions, while in the second we exclude metropolitan cores. Explanatory variables are the type of regions, employment density, economic diversity, density of cultural industries and mean size of a firm in CI.

The *first model* explained 75.5 per cent of variability in CI specialisation *(Table 4).* Employment density, cultural industries, firm size in CI and a dummy variable marking the metropolitan cores showed statistically significant ($p < 0.001$) positive relationship. Economic diversity, on the other hand, was not significant. This does not mean that diversity has no relevance for localisation of CI. Diversity is related to urban size, density and corresponds also with the typology of regions, so its effects
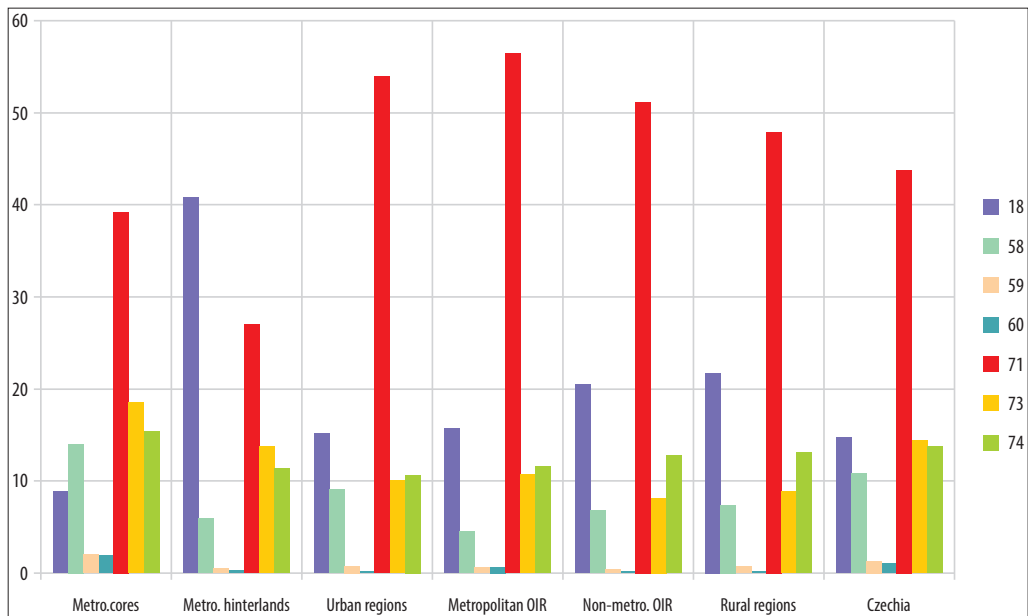

Fig. 4. Industrial structure of CI employment in various types of regions (2014). *Source*: CSO 2014.

Table 4. Correlates of regional specialisation in CI, 2014

Dependent variable	HLQ of CI employment				HLQ of CI employment except for metropolitan cores			
Source	Type III sum of squares	B	St. error	p	Type III sum of squares	B	St. error	p
Corrected model	14.040[a]	–		.000	831.497[a]	–		
Intercept	40.73	7.435	191	.000	273.957	651.41	164.637	.000
ln_empl_dens	0.62	–.153	030	.000	441.334	–129.32	26.210	.000
ln_divers	0.00	.012	028	.672	67.885	46.81	24.191	.054
ln_kult	0.50	.098	021	.000	237.866	67.92	18.752	.000
ln_AVG_CI	0.37	.055	014	.000	221.546	42.60	12.187	.001
Type_region	11.43	–		.000	76.375		12.187	.381
Error	4.55		–		3,535.275	–		–
Corrected total	18.59				4,366.773			
region_core		2.562	0.121	.000				
region_hinter		–0.048	0.047	.309		.673	41.498	.673
reg_OIR_Ostr	–	–0.082	0.059	.166	–	.385	51.948	.385
reg_OIR_Ust		–0.076	0.051	.137		.706	44.593	.706
region_rural		–0.093	0.034	.007		.072	29.805	.072
R^2	0.755				0.190			

Source: CSO 2014, compiled by the authors.

are probably obscured by other explanatory variables. Dummies of all other types of regions had negative effects, but only the effect of rural regions was significant ($p < 0.01$) due to their small economic base and low density. Therefore, urban scale and concentration of metropolitan functions seem to be the most important factors of CI localisation, while differences among metropolitan hinterlands, urban and old industrial regions do not affect spatial patterns of CI significantly.

This finding is supported also by the *second regression model (Table 5)* that tested the same explanatory variables after exclusion of metropolitan cores. Results are in some aspects similar to the former model (significant positive effects of employment density, cultural industries, firm size structure: $p < 0.01$; economic diversity: $p < 0.1$), but there are two major differences – type of region did not show significant effects (except for rural regions) and R^2 fell rapidly: this model explained only 19 per cent of total variabil-

ity. Employment density, cultural industries, economic diversity and CI firm size explained much more than the type of region. Therefore, the effects of urbanization and localisation economies matter for the spatial distribution of CI in urban and non-metropolitan regions. On the other hand, when we exclude metropolitan cores, regional contexts cease to be important for CI localisation.

Third model tested spatial distribution of publishing. Maybe surprisingly, share of explained variability is lower (52.2%) compared to models that tested regional specialisation in CI as a whole. Type of region is the key explanatory variable. Cultural industries showed no significant effect, while the firm size was the second most important explanatory variable.

When we turned to regional specialisation in architecture and testing as dependent variable (*fourth model*), we found results that are very similar to the findings of the first model. This may be explained by high share of architecture and testing in total CI employment.

Table 5. Correlates of regional specialisation in publishing (58) and architecture and testing (71)

Dependent variable	HLQ of employment in publishing (58)				HLQ of employment in architecture and testing (71)			
Source	Type III sum of squares	B	St. error	p	Type III sum of squares	B	St. error	p
Corrected model	692.146[a]	–		.000	144.357[a]	–		.000
Intercept	3.925	3.287	2.587	.296	.103	–497	.756	.604
ln_empl_dens	26.611	1.217	.446	.007	11.106	.648	.120	.000
ln_divers	18.703	.884	.386	.023	7.023	.476	.111	000
ln_kult	187	.073	.318	.819	3.153	.246	.086	.005
ln_AVG_CI	84.398	1.086	.223	.000	7.790	.253	.056	.000
Type_region	96.485			.000	11.754			.000
Error	571.220	–		–	75.104	–		–
Corrected total	1,263.367				219.461			
region_core		–2.263	1.515	.137		.942	.490	.056
region_hinter		–1.242	.657	.060		.203	.191	.288
reg_OIR_Ostr	–	–854	.754	.259	–	–047	.239	.843
reg_OIR_Ust		–523	.657	.427		.031	.205	.879
region_rural		–946	.506	.064		–446	.137	.001
R²	0.548				0.658			

Source: CSO 2014, compiled by the authors.

Discussion

Empirical results showed an excessive and increasing spatial concentration of CI into the two largest metropolitan cores – Praha and Brno. Localisation patterns of CI (especially CI with with symbolic knowledge base) reflect to a certain degree a process of metropolization, understood as "selective concentration of research-intensive industries and knowledge-intensive services on metropolitan regions and major urban agglomerations" (Krätke, S. 2007, 1). High transaction intensity of CI firms (Growe, A. 2012) is one of the reasons why these industries tend to concentrate heavily in the largest cities. Therefore, large and increasing spatial concentration of CI in Czechia corresponds with the intensification of metropolization, a tendency discussed and documented also by other authors (Hampl, M. and Marada, M. 2015; Viturka, M. *et al.* 2017). Nevertheless, it is necessary to distinguish between two basic types of metropoli-zation. The first is based on the difference in urban size/density between metropolitan and non-metropolitan regions, the second refers to the differences among metropolitan regions.

The dominant position of Praha is not surprising, although its increase in total CI employment does not correspond to the overall economic development in the post-crisis period (Ženka, J. *et al.* 2017c). However, considering strong position of the capital city in other knowledge-intensive services (Blažek, J. and Bečicová, I. 2016; Sucháček, J. *et al.* 2017) and concentration of corporate headquarters (Dostál, P. and Hampl, M. 1994; Sucháček, J. and Baránaek, P. 2013) we argue that Praha has been moving from the sectoral to the functional specialization (Duranton, G. and Puga, D. 2005), at least within Czechia.

Although urban size/density has been identified as a key explanatory variable, individual comparisons among selected microregions indicate some ambiguity. Significance of urban size is well illustrated by the difference

in concentration of CI between metropolitan OIR (Ostravsko) and non-metropolitan (Ústí nad Labem). On the other hand, metropolitan region Ostravsko has approximately 2.5 times lower concentration of market-oriented CI and also significantly lower representation of cultural industries (Ivan, I. *et al.* 2015) than metropolitan region of Brno, which is comparable in terms of urban size. Existing disproportions can be at least partly explained by a different regional context in terms of positive and negative path dependency (Henning, M. *et al.* 2013), or between the "good" inheritance of Brno and "bad" inheritance of Ostrava (paraphrase of Storper, M. 2013; for empirical illustration see Ženka, J. *et al.* 2017a). The influence of path dependency can also explain the mismatch between CI size/concentration in urban regions, namely relatively higher concentration of CI into Olomouc (university city) in comparison to larger and economically better performing Plzeň, traditionally specialized in engineering.

The concept of path dependency (partly co-evolution) can also be used to explain regional differentiation of industrial structure of CI (Berg, S.H. and Hassink, R. 2014). High share of architecture and testing (NACE 71) in employment of urban regions and COIR (to some extent also to rural and peripheral regions) results from traditional specialisation in manufacturing industries (architecture is of minor importance, technical testing and analyses clearly dominate – Ivan, I. *et al.* 2015). Path-dependence is relevant also for metropolitan hinterlands. Low employment in CI in these regions is in direct contradiction with their dynamic economic and demographic growth (Maier, K. and Franke, D. 2015). The first explanation is relatively weak importance of agglomeration disadvantages for the spatial distribution of printing. The second reason can be seen in the fact that in Czechia the process of metropolization was "delayed" (Musil, J. 1993; Hampl, M. 2005) in comparison with Western European economies due to the centrally planned economy. For this reason, these regions are not yet able to offer adequate infrastructure and environment for more intensive localization of CI, which is not

the case for less knowledge-intensive services (Sýkora, L. and Ouředníček, M. 2007).

Conclusions

In this paper we aimed to describe and explain spatial distribution of CI in Czechia. More specifically, we tried to determine to what extent localisation patterns can be explained primarily by traditional factors such as the position in urban hierarchy, urbanization and localisation economies and to what extent do regional contexts (metropolitan cores and hinterlands, old industrial, urban and rural regions) matter. We tested the effects of regional contexts (types of regions) together with traditional factors: employment density and economic diversity as proxies for urbanization economies, CI firm size structure and density of cultural industries representing localisation economies.

Regression model testing the effects of these explanatory variables explained more than 70 per cent of the total variability of the dependent variable, which was represented by horizontal location quotient of CI. Types of regions showed stronger effect than traditional explanatory variables. However, only two types were significant – positive effect of metropolitan cores and negative effect of rural regions. After exclusion of metropolitan cores the model significantly lost its explanatory power. Position in urban size/density and position in urban hierarchy seem to be the key explanatory variables. Differences among regions with similar size and density are of minor importance. Despite several theoretical arguments supporting assumptions that regional contexts should affect spatial concentration of CI, we found only limited empirical evidence to prove this statement – above mentioned comparisons of Plzeň and Olomouc or explanations for high share of architecture and testing in urban regions and COIR. Minor differences were found between spatial patterns of publishing, architecture-testing, advertisement and market research. Industries with a mix of symbolic and synthetic knowledge base

showed more dispersed localisation patterns, while purely symbolic industries were heavily concentrated into metropolitan cores.

Therefore, above mentioned types of (non) metropolitan regions differ significantly in their industrial structure of CI employment. Metropolitan cores are characterised by higher shares of purely symbolic industries, for which urban amenities, centrality and local buzz (see Polese, M. 2012, 1813) are of key importance. CI employment in metropolitan hinterlands, on the other hand, is dominated by printing, architecture and testing. The same applies to lesser degree also for urban, old industrial and rural regions, where architecture and testing accounts for (almost) more than half of the jobs in CI.

To summarize previous findings, localisation patterns of CI reflect existing spatial differentiation of social and economic phenomena in Czechia. It is a question if spatial concentration of CI is a cause or a consequence of reginal economic growth (Lee, N. 2014). Empirical results suggest an existence of a strong asymmetry in spatial division of labour between metropolitan and non-metropolitan regions (Massey, D. 1984; Maillat, D. 1998). Although the primary goal of this paper was not to evaluate dynamics of CI localisation and its regional development effects, it seems that CI contribute rather to divergence in regional economic performance than to convergence. Empirical studies testing these effects on the urban or microregional level are needed not only in Czechia, but also in other Central European countries.

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The impact of territorial policies on the distribution of the creative economy: tracking spatial patterns of innovation in Slovenia

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Abstract

The creative economy as an alternative pathway for industrial decline was first introduced into practice in metropolitan regions of the Global North. Since then, it has gradually spread out to other highly urbanized areas of the Global South and transitional areas such as post-socialist European countries. Numerous studies tried to explain structural conditions and suggested policies to attract, retain and release creative potentials. However, the focus on promotion of the creative economy is still on large cities and sectoral policies by emphasizing economic, social and legislative issues of the creative labour. There is little evidence about how territorial policies shape the development of the creative economy, especially in medium-sized and small towns outside the reach of the agglomeration areas. The aim of this paper is to study the impact of territorial policies on the distribution of the creative economy in Slovenia as an example of the post-socialist country. By analysing spatial-temporal trends of patents, we track patterns of innovation between 1975 and 2014 in the urban system. A central focus is given to examine changes in urban hierarchy, i.e. relationships between Ljubljana as the capital and the only large city in the country, regional centres and small towns. The spatial-temporal analysis of patents granted in Slovenia confirmed the linkages between territorial innovation systems and policies. The main findings show that innovation has become more evenly distributed across space, which can be attributed to long tradition of polycentric spatial development in times of Yugoslavia and more recent territorial policies favouring further dispersion of the local self-government system in Slovenia.

Keywords: cultural and creative industries, territorial innovation systems, intellectual property, patents, urban development, urban hierarchy, policentricity, small and medium-sized towns, Central and Eastern Europe

Introduction

The creative economy as an alternative pathway for industrial decline was first introduced into practice in metropolitan regions of the Global North. Since then, it has gradually spread out to other highly urbanized areas of the Global South and places in transition such as post-socialist European countries (Chapain, C. *et al.* 2013; Stryjakiewicz, T. *et al.* 2014; Schlesinger, P. 2016). Numerous studies tried to explain structural conditions and suggested policies to attract, retain and release creative potentials (Landry, C. 2000; Florida, R. 2002; Boschma, R.A. and Fritsch, M. 2009; Musterd, S. and Murie, A. 2010; Musterd, S. and Kovács, Z. 2013).

However, despite providing substantive contributions to the discussion on the creative economy, its geography and support mechanisms, the literature still contains some gaps because it is quite biased towards advanced economies (Hong, J. *et al.* 2014) and/or large cities and metropolitan areas (Kozina, J. and Bole, D. 2017). There is less research trying to identify specifically how different national understandings, economic systems, and geographic and institutional contexts influence the way creative economy works or the type of territorial policies implemented to support it (Chapain, C. *et al.* 2013). Furthermore, in comparison with increasing empirical analysis of global urban network, relatively little has been done to examining urban hierarchy

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and changing patterns of urban networks at national levels from the perspectives of creativity and innovation (Lu, L. and Huang, R. 2012). The latter is especially true for post-socialist European countries that have recently undergone significant changes in terms of economic, social and spatial restructuring. At the beginning of the 1990s, many post-socialist cities were almost complete deserts in terms of innovation (Stryjakiewicz, T. *et al*. 2014). Nowadays, Central and Eastern Europe (CEE) still performs among the worst on the European Innovation Scoreboard, although regional 'pockets of excellence' can be identified in some Moderate Innovator countries (Member States where performance is between 50 per cent and 90 per cent of the EU average) such as Prague in the Czech Republic or the Bratislava region in Slovakia (Hollanders, H. and Es-Sadki, N. 2017). However, we need a much better insight into the national spatial dynamics and territorial policies to support emerging creative economy and innovation in the post-socialist urban context.

The aim of this paper is to study the impact of territorial policies (such as regional plans, local self-government legal acts or strategies of spatial development) on the distribution of the creative economy in Slovenia as an example of the post-socialist country. By analysing spatial-temporal trends of patents, we would like to track patterns of innovation between 1975 and 2014 in the urban system. A central focus is given to examining changes in urban hierarchy, i.e. relationships between Ljubljana as the capital and metropolitan city, regional centres and small towns. Due to long tradition of polycentric spatial development in times of Yugoslavia and more recent territorial policies favouring further dispersion of the local self-government system, we hypothesize that patterns of innovations are becoming more evenly distributed across space. A peculiarity of the Slovenian urban system is the dominance of smaller towns due to traditionally dispersed settlement system and polycentric policies during the (post)socialist era. International urban-rural

typologies usually place Slovenia among the least urbanized European countries; according to the latest methodology, Slovenia is the second most rural country in Europe right behind Lithuania with 51.6 per cent of rural residents (Eurostat 2017). In this paper, we attempt to make two theoretical contributions. First, we try to add to the discussion if specific national territorial policies influence the distribution of the creative economy by investigating the spatial patterns of innovation. Second, we add to the theoretical debate of the creative economy by involving the concept of territorial innovation systems as a proxy for measuring a spatiality of the creative economy.

Theoretical background

Conceptualizing creative economy and innovation

The origins of the creative economy should be sought in changing economic circumstances of post-World War II when developed industrialised countries increased productivity, started moving traditional manufacturing to developing countries and entered post-industrial age by favouring services, knowledge, creativity, and innovation (Bell, W. 1973; Scott, A.J. and Storper, M. 2014). Strongly influenced by the movements around the "cultural turn" that shifted attention away from the Marxist tradition towards culture so-called "cultural industries" gained importance in the 1980s (Garnham, N. 2005). They refer to the traditional cultural economics and to forms of cultural production characterised by a symbolic element and encompass many fields, from art to movies, music and others (Lazzeretti, L. *et al.* 2018). Since the 1990s, another turn – the "creative turn" – denoted the dawn of a new era in political and academic domains by constructing the creative industries and latterly, the creative economy, as a policy object that can be managed to secure primarily economic and sometimes social outcomes so as to increase

competitiveness (Schlesinger, P. 2016). The focus of cities, regions or countries across the world thus redirected to the importance of creativity and innovation in fostering development with the emergence of highly interrelated concepts such as creative industries, creative economy and the creative class (Chapain, C. *et al.* 2013).

Despite its raising importance and popularity, the creative economy is a vague concept encompassing numerous inconsistent definitions (Boggs, J. 2009). The most recent bibliometric analysis distinguishes between three main streams of the creative economy research evolving around the concepts of 1) cultural and creative industries, 2) the creative class, and 3) the creative city (Lazzeretti, L. *et al.* 2018). It is quite commonly accepted that cultural and creative industries lay at the heart of the creative economy (for a review see Collins, P. and Cunningham, J.A. 2017). Although cultural and creative industries may be difficult to measure, there seems to be a wide agreement about intellectual property to define them (see Garnham, N. 2005; Newbigin, J. 2010). The creative economy can be understood as 'financial transactions in creative products, whose economic value is secured through copyright, design, trademark and patents', and therefore includes the arts, media, new media, design and architecture (creative industries) along with the sciences, engineering and technology sectors (knowledge-intensive industries) (Howkins, J. 2001; Cunningham, S.D. 2007).

The emerging economic activities adopted by competitive cities and regions can thus be attributed to creative and knowledge-intensive industries (Bontje, M. and Musterd, S. 2009; Musterd, S. and Murie, A. 2010; Bontje, M. *et al.* 2011; Musterd, S. and Gritsai, O. 2012; Musterd, S. and Kovács, Z. 2013). The role of the creative economy is to connect the creative sector to national and regional innovation systems and thereby move it into the sphere of research-based, knowledge-intensive industry policy (Cunningham, S.D. 2007; European Commission 2010; Hong, J. *et al.* 2014). Compared to creative indus-

tries, which are limited to specific sectors, the creative economy is used to encapsulate also their spill-over effects on a wide range of economic and social contexts (European Commission 2010; Kern, P. 2015). The creative economy is thus directly contributing to innovation (Bakhshi, H. and McVittie, E. 2009; Lee, N. and Rodríguez-Pose, A. 2014; Florida, R. *et al.* 2017) through creative inputs, such as ideas for new products, supplementary products and services or marketing support for product innovations (Müller, K. *et al.* 2009). From this perspective, innovation can be viewed as an integral part of knowledge-intensive industries and thus the creative economy.

Territorial systems of innovation

The systems of innovation have been categorized into national innovation systems, regional innovation systems and sectoral innovation systems with the first two relying on a spatial dimension (Markatou, M. and Alexandrou, E. 2015). Their reconfiguration is closely connected to transformation processes of corresponding political and planning systems (Kaiser, R. and Prange, H. 2004; Hamidi, S. and Zandiatashbar, A. 2018). Historically, there have been major differences between countries in the ways in which they have organised and sustained innovation within their national economies (Freeman, C. 1995), where urban development has an important feedback effects (Carter, R.A. 1988; Pumain, D. *et al.* 2009). Hägerstrand, T. (1952) was the first to formalize the propagation of innovation among towns and cities as a hierarchical diffusion process: the largest cities are the first to capture the benefit of the innovation, then the innovation filters down the urban hierarchy, according to urban size, through imitative or competitive processes: the larger cities adopting first, then the medium-sized cities, and later the smallest towns (cf. Pumain, D. *et al.* 2009).

The post-World War II saw a shift of population, businesses, and economic activity from

the urban centres to the suburbs, the rise of the so-called edge cities of industry and technology at the suburban periphery, as well as a clustering of high technology enterprise, creative workforce and venture capital in suburban "nerdistans" (Bontje, M. and Kepsu, K. 2013; Florida, R. and Mellander, C. 2016; Kozina, J. and Clifton, N. 2018). However, what we witness today is a movement of talent and jobs from the suburbs back to the city; a phenomenon occurring over the past decade or so defining that it will be the city – not the state – that gets to become the core of economic and political power (Markatou, M. and Alexandrou, E. 2015). The rank-size distribution of the creative class across 444 city regions in 8 European countries indicates a higher concentration in larger urban areas compared to smaller cities and towns (Lorenzen, M. and Vaarst Andersen, K. 2009). The suburban model might have been a historical aberration, and innovation, creativity, and entrepreneurship are realigning in the same urban centres that traditionally fostered them (Florida, R. and Mellander, C. 2016).

However, recent spatial trends in innovation have been well documented for large cities and metropolitan areas such as London and San Francisco (e.g. Ferrary, M. and Granovetter, M. 2009; Nathan, M. *et al.* 2012). On the other hand, little has been done to reflect the changing patterns of national-level urban hierarchy (Lu, L. and Huang, R. 2012). There is a lack of direct evidence on how dispersed forms of settlement affect innovation productivity (Hamidi, S. and Zandiatashbar, A. 2018). Due to weak theoretical base and lack of clarity, evaluation of

the research and formulation of guidelines for territorial innovation policies is limited, especially in small and medium-sized regions (Andersson, M. and Karlsson, C. 2006). To this end, we need a more pronounced evidence of how territorial policies shape the development of innovation, especially in medium-sized and small towns outside the reach of the agglomeration areas.

Territorial development of innovation in Central and Eastern Europe

The only comprehensive and comparable hard data to measure the creative economy and innovation across different countries are available from international organisations, such as the United Nations (UN, 2015). According to those reports, Slovenia's creative industries exports stood at USD 756.5 million in 2013, and imports reached USD 584.4 million, generating a positive trade balance of USD 172 million. Design (interior design and fashion) and publishing (newspaper and books) are the leading creative sectors in terms of exports. However, growth in the creative industries exports has been lagging in contrast to other CEE countries *(Table 1)*, possibly since Slovenia was one of the hardest hit countries in the recent economic crisis (Verbič, M. *et al.* 2016). On the other hand, the number of patents in Slovenia is significantly higher, indicating perhaps a better innovation potential of the country. In other indicators pertaining to innovation, such as the quality of R&D sector, tertiary education, and capacity of innovation, Slovenia together with

Table 1. Creative industries (CI) exports and number of applications filed under the Patent Cooperation Treaty (PCT) in selected CEE countries

Country	CI exports, million USD		PCT per million inhabitants, 2017
	2003	2013	
Czechia	n/a	n/a	24.4
Hungary	2,161.35	3,485.12	24.7
Poland	2,687.71	5,401.63	10.5
Slovakia	667.75	1,354.15	11.3
Slovenia	668.63	756.51	71.9

n/a = no data. *Sources*: World Economic Forum, 2018; UN, 2015.

Czechia generally scores higher than other CEE countries (World Economic Forum 2018).

If we consider the copyright industry, which includes 31 sectors according to combined WIPO and USPTO methodology, it is an important economic sector in Slovenia. It employs 2.9 per cent of the workforce and contributes to 4.0 per cent of the overall GDP in Slovenia, while the EU average is 3.2 per cent in employment and 4.2 per cent in GDP respectively (Forum D'Avignon 2014). CEE countries are not that much different in this respect, with Czechia having the highest GDP share (4.5%) and Hungary the highest employment share (3.1%). Regardless if we look at the creative industries or the copyright industries, we can observe that they represent significant segments of economy in Slovenia and CEE as a whole, especially if we consider that they emerged practically from scratch only one or two decades ago (Stryjakiewicz, T. et al. 2014).

Although research in the creative economy is quite extensive, it is more difficult to find those focusing on spatial patterns and the impact of territorial policies on them. In Slovenia, the research is limited towards finding spatial patterns of employees in creative economy on a level of city-regions (Kozina, J. and Bole, D. 2017; Kozina, J. and Clifton, N. 2018). The main finding is that workplaces in the creative economy still cluster in main urban centres, which was already established by other research for instance in Italy and Spain (Lazzeretti, L. et al. 2008). The creative economy tends to cluster in large urban areas, where it plays an important role for the local economic base. The findings from Slovenia reconfirm those results. But Slovenian results also show a slight shift of employees working in the creative economy towards more suburban and rural locations within the city-regional context in the last decade.

In other CEE countries, spatial patterns of the creative economy and innovation are also scarce. In Hungary, most of the creative labour is employed by foreign-owned companies in the north-western and north-eastern regions. There is also a high concentration of creative professionals in Budapest, due to historic trajectories where past uneven developmental policies created the capital city as a 'lone star' atop of the national urban system (Lengyel, B. and Ságvári, B. 2011), which also holds true for some other countries such as Bulgaria and Serbia (Bontje, M. et al. 2011). Budapest on the other hand holds almost 43 per cent of the country's creative employees (Kovács, Z. et al. 2007; Egedy, T. and Kovács, Z. 2009). A study from Czechia also confirms that the creative economy is unevenly spatially distributed with concentrations in large cities and especially Prague, which has almost 40 per cent of country's creative economy employment (Slach, O. et al. 2013). Spatial patterns in Czechia follow the settlement hierarchy, where population density is in positive and traditional manufacturing in negative relationship with the localization of the creative economy.

In Poland, the data is neither available nor comparable with other countries, although there are some indices that the spatial patterns are less centralised (Namyślak, B. 2013). According to Kasprzak, R. (2015), Warsaw is the place for the majority of the creative economy enterprises, but not to the same degree as in other CEE countries. Results from Slovakia are similar to other CEE countries, displaying a strong concentration in larger cities, especially Bratislava and Košice but with recent slight de-concentration tendencies in the past years (Blahovec, R. and Hudec, O. 2012; Rehák, Š. et al. 2014). In Romania, the distribution of creative economy follows the urban hierarchy, with Bucharest having a dominant role, expressed with a higher density of companies and employees in the creative economy (Pintilii, R.D. et al. 2017).

Spatial patterns of the creative economy in CEE countries exhibit higher concentration in capital cities or capital metropolitan regions. Ljubljana, Budapest and Prague all have between 40–45 per cent of the total national employment in the creative economy in their respective countries. This was established also in other non-CEE countries: 77

per cent of all creative clusters are found in metropolitan regions (Boix, R. *et al*. 2015). This concentration in large or capital cities could be explained by theories of agglomeration economies: co-location of firms and their spatial proximity, availability to specialised firms and services and access to knowledge spill-overs (Lorenzen, M. and Frederiksen, L. 2007; Hamidi, S. and Zandiatashbar, A. 2018). In addition to the benefits provided by agglomeration economies, the creative economy also clusters due to the mechanisms of spin-off formation (especially universities and of creative private firms) and institutional support (Gong, H. and Hassink, R. 2017). This institutional support in the form of public sector initiatives such as special trainings, public funding, higher education activities, and policies orientated towards strengthening the role of the creative economy are thus active agents in spatial distribution of creativity.

Research context and design

Territorial policies and urban development in Slovenia

The main aim of territorial policies (spatial and developmental plans and strategies, urban and regional plans) after the World War II was to establish polycentric urban development system. Most of this has been achieved through two local government reforms in 1960s/1970s and 1990s. Before the World War II, there were 469 municipalities in Slovenia. Their number constantly decreased to 62 in 1964 *(Figure 1)*. This was a one-tier system and was mostly understood as an extension of the state power (Nared, J. 2018). The rationale of such territorial development was to develop centres that would be equally divided and would provide the same possibilities for work, living, recreation and social standing to all inhabitants. This idea suited the economic, social and ideological circumstances of socialism (Nared, J. 2018). About 13–15 towns would form the frame of
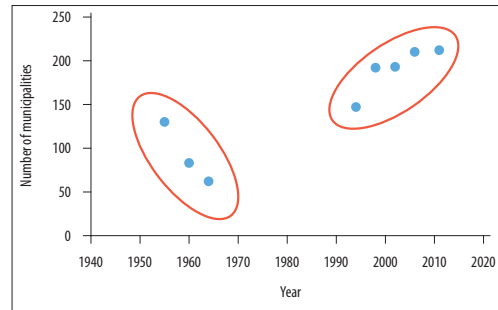

Fig. 1. Spatial concentration and dispersion of the local (self)government system after the World War II and the independence of Slovenia. *Source*: Nared, J. 2018.

such polycentric development (a more precise number was not set). In 1974, the new constitution of Yugoslavia identified municipalities as not only administrative but also the economic units. Instead of 13–15 regional centres, there were suddenly 64 centres (the same as the number of municipalities) (Drozg, V. 2012). Such urban development system strongly favoured small towns with population between 5,000 and 20,000.

The second major local government reform took place after the independence of Slovenia in 1991, when the number of municipalities started to increase again from previous 62 to 212 in 2011 (Nared, J. 2018). The vast majority of newly born municipalities were established in a rural context. The introduction of new municipalities signalled the discontinuation of the previous local government system in which the municipality, as a 'socio-political community', primarily operated in the name of the state while the exercise of local self-government mostly took place within smaller local communities (Čokert, A. 2005). This policy recognised two spatial levels of government: the local (municipal) and state level, whereas the regional level is only administrative. The Spatial Development Strategy of Slovenia from 2004 *(Figure 2)* identified 15 regional centres (urban centres of national importance) but no further steps were made towards establishing a second-
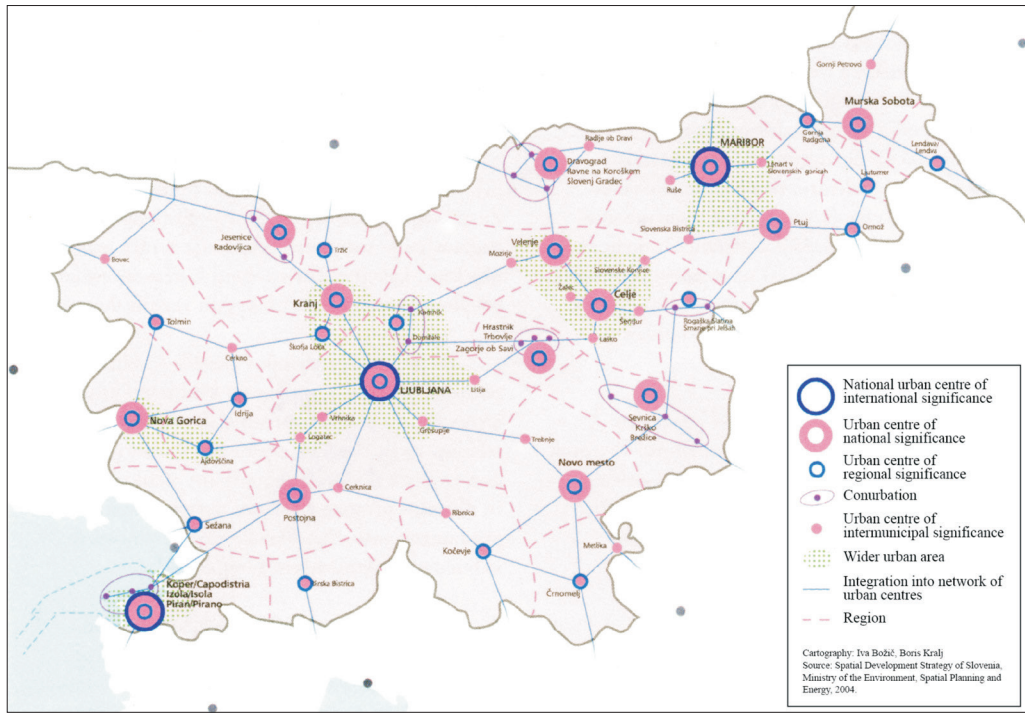
Fig. 2. Polycentric urban system and development of wider urban areas in Slovenia in 2004. *Source*: MOPE, 2004.

tier level of government system. Such territorial development exacerbated the unevenness of the Slovenian urban system, which is reflected in the lack of regional centres or medium-sized towns with population above 50,000, a strong presence of small towns below 20,000 inhabitants that typically display 'oversupply' of public services and functions in comparison to medium-sized towns (Nared, J. *et al*. 2017), and high prevalence of rural centres.

Methodology

With an aim to study the impact of territorial policies on the distribution of innovation in the Slovenian urban system, we analysed spatial-temporal trends of patents granted per place of patent holder between 1975 and 2014. The data were obtained from the Slovenian In-

tellectual Property Office. Empirical confirmation of the powers of spatial agglomeration in regard to knowledge generation can be found in the empirical works of Jaffe, A.B. *et al*. (1993), ÓhUallacháin, B. (1999), Acs, Z.J. *et al*. (2002), Crescenzi, R. *et al*. (2007) and others on the geography of patenting. They suggest that patenting activities are typically concentrated in agglomerated centres of production. Patent statistics provide a measure of innovative output. Their strength is to provide comparable information on inventions across a broad range of technological sectors (Crescenzi, R. *et al*. 2007) and are available in large numbers and for a very long time series (Archibugi, D. 1992), which is of utmost importance when conducting such spatial-temporal analysis. The number of patents has been linked to R&D activity and to innovation, and is therefore a widely used indicator of the capacity of a region to exploit knowledge and to translate it

into potential economic gains (Bowen, H.P. *et al.* 2008). Patent statistics is probably the most commonly used empirical indicator for the innovative output of firms and regions (Brenner, T. and Broekel, T. 2011).

However, patent indicators also suffer from a number of limitations in their ability to proxy innovation, and hence must be interpreted with care (Crescenzi, R. *et al.* 2007). Patents are notably troublesome, because not all innovations are patented, and not all patents are equally innovative or rewarding (Scott, A.J. 2006). To overcome these barriers, other more complex approaches can be applied such as R&D and non-R&D activities, innovation surveys and other intellectual property records (Lhuillery, S. *et al.* 2016). However, Acs, Z.J. *et al.* (2002) and Crescenzi, R. *et al.* (2007) claim that patent statistics return results highly comparable with other measures, thus allowing us to consider the growth rate of patents as an effective proxy for measuring spatial patterns of innovation.

Spatial units of analyses are 212 municipalities, which correspond to Local Administrative Units (LAU level 2) according to the Nomenclature of Territorial Units for Statistics (NUTS) of EUROSTAT. The municipalities are divided into four main groups according to the period of their establishment that highly corresponds with the urban hierarchy level. In

addition, we distinguish older 62 municipalities into Ljubljana as the capital and the only large city in the country (~290,000 inhabitants in 2016); regional centres (foreseen as a backbone of the urban system in the 1960s, identified as urban centres of national significance by the Spatial Development Strategy of Slovenia in 2004, but never established as capitals of regional authority units) and other small towns *(Table 2).*

Results: territorial dynamics of innovation in Slovenia

The innovation activity measured through the patents granted was almost insignificant in Slovenia until 1991, when the country gained independence from Yugoslavia and entered the market economy *(Figure 3)*. The situation was therefore the same as in other post-socialist countries that were described as 'complete deserts in terms of innovation and business networks' (Stryjakiewicz, T. *et al.* 2014). Further developments were in line with the prevailing trends in economic development: moderate and sustained growth after 1991, a re-acceleration shortly after the entry into the European Union in 2004 and a sharp decline after 2011, when the delayed effects of the global recession began to intensify in Slovenia (Verbič, M. *et al.* 2016).

Table 2. The structure of municipalities according to the period of establishment, the dominant type of municipal centres and size

Type of municipalities			Population in 2016				
Period of establishment		Dominant type of municipal centres	N	Mean	SD	Min.	Max.
1964–1994	Capital city*	Large city	1	/	/	/	/
	Regional centres**	Medium-sized town	23	28,157	22,408	8,885	111,832
	Other	Small town	34	14,375	6,682	4,056	35,278
1994–1998		Rural centre	89	4,977	2,856	372	16,182
1998–2006		Rural centre	45	3,021	2,191	375	11,273
2006–2011		Rural centre	20	3,032	952	2,039	5,515
Total			*212*	*9,737*	*22,260*	*372*	*288,307*

*Ljubljana was divided into five municipalities in 1964. They were merged in 1994. **The Spatial Development Strategy of Slovenia identified some medium-sized towns as conurbations. These are Brežice–Krško–Sevnica, Jesenice–Radovljica, Koper–Izola–Piran, Slovenj Gradec–Ravne na Koroškem–Dravograd, and Trbovlje–Hrastnik–Zagorje ob Savi. However, in present paper we analyse them separately. *Source*: Authors' calculation based on the data of the Statistical Office of the Republic of Slovenia.
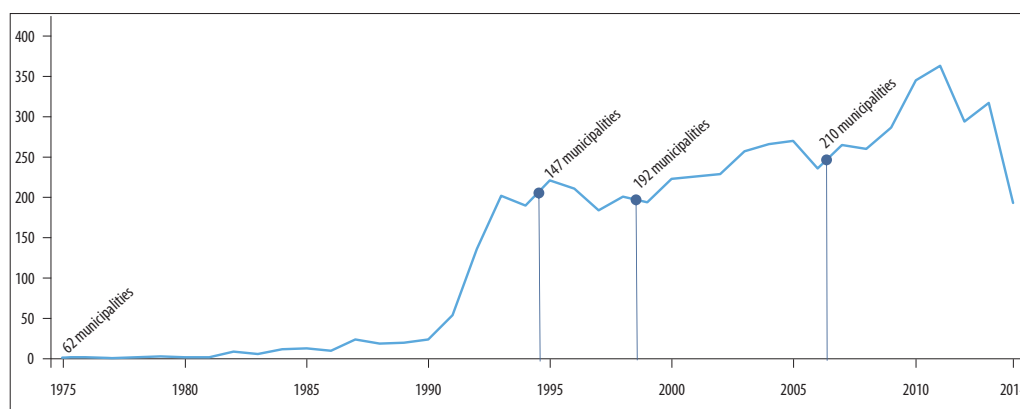
Fig. 3. Evolution of patents granted between 1975 and 2014 in Slovenia. *Source*: The Slovenian Intellectual Property Office.

Spatial distribution of patents granted between 1975 and 2014 according to urban hierarchy outlines strong concentration in Ljubljana as the only large city with 31.2 per cent of all granted patens *(Figure 4).* Stronger concentration can also be detected in some medium-sized towns such as Maribor, Kranj, Velenje, Novo mesto, Celje and Koper, whereas many of them portray a similar image as small towns and in some cases even rural centres. Innovation distribution does not necessarily follow the agglomerative logic in a straightforward way as suggested by empirical works of Jaffe, A.B. *et al.* (1993), ÓhUallacháin, B. (1999), Acs, Z.J. *et al.* (2002), Crescenzi, R. *et al*. (2007).

Between 1994 and 2014, innovation activity increased at the national level by 2.5 times. It is important to note that there was a significant increase in all types of municipalities. However, the largest increase was recorded in small towns (3.9 times) and rural areas (3.4–3.7 times), significantly smaller in medium-sized towns (2.5 times) and the smallest in the capital city of Ljubljana (1.7 times). Innovation has therefore intensified the most in less urbanized settlements *(Table 3).*

Ljubljana as the capital city is constantly losing its position as the innovation leader. From more than one third of patents granted

in 1994 this share fell to almost 25 per cent in 2014. The medium-sized towns have kept their constant position, while small towns that were granted local authority rights in 1960s/1970s, on the one hand, and newly established rural municipalities after 1994, on the other hand, have improved their position. Territorial policies from the socialist and post-socialist era favouring polycentricism at lower hierarchical levels and neglecting regional centres have influenced also a more even distribution of innovation activities.

Dispersion of innovation activities can also be detected within individual categories of municipalities. Gini coefficients exhibit continuous dispersion in the categories of small towns and rural centres. Medium-sized towns remain quite stable in this regard. However, the concentration is generally a bit higher in rural rather than urban context *(see Table 3).*

Discussion and conclusions

The objective of this paper is to study the impact of territorial policies on the distribution of the creative economy in Slovenia as an example of the post-socialist country. By analysing spatial-temporal trends of patents
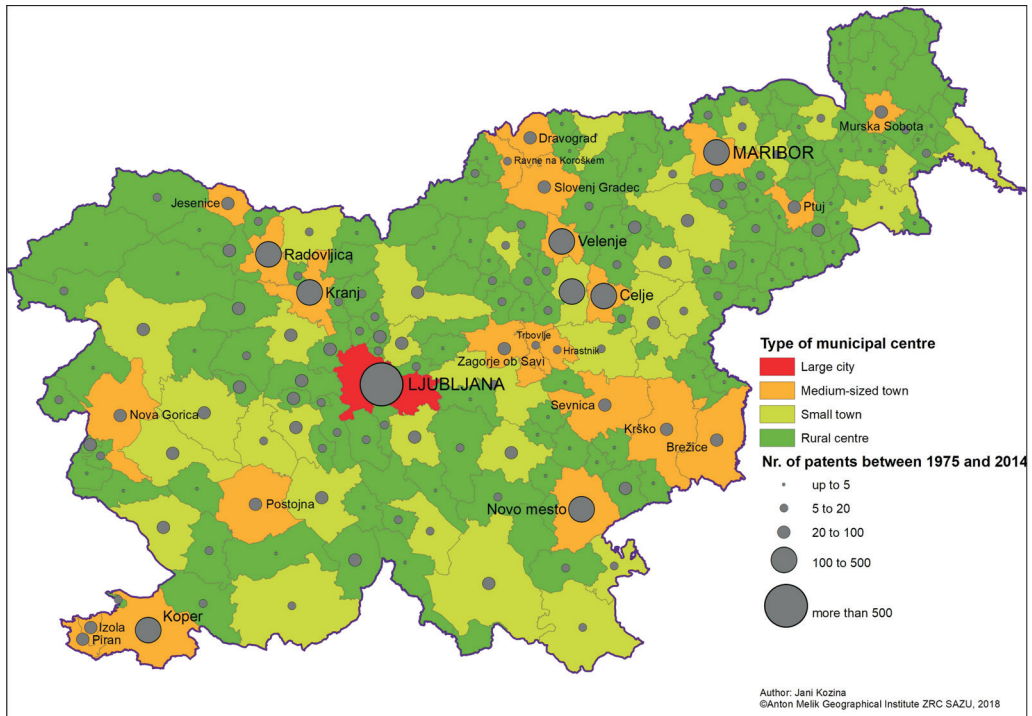
Fig. 4. Spatial distribution of patents granted between 1975 and 2014 according to urban hierarchy in Slovenia.
Source: The Slovenian Intellectual Property Office.

granted, we aim to track patterns of inno-
vation between 1975 and 2014 in the urban
system. A central focus is given to examine
changes in urban hierarchy, i.e. relationships
between Ljubljana as the capital and the only
large city in the country, regional centres or
medium-sized towns and small towns.

Spatial-temporal analysis of patents grant-
ed in Slovenia confirms the linkages between
territorial innovation systems and changes in
the urban system. The main findings show
that innovation has become more evenly dis-
tributed across space, which can be attributed
to long tradition of polycentric spatial devel-
opment in times of Yugoslavia and more
recent territorial policies favouring further
devolvement of power from the regional level
to local municipal centres. This means that
municipal centres that gained decision-mak-
ing and administrative importance gradually

also increased their innovation potential. The
results are consistent with the outcomes of
other authors who highlight the connection
between reconfiguration of territorial innova-
tion systems and transformation processes of
corresponding political and planning systems
(Kaiser, R. and Prange, H. 2004; Hamidi, S.
and Zandiatashbar, A. 2018).

However, to say that patterns of innovation
are becoming uniformly distributed across
the urban system would be an exaggeration.
A better description is that territorial polices
can, over a longer period, 'nudge' spatial pat-
terns of innovation into a specific direction or
shape. In Slovenian case, towards a slightly
more balanced, polycentric structure by fa-
vouring small towns, which were designated
as central settlements in 1960s/1970s, and ru-
ral centres, which were given a more impor-
tant role in the settlement structure after 1994

Table 3. Distribution of patents granted across different types of municipalities between 1975 and 2014.

Type of municipalities			Patents granted											
			N				%				Gini coefficient			
Period of establishment	Dominant type of municipal centres	N	1975–1994	1994–1998	1998–2006	2006–2014	1975–1994	1994–1998	1998–2006	2006–2014	1975–1994	1994–1998	1998–2006	2006–2014
1964–1994	Large city	1	259.5	266.8	585.7	694.3	37.5	33.8	31.8	28.4	–	–	–	–
	Medium-sized town	23	236.0	247.2	620.9	836.3	34.1	31.3	33.7	34.2	0.545	0.535	0.538	0.545
	Small town	34	88.2	117.3	310.0	432.1	12.7	14.9	16.8	17.7	0.576	0.571	0.470	0.520
1994–1998	Rural centre	89	76.0	108.1	220.5	336.4	11.0	13.7	12.0	13.7	0.772	0.771	0.656	0.674
1998–2006	Rural centre	45	22.8	43.5	78.9	107.0	3.3	5.5	4.3	4.4	0.800	0.734	0.752	0.730
2006–2011	Rural centre	20	9.5	7.1	24.0	41.9	1.4	0.9	1.3	1.7	0.761	0.795	0.606	0.564
Total		212	692.0	79.0	1,840.0	2,448.0	100.0	100.0	100.0	100.0	0.866	0.839	0.818	0.807

Source: The Slovenian Intellectual Property Office.

(Nared, J. 2018). Territorial tendencies of innovation follow a similar pattern of a slight shift of employees working in the creative economy towards more suburban and rural locations within the city-regional context in the last decade (Kozina, J. and Bole, D. 2017; Kozina, J. and Clifton, N. 2018). This nudge may be related to the impact of local (self)government reforms affecting improvement of some public service (e.g. education, health, administration), which are strongly linked to greater territorial innovation potential (Doloreux, D. 2002; Morgan, K. 2004). Being a municipal centre in Slovenia guarantees better access to public services, which leads to better living and working environment (Nared, J. 2018) and possibly also to a better innovation potential of those localities. In the socialist era, newly established municipal centres were further developed with new economic functions – for instance, every town was 'equipped' with at least one industrial plant, an accompanying apartment buildings built for industrial workers, and basic social infrastructure (Drozg, V. 2012). We could argue that although the transition to market economy transformed and deindustrialised those smaller centres, they retained the 'pioneering' spirit, defined as a range of certain assets like mind-sets, skills, traditions and tacit knowledge (Harfst, J. et al. 2018), which is so important for the creative economy. This is also a demonstration of how territorial polices can influence the innovation systems through improving amenities in the public sector domain.

Nevertheless, the spatial structure of innovation activities still reflects the dominant agglomeration logic and follows urban hierarchy. Just as in the case of employees working in the creative economy (Kozina, J. and Bole, D. 2017; Kozina, J. and Clifton, N. 2018), patents granted also concentrate in larger and more central settlements in the urban system. Ljubljana as the capital and the only large city in the country with ~290,000 inhabitants in 2016 still exhibit the supremacy over other medium-sized and small towns, although its fading role does not ultimately

legitimise anymore a status of a 'lone star' atop of the national urban system, which is so typical for other capital cities in CEE (Kovács, Z. *et al.* 2007; Egedy, T. and Kovács, Z. 2009; Bontje, M. *et al.* 2011; Lengyel, B. and Ságvári, B. 2011; Slach, O. *et al.* 2013) and also metropolitan areas of non-CEE countries (Boix, R. *et al.* 2015). The fading role of Ljubljana could probably be explained by higher land and property values, which can be a significant discouraging locational factor for small innovative businesses (Hamidi, S. and Zandiatashbar, A. 2018).

Medium-sized towns (~20,000–50,000 inhabitants) maintain their innovative role stagnant, although growth would be expected in line with their 'assigned' role in the Spatial Development Strategy of Slovenia from 2004, where they are defined as centres of national significance. The role of medium-sized towns in the national innovation system can be explained by the spatial policy, where the regional level is neglected, non-autonomous, and where, from a public administration point of view, regional centres have exactly the same competences as the local municipal centres (Nared, J. 2018). On the other hand, small towns (~5,000–20,000 inhabitants), which were defined as central places in 1960s/1970s, exhibit the largest growth of innovation activities. They are probably using their 'oversupply' with social and physical infrastructure as a competitive advantage contrary to larger urban environments in attracting, retaining and/or releasing innovation potential. As shown by Nared, J. *et al.* (2017), small towns are also very important in terms of export orientation and global competitiveness of Slovenia since they are the location of successful export orientated companies both from the socialist and post-socialist era.

This research contains certain limitations, which relate to the ability of patent indicators to proxy innovation. Such limitations include the heterogeneous value or degree of novelty of patented products or processes, non-patentability of many inventions or the better cost-effectiveness of other protection methods (e.g. secrecy), the different propensity to patent across countries and sectors (Archibugi, D. 1992). However, Acs, Z.J. *et al.* (2002) and Crescenzi, R. *et al.* (2007) argue that analyses based on patent counts deliver results highly comparable with those based on more direct measures of innovation, thus allowing us to consider the growth rate of patents as an effective proxy for changes in local innovative performance.

Patents can thus be a measure of both the creative economy and innovation. By including patents and other measures of territorial innovations systems, we can contribute to the methodological pluralism in the creative economy research and unveil its hidden perspectives. It would be interesting to see if other countries with similar polycentric structure and/or policies as Slovenia (e.g. Switzerland, Germany, Poland, the Netherlands) also exhibit similar territorial innovation patterns. In addition, it would be interesting to know which aspects of territorial policies influence the innovation system the most: is it the infrastructure (construction of physical or social space) or the more indirect aspects (institutional support for innovations, the innovative milieu etc.)? This research tried to focus on untapped synergies between innovation, policies and space. New findings may serve planners and policy makers to be better equipped to create places that not only benefit industry clusters, but that provide the framework for more robust territorial innovation systems (Hamidi, S. and Zandiatashbar, A. 2018).

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Changing geography of the creative economy in Hungary at the beginning of the 21st century

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Abstract

The Hungarian economy has gone through rapid transformation and modernization since the political changes of 1989/90. One of the signs of successful economic restructuring and re-integration to the world economy was the growing role of creative economy. In the present paper we analyse the changing geographical pattern of creative economy in Hungary, based on longitudinal statistical data. Our findings suggest growing core-periphery relations in the spatial pattern of creative economy, especially since the recent financial crisis. The relative weight of Budapest and its urban region has been continuously growing and even major regional centres are unable to keep pace with the Hungarian capital. We also found that cities in the Hungarian urban system became highly differentiated according to their attractiveness for creative firms and labour, and there is a growing competition among secondary cities for knowledge based and creative activities. The growing geographical concentration of the creative economy (especially the knowledge intensive industries) is partly the result of previous neoliberal regional and urban policies.

Keywords: creative economy, urban hierarchy, creative city, financial crisis, Budapest, Hungary

Introduction

The post-industrial revolution, which can also be labelled as the revolution of information, signalled the beginning of a new era creating new socio-economic order in the world, where the notion of competitiveness has been completely re-evaluated. As a growing body of literature demonstrates the economic competitiveness of regions and countries increasingly depends on those branches where the added value is based upon knowledge and creativity. According to Kao, J. (1996) we are in the age of creativity, where economic and social development increasingly depends on creative thinking.

International experience shows that in economic competition – along with information and its flow – a growing role is played by creativity (and particularly by culture), invention and innovation (Hall, P. 1998; Lambooy, J.G. 1998). The importance of creativity, knowledge and innovation has never seemed as decisive as in the early 21st century. Regarding the future development of the European metropolitan regions the emphasis is more and more on the question how these city-regions will be able to attract and integrate firms from the sphere of the creative economy and its labour in the future (Glaeser, E.L. 2005).

Since the 1990s, the importance of geographical location has enjoyed a revival in economic-geographical theories. We should speak of new types of agglomeration economies in the current 'post-industrial' or 'post-Fordist' era. Only metropolitan regions that are creative enough will survive global competition (Törnqvist, G. 1983; Andersson, A. 1985; Hall, P. 1998). Phelps, N.A. and Ozawa, T. (2003) have high-

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lighted the main shifts in agglomeration factors from the late industrial to the post-industrial or post-Fordist era (e.g. shift from town-with-suburbs to the global city-region, from hierarchically organised monocentric structures to polycentric structures, from manufacturing to services etc.). It is not surprising, therefore, that scientific, economic and political interest in creative economy has significantly grown since the beginning of the new millennium (DCMS 1998; Musterd, S. *et al.* 2007; Howkins, J. 2013).

As a consequence of the shift from the Fordist production system to the post-Fordist economy metropolitan regions have acquired an ever growing importance and became centres of economic and social development of countries and regions. Big cities and metropolitan regions play a prominent role; in addition, due to their size and population number, they represent a considerable material, spiritual and intellectual "mass" (Malecki, E.J. 1987). Nowadays, the creative economy is increasingly concentrated in large cities and metropolitan regions. Cities with strong creative sectors – especially new-economy industries, such as high technology production, business and financial services, media and cultural-products industries, and neo-artisanal manufacturing – are in the vanguard of this trend (Scott, A.J. 2004). With integrated global markets and the advent of new technologies there has been a search for new sources of competitive advantage (Landry, C. and Bianchini, F.F. 1995; Landry, C. 2000; Rantisi, N.M. *et al.* 2006).

As an acknowledgement of the global trends a row of policy measures aimed at developing the creative economy have been formulated and implemented at the EU level in the last three decades. Among them the European Capitals of Culture (ECOC) initiative launched in 1985 should be mentioned, or the MEDIA programme between 1990 and 2013 aimed at supporting the audiovisual industry, but we can also refer to the Culture 2000 programme between 2000 and 2006, and its continuation the Culture programme (2007–2013), or the current Creative Europe framework programme (2014–2020), which

is an overarching cultural policy of the EU (Schlesinger, P. 2018). Countries of East Central Europe joined these programmes after their accession to the EU in 2004 (and 2007), in addition, the socio-economic and territorial aspects of creative economy became one of the focal points of the EU research programmes (FP6, FP7) in which post-socialist countries also actively participated. Subsequently, scientific publications applying the concept of creative cities have gradually increased in East Central Europe.

Analysing the growing body of literature focusing on creative economy in East Central Europe we can define three main strands of publications. Firstly, international comparative research projects yielded a lot of insights about the state-of-the-art of the creative economy in the region, e.g. Ságvári, B. and Desewffy, T. 2006; Musterd, S. and Murie, A. 2010; Lazzeretti, L. 2012; Musterd, S. and Kovács, Z. 2013; Chapain, C. and Stryjakiewicz, T. 2017. Secondly, country-based statistical analyses focusing on the macroeconomic position and regional pattern of creative economy have been mushrooming, e.g. Murovec, N. and Kavas, D. (2012b) in Slovenia, Slach, O. *et al.* (2013) in Czechia, Vitálišová, K. *et al.* (2013) in Slovakia, Kasprzak, R. (2015) and Ratalewska, M. (2016) in Poland, and Toma, S-G. *et al.* (2018) in Romania. The third group of papers deals with the spatial characteristics of creative economy in cities and metropolitan regions, e.g. Kovács, Z. *et al.* (2007), Egedy, T. and Kovács, Z. (2009) and Lengyel, B. and Ságvári, B. (2011) in Hungary, Bednár, P. and Grebeníček, P. (2012) in Czechia, Murovec, N. and Kavas, D. (2012a) in Slovenia, Stryjakiewicz, T. and Męczyński, M. (2010) and Namyślak, B. (2014) in Poland, Petrikova, K. *et al.* (2015) and Baculáková, K. (2018) in Slovakia.

With this paper we would like to contribute to the second and third groups of papers. The main aim of this article is to analyse the changing geographical pattern of creative economy in Hungary, based on longitudinal statistical data. Using statistics

regarding the number of creative firms and employees, as well as revenues, the main temporal and spatial development trends of the creative economy in Hungary, as well as the restructuring processes within the sector will be highlighted. In the context of territorial shifts, we will also concentrate on the distribution of the creative and knowledge intensive sectors within the urban system.

Theoretical background

The creative economy

To date there is no universally accepted definition for creative economy, and there is no consensus among researchers which activities belong to the creative economy (Cunningham, S. 2002). The Department for Digital, Culture, Media & Sport (DCMS) of the UK government defines those activities as part of the creative economy which are based on personal creativity, knowledge and talent and which create jobs and value added through the generation and utilization of intellectual property (DCMS 2001, 4.). According to Howkins, J. (2013) economics of creativity deals predominantly with two value systems: one is based in the physical product, the tangible value, another one is based on intellectual property, which is intangible. UNCTAD (2008, 15) defined the creative economy as an evolving concept based on creative assets potentially generating economic growth and development that can foster income-generation, job creation and export earnings while promoting social inclusion, cultural diversity and human development. The creative economy embraces economic, cultural and social aspects interacting with technology, intellectual property and tourism objectives. It is a set of knowledge-based economic activities with a development dimension and cross-cutting linkages at macro and micro levels to the overall economy.

Based on our previous research experiences we classify creative activities into two groups: creative industries and knowledge intensive industries (Musterd, S. et al. 2007). The group of creative industries is very diverse. The 'hard core' of these creative industries is often labelled 'cultural industries'. Throsby, D. (2001) distinguishes the cultural industries more or less synonymous with the creative arts. He ranges them in a hierarchy ranked on 'pure' creativity: at the centre are the 'arts' and (core creative arts like literature, music, performing arts or visual arts, and other core cultural industries), on the outside more 'applied' creative skills (wider cultural industries and related industries). Scott, A.J. (2004) suggests calling the sector cultural commodity production and within cultural-product industries two categories should be distinguished: firstly, service outputs that focus on entertainment, edification, and information and secondly, manufactured products through which consumers construct distinctive forms of individuality, self-affirmation, and social display. Symbolic value and function appear as a characteristic feature of these industries.

Cultural industries can have intensive links with several other creative economic branches, as well as with creative departments of various production activities. The wide array of creative activities developed around the cultural industries is most often called 'creative industries'. According to the UNCTAD (2008, 11) creative industries engage with the cycles of creation, production and distribution of goods and services that use creativity and intellectual capital as primary inputs. They are at the cross-road among the artisan, services and industrial sectors and constitute a new dynamic sector in world trade. Creative industries focus on, but they are not limited to arts, potentially generating revenues from trade and intellectual property rights and they constitute a set of knowledge-based activities as well. Creative industries comprise tangible products and intangible intellectual or artistic services with creative content, economic value and market objectives. A large share of these creative industries is highly interrelated with knowledge

intensive activities. Therefore, the circle of creative industries can be extended by certain knowledge intensive industries while defining the creative economy. Knowledge intensive industries should be considered as part of the creative economy not only because they demand highly qualified labour and partly overlap with creative industries but also because some creative industries highly depend on knowledge intensive activities (Broekel, T. and Boschma, R. 2016).

The creative class

The rise of the creative economy has also brought about societal changes in urban agglomerations. Within urban societies a new stratum the so-called 'creative class' has been gradually formed which according to some commentators highly influence the economic performance and competitiveness of cities and their regions (Florida, R. 2002). According to Florida, R. (2002) the competitiveness of city-regions increasingly depends on the size of the creative class and how cities are able to attract creative people. Analysing the role of creativity in economic development and urban and regional success Florida came to the conclusion that Talent, Technology and Tolerance (3Ts) are important conditions (Florida, R. 2002). In his famous 3T model he argued that growth is powered by creative people (Talent), who prefer places that are culturally diverse and open to new ideas (Tolerant), and the concentration of 'cultural capital' wedded to new products (Technology). All these result in 'business formation, job generation and economic growth'. Florida claims that we are entering the 'creative age', in which people with original ideas of all sorts will play a central role. According to Florida, R. (2002) "The creative class is comprised of a 'super creative core', which consists of a new class of scientists and engineers, university professors, poets, actors, novelists, entertainers, artists, architects and designers, cultural worthies, think-tank researchers, analysts and opinion

formers, whose economic function is to create new ideas, new technology, and/or new creative content". Beyond this core group, the creative class also includes a wider circle of talent working in knowledge intensive industries (Meusburger, P. 2015).

In the growing body of literature on creative economy there has been increasing criticism on Florida's creative class theory. According to Krätke, S. (2010), even if we admit that creative class has been identified correctly, the mixing of different groups defined by Florida cannot be interpreted and examined under a hat, because only the "scientifically and technologically creative" workers had an impact on the local economy and, thus, on the regional GDP. Hall, P. (2004) pointed out that developing a creative and innovative city is a long and slow process. According to Storper, M. and Manville, M. (2006), not the skills and creativity, but the companies and the agglomeration economies are the engines of growth. From the point of view of urban development, some authors criticized Florida for supporting only the promotion of a "trendy" neighbourhood, which can negatively affect the original population living there for a long time (Peck, J. 2005), or even supporting urban transformations that favour higher status people instead of the majority (Pratt, A.C. 2008). This is also confirmed by the view that Florida basically supports a hard city image building with a kind of soft edge by encouraging the creation of a consumption-oriented cultural milieu (Pratt, A.C. 2011). Martin-Brelot, H. *et al.* (2009) emphasize that the geographical context of Florida's theory is obviously weak. Florida's theory does not take into account the human and personal trajectories and networks as well, that creative professionals may also associate with other people and also places where they had previously lived and worked (Gáková, Z. and Dijkstra, L. 2014).

While Florida puts the emphasis on the attraction of creative people as the secret of economic success, European policies on the creative economy consider the attraction of

creative firms more important. Empirical results of a European research project carried out between 2006 and 2010 ('Accommodating Creative Knowledge – Competitiveness of European Metropolitan Regions within the Enlarged Union' – ACRE) confirmed that the spatial mobility and settlement of the European creative class is not so much influenced by soft factors – as advocated by Florida – but rather by personal trajectories and hard factors (e.g. wage level). Soft factors play – as opposed to Florida's concept – a subordinated role. They are more important, however, in understanding how creative people become attached to a place. Not surprisingly, in the European development pattern of creative economy *place*, *pathway* (historical development of an urban region) and *personal networks* (place attachment and social networks), thus a 3P model, has lot more relevance than Florida's 3T model (Musterd, S. and Murie, A. 2010; Boross, L. *et al.* 2016; Páthy, Á. 2017).

The urban bias of creative activities

According to Costa, P. *et al.* (2007) there are five main factors that have contributed to the growing interests towards creativity and its impacts on urban development: a) the idea of the 'creative city' developed by Landry, C. (2000), Hall, P. (2004) and others; b) the notion of 'Creative Europe' by international research institutions as well as the "Creative Cities Network" of the UNESCO; c) Florida's concept on 'creative class'; d) the growing importance of the 'creative industries' within economic analysis (Caves, R. 2002), and e) the valorization of 'creation and creativity' in the field of artistic activities analysis in the mainstream body of literature (Throsby, D. 2001). As a consequence of these ideas and concepts the territorial development and spatial embeddedness of creative economy came into the forefront of academic research over the last two decades.

As Pratt, A.C. and Hutton, T.A. (2012) pointed out one of the main characteristics of creative economy is its urban bias, especially in its higher value added sectors. Canadian examples demonstrate that highly urbanized areas are attractive locations not only for the creative industries, but also for cultural industries and specialised labour. This aspect of creative activities has been supported by large number of studies. Power, D. and Nielsen, T. (2010) also emphasized this distinctive urban focus of the creative economy. The relationships between the concentration of creative industries and urban primacy benefit to cities, but at the same time sharpen interregional employment and income disparities. Very often major cities stand out as strongholds of the creative economy within their wider hinterland. In fact, this phenomenon drew the attention to the role of urban hierarchy in the investigation of creative economy, since metropolitan regions seem to be not only echelons of urban hierarchy in terms of population and employment, but also have a disproportionately larger share of creative and knowledge-based industries.

Lorenzen, M. and Andersen, K.V. (2009) investigated altogether 444 cities in eight European countries in order to provide knowledge on the relationship of urban hierarchy and the presence of creative class, and compared it to the size distribution of the overall population across European cities. Based on data collected in 2003 and 2007 authors pointed out that even if the presence of the European creative class correlates with the European total population, its distribution constitutes a population hierarchy which differs from the urban hierarchy. Both distributions follow the rank-size rule, but the creative class's distribution has a steeper overall slope (i.e. with the size and rank of the city, the size of the creative class grows more rapidly than the city's population). Their results confirmed that the slope across the rank-size distribution is shallower towards the settlements on the lower levels of the hierarchy (i.e. the tail end of the distribution) for the creative class than for the total population. This result also implies that city-size matters and the creative class is less attracted

by smaller cities. Exploiting the theoretical foundations of Christaller's (1933) central place model, Lösch's (1940) theory on urban hierarchies and centrality, Zipf's (1949) rank-size rule and Florida's (2002) surveys on the creative class, authors found, that there is a good correlation between the size of the general population and the presence of the creative class in European cities, but due to relative diseconomies the tendency of cities to drop off steeply at the tail end is more profound for the creative class than for the general population (Lorenzen, M. and Andersen, K.V. 2009; Lang, T. 2015).

Thus, creative urban hierarchy is distinctive from the general population hierarchy in a fundamental way: the rank-size distribution of the creative class indicates a greater proportionate growth than that of the wider population. This can be explained, on the one hand, by the specialized consumption demand of the creative class (first of all bohemians have special preferences for consuming services than the rest of the creative class and this group is the first to shy away from cities with growing diseconomies and poor services), and on the other hand, by the specialized job preferences of the creative class (the presence of the creative class correlates very highly with the presence of high-technology workplaces).

Similar phenomenon can be observed in the countries of East Central Europe, and in this respect there is no significant difference between the Western and Eastern half of Europe. Using employment statistics Slach, O. *et al.* (2013) found that the concentration of the employees in creative and cultural industries is very high in Czechia, 40 per cent of the creative class live in Prague and its agglomeration, and the role of secondary cities is very much subordinated (e.g. Brno – 9%, Ostrava – 3%). Thus, location patterns of the creative economy highly correspond to the hierarchy of the urban system in the Czech Republic. This is similar to other Western European countries e.g. Madrid and Barcelona concentrate 45 per cent of the Spanish, Milan and Rome 35 per cent

of the Italian creative labour. Similar trend was pointed out by Pintilii, R. *et al.* (2017) in Romania where the weight of Bucharest significantly increased in the creative economy after the global financial crisis, and in 2012 49 per cent of the creative employees of the country lived in the capital city and its surroundings. Authors also pointed out the growing dynamism of the periurban zone (suburbs) where properties are significantly cheaper than in the city proper. In the present theme issue Kozina, K. and Bole, D. (2018) also clearly demonstrate the correlation between the position of a city in urban hierarchy and the weight of creative economy on the example of Slovenia. Thus, irrespective of the legacies of state-socialism the urban geography of the creative economy follows basically similar patterns in the Eastern and Western parts of Europe.

Considering the theoretical foundations of the paper, the main research questions of this study are as follows:

What are the most important temporal and territorial features of the development of the creative economy in Hungary?

Does a creative urban hierarchy exist in Hungary and how can its geographical feature be characterized?

What is the role of the Budapest Metropolitan Region in the creative economy of the country and is there any sign of a polycentric development in the spatial transformation of Hungarian creative economy?

How did the global economic crisis affect the development of the creative economies in Hungary, and what were the main geographical consequences of the crisis?

Research methods

First, on the basis of the international literature (see Musterd, S. *et al.* 2007) we defined those economic activities and occupations that can be classified as part of the creative economy (*Table 1*). For the identification of creative economy, the international NACE codes were used, which are predominantly

identical with the TEAOR'08 codes applied by the Hungarian Central Statistical Office (HCSO). Data on the number of enterprises (divided by companies, sole proprietors, and government institutions), their number of employees and annual revenues (in 1,000 EUR) were supplied by HCSO. This set of standardised data was available in a cleaned and structured format for 1999, 2004, 2007, 2011 and 2015. Based on these datasets statistical analyses were carried out in order to detect the temporal and spatial development of creative economy in Hungary.

Due to the proliferation of research results the definition of creative economy has cristalised and become more unambiguous in the last decade. Even though ACRE project defined creative economy somewhat broader, for the sake of longitudinal analysis and the comparability of our data sets we apply in this article the traditional ACRE classification of economic activities.

In the first phase of analyses we investigated the weight of creative economy and its different sectors at the national level, since the competitiveness of cities largely depends on the share of creative economy (Rechnitzer, J. and Lengyel, I. 2000) and the production of knowledge is highly uneven within the Hungarian urban network (Nagy, E. and Nagy, G. 2010). In the second phase of analyses we investigated the weight of

Table 1. Subdivision of creative economy defined by the ACRE consortium

Sectors	2–4-digit TEAOR'08 (NACE) codes		Main branches
Creative industries	13, 14, 15, 581, 182, 4751, 4753, 4754, 4759, 4761, 4762, 4763, 474, 4771, 4772, 4778, 4779, 6201, 5829, 711, 731, 742, 8211, 8220, 8299, 741, 591, 60, 592, 900, 920, 932, 6391		Architecture; Advertising; Publishing; Motion pictures, video, radio and television activities; Software consultancy and supply; News agency activities; Entertainment and recreational activities; Manufacture of textiles, wearing apparel, luggage, handbags, saddler, harness and footwear; Tanning and dressing of leather; Retail sale of new and second hand good.
Knowledge intensive industries	ICT	262, 2823, 261, 263, 264, 273, 332, 61, 62, 631, 951	Telecommunications; Computer related activities; Hardware consultancy; Data processing and database activities; Manufacture of office machinery and computers, insulated wire and cable, television and radio, telephony and line telegraphy, video recording or reproducing; Maintenance and repair of office, accounting and computing machinery.
	Finances	64, 65, 66	Financial intermediation; Insurance and pension funding; Activities auxiliary to financial intermediation.
	Law and business	69, 70, 78, 80, 712, 732	Legal, accounting, book-keeping and auditing activities, market research; Technical testing and analysis; Labour recruitment and provision of personnel; Investigation and security activities.
	R&D and higher education	72, 8542	Research and development; Research and experimental development on natural and social sciences, engineering and humanities; Higher education.

Source: Kovács, Z. *et al.* 2007.

creative economy at the local (settlement) level. In this case the subject of investigation was Hungary's approximately 3,200 settlements which were devided into five groups according to their size (Budapest, cities above 100 thousand, between 50 and 100 thousand, between 20 and 50 thousand and settlements below 20 thousand inhabitants). In the third phase of analyses, cities above 20 thousand inhabitants and Budapest (altogether 61 geographical units) were examined more thoroughly in order to grasp socio-economic aspects of the development of creative economy.

On the one hand, we compared the changes in the number of creative employees and total employment between 1999 and 2015 (see results in *Figure 4*). On the other hand, we elaborated and applied simple rank-order analysis to explore the correlation between the socio-economic profile and the performance of creative ecnomy in the Hungarian cities above 20 thousand inhabitants. First, indicators for the socio-economic and creative performance of cities have been selected. For charterizing the socio-economic performance of a city, on the one hand, economic indicators such as the ratio of enterprises in industry, building industry and mining in 2015 (reflecting the diversity of local economy in a negative sense), the number of joint ventures per 1,000 inhabitants in 2015 (entrepreneurial activity), the volume of industrial tax-income in 2013 (business output), and on the other hand social indicators such as population change between 2011 and 2015 (representing population dynamics), the share of university graduates in 2011 (skill level), and the level of unemployment in 2015 (economic activity) have been choosen.

With regard to performance of the creative economy the share of creative companies within the local economy, the share of employees of creative companies within the total number of local employees, and share of annual revenues of creative firms within the total revenues of local firms (each indicator for 2015) have been applied. In the next phase of analysis, the 61 investigated

cities were ordered in each indicators in a reversed rank-order where better positions meant higher rank values. The final aggregated values for both the socio-economic and crative performance have been created by the arithmetic means of the rank-order positions. Thus, cities with highest rank values had the best socio-economic and creative economic performance (see results in *Figure 5*).

The creative economy in Hungary

The role of creative and knowledge intensive industries in the light of statistics

According to the registry of the Hungarian Central Statistical Office (HCSO) there were 222 thousand active economic organizations in the country operating in the field of the creative economy at the end of 2015, which made up 32.5 per cent of all active economic organizations registered in Hungary. Firms belonging to the creative economy provided jobs for 845 thousand employees, 22.2 per cent of all employees in the country. The total amount of revenues generated by the sector was 59.5 billion EUR in 2015.

The weight of the creative economy grew in Hungary until the world financial crisis of 2008 when the growth terminated and the number of firms (and to a lesser extent the number of employees and the amount of revenues) sharply decreased *(Figure 1)*. The drop hit most seriously the creative branches, while the knowledge intensive sector was
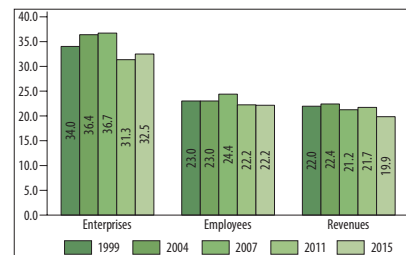

Fig. 1. The share of creative economy in Hungary (1999–2015, in %). *Source*: HCSO, National Accounts 1999–2015.

less affected. Between 2007 and 2011 approximately 45 thousand creative firms stopped operating, and the number of employees in creative industries decreased by ca. 130 thousand out of which 40 thousand were sole traders (self-employed). The crisis hit most hard some parts of business services (e.g. graphic design, potography, call-center activities) software consultancy and retailing (e.g. specilised and second-hand goods). A similar decline in the knowledge intensive sector of the creative economy was not experienced during the economic crisis: the number of firms and their output slowly grew. Between 2011 and 2015, even though the amount of revenues decreased there was a gradual regeneration in the creative industries and in the whole creative economy as well.

Analysing the internal structure of creative economy, it can be noted that the share of firms in the creative industry category accounted for 48 per cent of the creative economy in 2015, with 106 thousand active economic organizations *(Table 2)*. However, at the same time the ratio of creative industries was only 37.8 per cent among the employees and 31.4 per cent regarding the total revenues of the creative economy. This clearly indicates that firms of the creative industries are smaller, employing fewer people and generating less revenue than the average of the creative economy.

Looking at the share of the knowledge intensive industries, we find substantial differences among the different sub-sectors. Even though the ICT sector comprises only 9.1 per cent of the firms and 15.8 per cent of the em-

ployees of the creative economy, it produces 33 per cent of its total turnover. Companies in international finances have above average revenues whereas those in law and businesses are below. Economic organizations classified as R&D and higher education are generally bigger with low relative revenue figures. This clearly indicates the dominance of state owned (financed) institutions in the field (e.g. universities, research institutes) providing jobs for 71 per cent of the employees in the sub-sector (see also Szakálné-Kanó, I. *et al*. 2017).

Between 1999 and 2015 there was a substantial shift within the creative economy reflecting the trend of professionalization and the knowledge-based modernization of the economy. National policies after 2000 clearly supported the development of the knowledge intensive sector, therefore, it is no surprising that the share of knowledge intensive industries increased within the creative economy regarding the number of firms, employees and business turnover as well. At the same time the relative share of creative industries decreased *(Table 3)*. As international comparative research gave evidence, knowledge intensive industries had similar or even higher shares in the economy in East Central European countries than in Western Europe (Musterd, M. and Murie, A. 2010, 12). However, not all sub-sectors of the knowledge intensive industries grew at the same pace. Data reflect the above average dynamism of law and business services after the financial crisis. Consequently, the weight of professionals providing busi-

Table 2. The composition of creative economy in Hungary, 2015

Industries and economy	Enterprises		Employees		Revenues	
	Number	%	Person	%	1,000 EUR	%
Creative industries (A)	106,863	48.2	319,807	37.8	18,643,448	31.4
Knowledge intensive industries (B)	114,772	51.8	525,435	62.2	40,819,850	68.6
Infocommunication (ICT)	20,116	9.1	133,226	15.8	19,647,667	33.0
Finances	20,680	9.3	87,346	10.3	11,398,508	19.2
Law and business services	68,659	31.0	235,667	27.9	8,995,731	15.1
R&D, Higher education	5,317	2.4	69,196	8.2	777,945	1.3
Creative economy (A + B)	*221,635*	*100.0*	*845,242*	*100.0*	*59,463,298*	*100.0*
Economy total	*681,922*	*–*	*3,815,891*	*–*	*299,561,016*	*–*

Source: HCSO National Accounts, 2015.

Table 3. Changes of the composition of creative economy in Hungary, 1999–2015

Industries and economy	Enterprises				Employees				Revenues			
	1999 %	2015 %	Change, %	Change, number	1999 %	2015 %	Change, %	Change, persons	1999 %	2015 %	Change, %	Change, 1,000 EUR
Creative industries	62.1	48.2	-13.9	-19,469	53.9	37.8	-16.1	-122,785	42.6	31.4	-11.3	7,784,749
Knowledge intensive industries	37.9	51.8	13.9	37,652	46.1	62.2	16.1	147,573	57.4	68.6	11.3	26,203,674
Infocommunication (ICT)	5.4	9.1	3.6	9,040	11.9	15.8	3.9	35,615	35.3	33.0	-2.3	10,654,654
Finances	6.7	9.3	2.6	7,010	9.1	10.3	1.2	12,739	10.3	19.2	8.8	8,767,918
Law and business services	24.8	31.0	6.2	18,276	15.1	27.9	12.8	111,741	11.0	15.1	4.1	6,192,086
R&D, Higher education	1.0	2.4	1.4	3,326	10.0	8.2	-1.8	-12,522	0.7	1.3	0.6	589,017
Creative economy	*100.0*	*100.0*	*–*	*18,183*	*100.0*	*100.0*	*–*	*24,788*	*100.0*	*100.0*	*–*	*33,988,423*

Source: HCSO National Accounts, 1999, 2015.

ness and legal services but playing limited roles in technological development and innovation, the so-called 'dealer class' (according to Krätke, S. 2010) increased. The outcome of austerity programmes launched to reduce public expenditure is also obvious, the weight of R&D and higher education stagnated over the last decade.

The creative economy in the Hungarian urban system

The creative economy has a hierarchically structured pattern in national urban systems, where the weight of the creative economy normally increases with city size. As it was documented in the literature, the locational decisions of creative firms tend to favour larger urban agglomerations (Lorenzen, M. and Andersen, K.V. 2009). Hungary as a relatively small (ca. 10 million inhabitants) and highly centralized state clearly confirms this picture, as there is a high correlation between the weight of creative economy (total number of firms, employees and annual turnover) and the position of a place in the urban hierarchy.

For the sake of analysis, we divided the settlements of Hungary into five classes according to their size (1 – Budapest; 2 – cities above 100 thousand; 3 – cities between 50 and 100 thousand; 4 – cities between 20 and 50 thousand, and 5 – settlements below 20 thousand inhabitants), and the relative share of creative economy was analysed for these five classes on a temporal basis.

First we analysed the location quotient of firms in the Hungarian settlement system. The share of the Budapest Metropolitan Region (BMR) has continuously increased in the creative economy of the country over the last one and a half decades, even during the world financial crisis *(Figure 2)*. By 2015 48.3 per cent of the creative and knowledge intensive firms were located in the BMR, even though the metropolitan region was the home for only 38.5 per cent of the firms operating in Hungary. The concentration regarding the number of employees and rev-
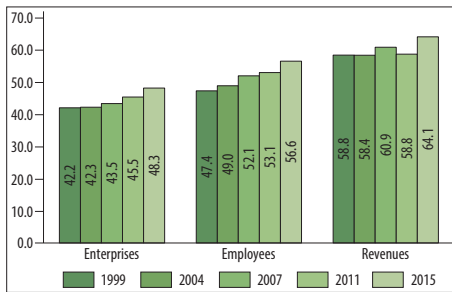
Fig. 2. The share of Budapest Metropolitan Region in the creative economy of Hungary (1999–2015, in %). *Source:* HCSO, National Accounts 1999–2015.
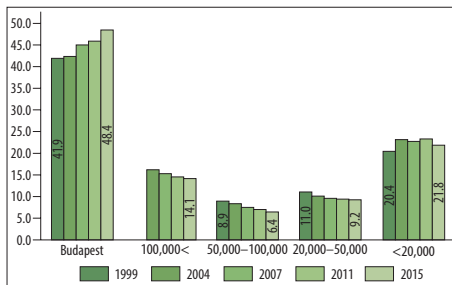

Fig. 3. Distribution of employees of the creative economy by settlement categories in Hungary (1999–2015, in %). *Source:* HCSO, National Accounts 1999–2015.

enues was even higher. In 2015 56.6 per cent of the creative labour force was employed in the BMR and 64.1 per cent of total revenues generated by the creative economy was concentrated here. Thus, data reflect a high level of spatial concentration of creative economy within Hungary, with growing trends.

The level of concentration, however, differs among different sub-sectors of the creative economy *(Table 4).* Taking into account the number of firms, the weight of BMR is outstanding in the field of ICT (57.9%). However, if we take into consideration the share of employees (70.9%) or revenues (95.5%) the predominance of Budapest and its urban region is extraordinary in the field of finances.

As *Figure 3* demonstrates the growing weight of Budapest within the creative economy took place at the expense of cities at the lower levels of urban hierarchy, and only settlements (small towns and villages) below 20 thousand inhabitants were able to gain higher share in the creative economy after 1999. Similar trends were recorded regarding the spatial distribution of creative employees and revenues produced by the creative economy. Thus, we can safely say that the growing geographical concentration of creative economy has shown a clear trend in Hungary in the 21st century, and this is rather alarming for policy makers dreaming about regional levelling out.

There is a growing gap between Budapest and the rest of the country, and between the larger regional centres (e.g. Szeged, Pécs, Győr) and their hinterland (Csomós, Gy. 2015). The dominance of Budapest is outstanding, however, major regional centres still have better positions than smaller cities due to the highly hierarchical distribution of creative activities. The previously dominant east-west dimension in the spatial configuration of creative economy has been replaced

Table 4. The weight of the Budapest Metropolitan Region (BMR) within the creative economy in Hungary, 2015

Industries and economy	Enterprises	Employees	Revenues
	%		
Creative industries (A)	47.5	49.6	69.7
Knowledge intensive industries (B)	49.0	60.8	61.6
Infocommunication (ICT)	57.9	57.1	41.9
Finances	32.0	70.9	95.5
Law and business services	51.4	62.2	60.3
R&D, Higher education	49.5	50.7	78.7
Creative economy (A + B)	*48.3*	*56.6*	*64.1*
Economy total	*38.5*	*43.2*	*52.8*

Source: HCSO National Accounts, 1999–2015.

by the factor of 'distance from Budapest', or 'distance from the nearest regional centre'.

There are substantial differences in the spatial pattern of creative economy within the wider Budapest Metropolitan Region as well. Inside the city proper (i.e. within the administrative boundaries of the city) the elite districts on the Buda side show higher proportions regarding the relative share of creative firms (12th district – 51.8%; 1st district – 49.8%; and 2nd district – 49.6%), while peripheral districts on the Pest side (e.g. 21th, 23th, 15th–17th districts) have much lower values. In addition, a core-periphery dichotomy is clearly observable inside the compact city. This pattern corresponds the socio-economic pattern of the city, but the location of creative clusters (along the line of Danube e.g. InfoPark, ELTE campus, Graphisoft Park) and numerous inner-city oriented cultural and art institutions (theatres, concert halls, museums and galleries etc.) also serve as magnet for smaller creative firms (Kovács, Z. *et al.* 2010).

Within the suburban zone we can also see marked geographical differences in the configuration of the creative economy which is clearly the outcome of suburbanization in the 1990s and early 2000s (Tímár, J. 2006). We find municipalities with the highest share of the creative economy in the north-western sector of the agglomeration (e.g. Budajenő 53.6%; Telki 52.1%; Pilisborosjenő 48.2%) where young professionals settled down in great number as part of the suburbanization process (Szirmai, V. *et al.* 2011; Schuchmann, J. 2012). The south-eastern sector of the agglomeration was less affected by urban sprawl and the invasion of intelligentsia. Consequently, the share of the creative economy is also significantly lower. According to our previous findings (Egedy, T. *et al.* 2008) new creative firms are created first of all where the founders and managers are living. Thus, the location of the place of residence is vital for the creative enterprises. Site selection by firms in the Budapest metropolitan region as a rule is strongly influenced by hard factors (e.g. price and infrastructure of office, traffic and public transport), while among

the soft factors calm and quiet environment was mentioned by the managers in the first place. As a consequence, in the process of accommodating new creative firms the agglomeration zone clearly appears as a winner of the economic transition.

We investigated the correlation between the changes in the number of creative employees and the total number of employees *(Figure 4)*, looking at whether an increase or decrease of the total number of employees automatically generates increase or decrease of the number of creative employees. This assumption can be obviously related to international experience on the role of diseconomies and centrality discussed in the theoretical part of the paper (see Lorenzen, M. and Andersen, K.V. 2009). Those cities at the tail end of the curve appear to have characteristic diseconomies, where the conditions are less favourable for the development of the local creative class. It is obviously recognizable in the lower ratio of creative workers compared to the share of total employment in these settlements (see position of red and blue bullets). At the other end of the scale, we find cities with flourishing local markets, growing number of employees and equally growing group of creative employees. However, it can also be seen on the graph that the shrinkage or growth of the creative labour shows greater volatility especially at the two ends of the scale.

In addition, we analysed the correlation between the socio-economic development of a city (data on the share of university graduates, the level of unemployment, population dynamics, industrial tax, entrepreneurial activities and diversity of the local economy were converted into one single index) and the performance of the creative economy. Our findings confirm that larger cities with more diversified (multi-layered) economic profile show higher presence of the creative class (marked with green). At the other end of the scale cities with a rather monofunctional single-layered local economy (marked with red) lack creative labour force, which highlights the exisiting spatial and functional divisions within the Hungarian urban network *(Figure 5)*.
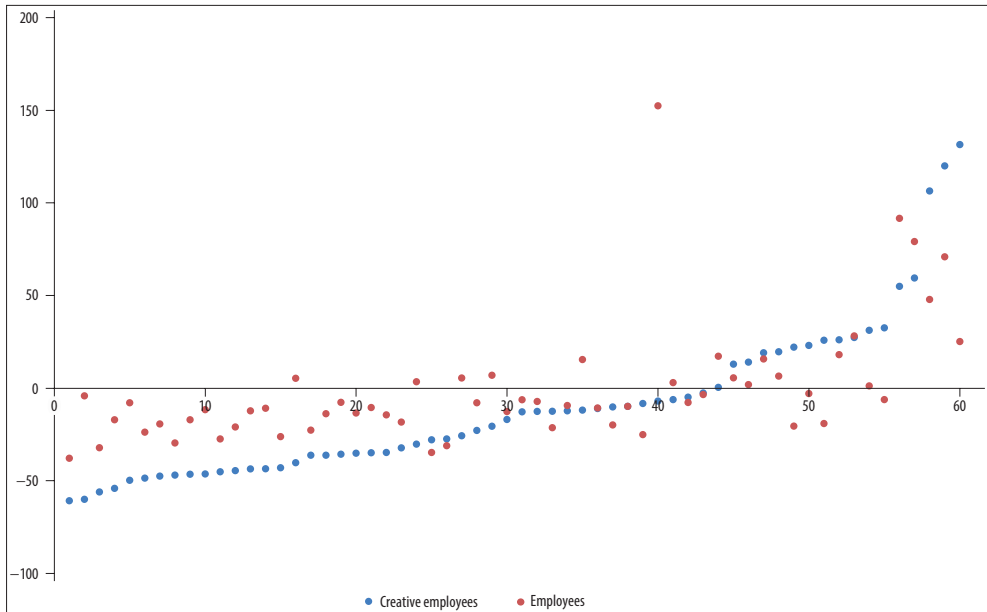
Fig. 4. Changes in the number of creative employees and total employment between 1999 and 2015 in the Hungarian cities above 20 thousand inhabitants (base year 1999; in %)
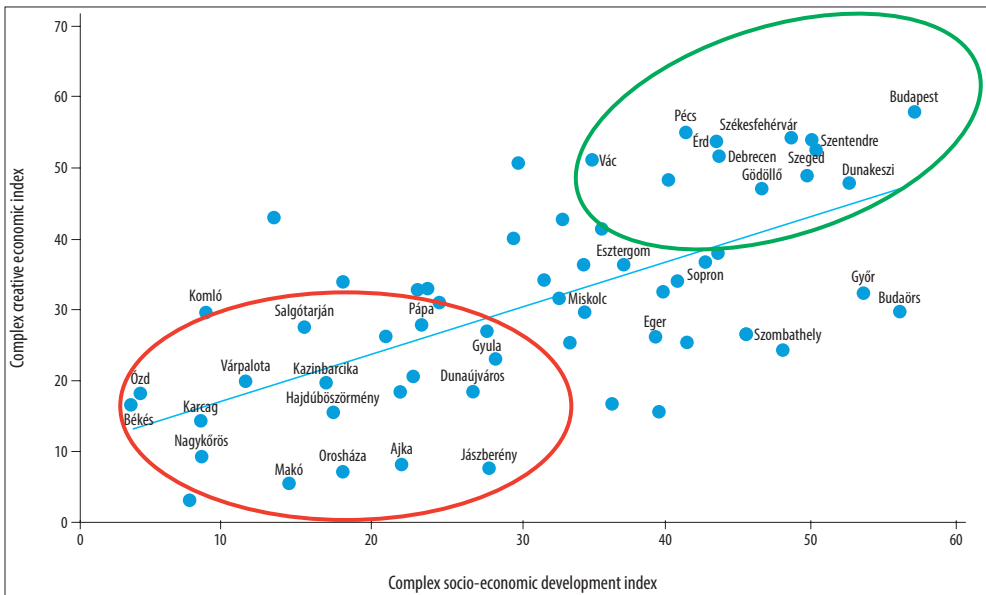

Fig. 5. Correlation between socio-economic profile and performance of creative economy in the Hungarian cities above 20 thousand inhabitants

Our results correspond to earlier domestic and international outcomes that historical pathway and city size play a decisive role in accommodating creative economy. In figure 4 Budapest is followed by two groups of cities: on the one hand, regional centres with strong traditions in higher education, R+D, and a lively cultural life (e.g. Pécs, Székesfehérvár, Debrecen, Szeged), and on the other hand, sub-centres in the agglomeration of Budapest (e.g. Szentendre, Vác, Érd and Dunakeszi) where the dynamism of the creative economy is very much related to the closeness of the metropolis. At the other end of the scale we find monofunctional industrial centres (e.g. Ajka, Ózd) and agrarian market towns on the plain in South-eastern Hungary (e.g. Makó, Karcag, Jászberény). These results confirm the findings of previous studies regarding the backwardness of market towns on the Great Hungarian Plain as far as the knowledge based economy is concerned (Nagy, E. and Nagy, G. 2010; Nagy, E. *et al*. 2017).

Conclusions

As the literature review at the beginning of this paper demonstrated researchers in East Central Europe rapidly joined the academic discourse on creative economy after the turn of the millennium. This was partly linked to the robust economic restructuring of these countries and the growing role of creative sectors, and partly the infiltration of EU policy measures and programmes. Results of international comparative research projects, as well statistical analyses focusing on the macroeconomic position and regional pattern of creative economy in various countries became widely published. This paper fits to the second group of studies, as we analyzed the changing geographical pattern of creative economy in Hungary, based on longitudinal statistical data.

The Hungarian economy has gone through rapid transformation and modernization since the political changes of 1989/90. One of the signs of successful economic restructuring and integration to the world economy was the growing role of the creative economy. However, the growth within the creative economy was rather uneven, the knowledge intensive sectors have shown especially high dynamism. Consequently, the share of creative industries decreased within the creative economy. Even though the world financial crisis of 2008 hit hard the creative economy, and the number of firms and employees have slightly decreased, nevertheless, data reflect clearly a knowledge-based shift in the Hungarian economy.

According to our findings there is a clear correlation between the growth of creative economy and urban hierarchy. The creative economy increasingly concentrates to higher levels of the urban hierarchy, to Budapest and other regional centres (university towns). The reasons behind are partly economic (agglomeration effects, clustering etc.) and partly socio-economic (cultural diversity, social networks, etc.), but historical traditions and the quality of the built environment, as well as the diversity of neighbourhoods play a role here. Thus, our findings largely confirm the results of Carlino, G.A. and Saiz, A. (2008) on the importance of attractiviness of cities for highly-educated individuals.

Core-periphery relations in the spatial pattern of creative economy has increased. As data indicated the relative weight of Budapest and its urban region has been continuously growing and even major regional centres (e.g. Debrecen, Szeged, Pécs) with strong educational and cultural traditions have been unable to keep pace with the Hungarian capital. This makes the territorial configuration of the creative economy very unbalanced, and the economy of the country very fragile. The previously so dominant east-west dichotomy within the country has been replaced by the closeness to Budapest factor in the locational decisions of creative firms. New start-ups in creative economy also increasingly concentrate to Budapest.

The growing geographical concentration of the creative economy (especially the knowledge intensive industries) is partly the result

of previous neoliberal regional and urban policies (e.g. the programme of 'pole-cities', establishment of technological parks, R&D investments, development of universities etc.) putting competitiveness in the focus.

Our findings also suggest that cities in the Hungarian urban system became highly differentiated according to their attractiveness for creative firms and creative labour after the global financial crisis, and there is a growing competition among secondary cities for knowledge intensive and creative activities. Regional centres and county seats with strong cultural traditions and a solid base of higher education are clearly more favoured by creative firms and labour than monofunctional (agrarian or industrial) cities or other peripheral locations. All these shed light on the one hand, the path dependent nature of creative economic activities, and on the other hand, the difficulties of peripheral (mostly monofunctional) towns to find their ways to the 'creative age'.

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BOOK REVIEW SECTION

Popov, V. and Dutkiewicz, P. (eds.): Mapping a New World Order: The Rest Beyond the West. Cheltenham–Northampton, Edward Elgar, 2017. 218 p.

Since the late 1940s, when development economics as an academic field was in its infancy, there has been an abundance of action plans, road maps and aid initiatives aimed at achieving development in a given country or region. From the Marshall Plan to the Washington Consensus, the West has proposed no end of remedies for underdeveloped countries and regions.

However, only a few countries have actually succeeded in converging over the past 60 years. Moreover, there has been criticism of the West's involvement, much of it drawing attention to the inefficiency of wealthy nations at helping to build the Rest's growth, and decrying them as being a major part of the reason why the Global South continues to struggle to improve its wellbeing. Some have gone so far as to declare that catch-up development is a 'myth' that is anti-democratic in nature (Lummis, D.C. 1991, 2000), and to claim that the West's development assistance (estimated to be a staggering

USD 2+ trillion) has "failed to deliver the promise of sustainable economic growth and poverty reduction" (Moyo, D. 2009, p. 28).

It seems that with "Mapping a New World Order: The Rest Beyond the West", the new book published by Edward Elgar and edited by Vladimir Popov and Piotr Dutkiewicz, we are taking a step forward from merely trying to understand why the Rest has not caught-up with the West (Garbicz, M. 2012) to looking more into the existing growth in certain developing countries and predicting its future global consequences.

The objective of the present volume is to take stock of the world's current economic trends at a very significant moment in the history of its economic development, i.e. when global economic dominance is shifting from North America to Asia, and to set out possible scenarios for the future role of the Rest. This demanding task has been attempted by no fewer than 14 contributors, comprising eight economists, four sociologists, and two political scientists. The authors draw on their detailed understanding of what can be learned from previous development approaches and policies, with examples taken from all over the world. In doing so, they cover a vast range of perspectives. On the one hand, the reader is presented with more general chapters containing historical analyses of growth trends in the Global South, along with presentations of the patterns of globally distributing wealth and power found throughout history (Chapters 1 and 2). On the other hand, there is no shortage of analyses, focusing on specific regions (Chapters 4 and 7), that attempt to answer the central question of how to achieve an economic miracle in a developing country (based on the East Asian success stories) and offer a deeper understanding as to why economic growth cannot be deemed successful when accompanied by economic inequality that threatens social stability (e.g. in India).

The book focuses on three main aspects. The first is convergence, i.e. the idea that developing economies can catch-up with more developed ones in terms of per capita GDP. The countries that make up the Rest are striving to close the per capita income gap with the West, and for the first time in the history of development economics, they are doing so successfully on average, although admittedly not all at the same (satisfactory) rate. The second is internal policies regulating the market. As is widely known, there is no magical 'one size fits all' formula for growth. Similarly, solely relying on a neoliberal approach (with free market playing the key role) or drawing on structuralist theory (with a strong
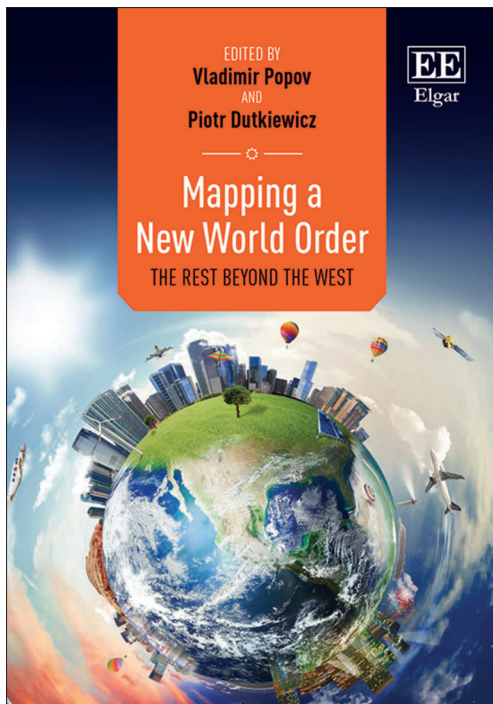
state) have proven to be dead-end solutions. Hence the 'dual track reform approach', which combines the two, is advised. This approach that "calls for maintaining stability during the transition and stimulating dynamic and sustainable economic growth by continuing transitory protection of the nonviable firms in the old priority sectors while removing restrictions to entry and facilitating the development of previously repressed industries that are consistent with the country's comparative advantages" (p. 63) has proven to be effective in the few stable transitions that have taken place recently. Moreover, in Chapter 5 it is argued that foreign finance has not been helpful to developmental success, and that none of the few countries that have managed to make the transition from developing to developed status since the mid-twentieth century were running current account deficits that would have had to be financed by loans, foreign direct investments, or multinational corporations. This is an important argument in the ongoing debate on development in those economies trapped in a low-income equilibrium. One side of the discussion, with "The End of Poverty: Economic Possibilities for Our Time" (Sachs, J.D. 2005) and one of the founding fathers of both Millennium Development Goals and Sustainable Development Goals, Jeffrey Sachs, argues that this can be achieved through the 'big push' model, where various forms of foreign finance (FDI, development aid, etc.) play the key role in bringing in the necessary capital, which then becomes a catalyst for growth. The other side, presented, inter alia, by the author of "Dead Aid", Dambisa Moyo, rejects this model and advocates a more nationalistic approach where direct foreign investment should only be allowed in order to benefit new technology or to gain access to new markets and not for the purpose of bringing in capital (see Chapters 5 and 6). "The Rest Beyond the West" sides with the latter view. The economic views presented tend to come from the left end of the spectrum, e.g. famous experts such as the late Samir Amin (who passed away in August 2018), but even the skeptics have to take into account the compelling evidence they bring to bear in support of their views (this is especially the case for the specific region presented by each author).

The third aspect widely discussed in the book are strategies to improve living standards in the developing world. And it is precisely here where the reader might feel that what the book lacks are examples and analyses from Sub-Saharan Africa. There are many excellent references to Asian (notably China and the Asian Tigers), and some to South American, experiences, but Africa is altogether visibly under-represented. This is a curious omission, as this macro-region has arguably been grappling with the greatest developmental challenges on the planet, and the need to improve wellbeing there is dire. Failing to bring its specificity to the picture may well be a major flaw in the book's attempt to present the 'new global order'. Clearly, the Sub-Saharan African countries are struggling to converge (Djenass, M. and Ferouani,

B. 2014; Sy, A. 2014) and their global economic impact is less significant than that of other macro-regions. Despite that, the catch-up effect is in evidence there, even if it is occurring at a much slower pace than elsewhere (Cuñado, J. and Pérez de Gracia, F. 2006).

Nor is there a single chapter on development from an ecological perspective, e.g. analysing the trade-offs between environmental protection and economic growth (Bina, O. 2013) or on the question of gradual convergence and planetary boundaries: "If incomes in middle- and low-income countries were to catch up with incomes in high-income countries (roughly USD 41,000 per capita), there would be a roughly 3.4-fold increase in global income from USD 87 trillion to USD 290 trillion, which would increase even further if high-income countries grow further and as the world population grows. And therein lies the problem." (Rockström, J. *et al.* 2013, p. 2). If the authors' prognosis that the average per capita GDP gap will continue to close is correct, then environmental concerns are bound to become the global community's primary concern, whichever individual country takes the lead and wherever the headquarters of the main international institutional actors are located.

The book takes a global view of the issues discussed, while using local examples to illustrate broader trends. One chapter focuses on the relationship between the EU and Russia. It advocates "thinking about new forms of spatiality" and puts forward the idea of an "international regime", i.e. "institutionalized patterns of co-operation" (p. 177), as a solution to the recent impasse in Russo-EU relations. Otherwise, its relevance to the Central and Eastern European experience lies in its indicating directions towards building truly win-win relationships between countries belonging to the West and the representatives of the Rest (where it seems that the CEE countries that are part of the EU are considered by the authors part of the West, and the EU non-members – part of the Rest), either through bi- or multilateral agreements or development assistance priorities.

Despite the book's several chapters being written by different authors with many and varied views and perspectives, it is coherent and fascinating to read. Development issues, by their very nature, require an interdisciplinary approach, and a 'mapping' that manages to present the big picture of the main point at issue, viz. what the world order is about to morph into.

The intended readers are graduate and PhD students, as well as professionals in development studies and related fields, who should find this book a compelling proposition that answers many questions but raises even more.

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Solarz, M.W. (ed.): New Geographies of the Globalized World. Abingdon–New York, Routledge, 2018. 216 p.

As a consequence of globalisation, the shrinking world, time-space convergence, distantiation and compression cause the concept of space (which is 'collapsing') to become more and more relativised, multifaceted and therefore less important, while territorial thinking and the role of place from the perspective of globalisation are being reinterpreted and more becoming the focus of interest in geography. Along with this change the role of scale is also going through a process of re-conceptualisation in human geography (Elden, S. 2005; Murray, W.E. and Overton, J. 2015). Several authors criticise that the scale of the nation-state is prioritised since many of the various districts, regions and zones extend across national boundaries and transnational networks cannot be described at the level of nation states, either. Furthermore, local entities and communities are revalued by attaching more importance to them since these could be affected by globalisation in completely different ways. Moreover, the global impact of a micro region may be substantial as well. New viewpoints, observations and

metaphors are being used for describing the process of globalisation, e.g. global networks, global flows or glocalisation (Sheppard, E. 2002).

The essays in the volume "New Geographies of the Globalized World" analyse the phenomenon of globalisation through various topics of geography. The concrete examples are of different scale and provide tangible and apprehensible clues for interpreting global networks and flows.

The volume does not question the existence of the process of globalisation, it rather perceives it as a victorious revolution, which should be thoroughly investigated. It disputes those viewpoints that do not see globalisation as a new era in human history and think that the hype around it is largely exaggerated. It implicitly adapts the transformationalist approach to globalisation, so it argues that due to the time-space compression interactions are rescaled and because of the existence of new networks processes become more complex than old patterns (Murray, W.E. and Overton, J. 2015). The authors are not concerned with defining globalisation, so the volume does not deal with competing discourses and the history of globalisation. Instead, it focuses on specific themes and areas, present in geographic space, which often can easily be depicted on maps as well. Through these examples the new networks and currents that have emerged as a result of global changes become apparent. The book aims to reveal and present the various relationships between people and the world that are profoundly restructured in this new global era.

The volume was published by Routledge in February 2018 as part of the Routledge Studies in Human Geography series. Its editor is Marcin Wojciech Solarz, associate professor of the University of Warsaw, Faculty of Geography and Regional Studies. Solarz's major research topics are in connection with political and development geography. His latest book related to this volume was "The Language of Global Development: A Misleading Geography" (Solarz, M.W. 2014). The chapters of the book are organised around topics of demography, development geography, urban geography, transportation, environmental issues, world conflicts and twenty-first-century diseases. The mostly Polish, Romanian and Hungarian co-authors discuss the above mentioned topics in nine chapters, where the topic of development is of special emphasis, since two chapters are devoted to it.

The first chapter by Barbara Jaczewska, Tomasz Wites, Marcin Wojciech Solarz, Maciej Jędrusik and Małgorzata Wojtaszczyk deals with contemporary demographic trends in the world. Before discussing current tendencies, it outlines previous milestones in
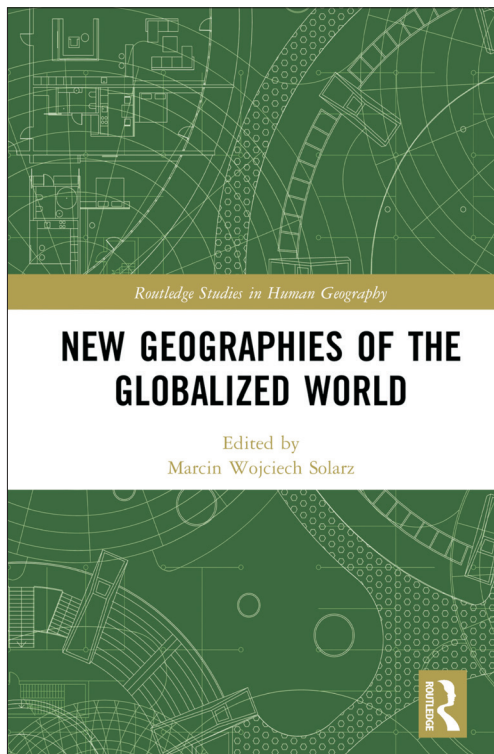
the demographic development of the world's population. Some surprising data make the reader further reflect upon certain facts, for example that the majority of those who were born when only 2 billion people lived on Earth are still alive today. The growth of *oecumene* (inhabited territories) and *suboecumenes* (transitional zones) at the expense of *anoecumene* points to the geographical dimensions of uninhabited and inhabited areas and the migration of boundaries between them. After presenting the changing population of the various continents and countries, the authors undertake a critical analysis of Malthus, Dennis and Donella Meadows and other demographic forecasts. The chapter also provides a number of examples for phases of the demographic transition model, complemented by Ethiopian and Russian case studies.

The next part of the chapter analyses migration as one of the main contemporary challenges in Europe and the world. Since contemporary migration is characterised by enormous diversity, a detailed explanation would go beyond the scope of this chapter, but the following five important tendencies are highlighted for the most significant changes: 1. extensive spread; 2. mass scale; 3. differentiation of migration; 4. shift in migration destination; and 5. the politicisation of migration, which is strongly felt in Europe. The authors specify the characteristics of modern migratory phenomena and strategies by Zygmunt Bauman's 'liquid modernity' theory, which in his opinion better describes the condition of constant mobility and change of the postmodern contemporary society. Bauman writes of a transition from solid modernity to a more liquid form of social life (Bauman, Z. 2000). Similarly, in the case of 'liquid migration strategies' migration destinations are rapidly changing, "and active choices are made to move to where opportunities are available at a given moment" (p. 16). Case studies (on tourism and on the European migration crisis) and maps further help to deepen one's knowledge on the issue and draw the attention to the various types of migration.

Most global events and phenomena are closely related to development. Although before the World War II the term 'development' was not in general use, the pursuit of progress, development or a higher 'level of civilisation' was among the goals to be achieved, so much so that societies considered to be more developed wanted to shape the so called underdeveloped, 'barbarian' groups of people in their own image. Ferenc Gyuris starts Chapter 2 with the introduction of the various concepts of development, analysing in more detail the changing viewpoints after World War II. The starting point for these concepts was the economy centred Trumanian thought, which considered economic development a prerequisite for creating peace, freedom and prosperity. That is why, in order to promote economic development, a lot of organisations were established both in the Eastern

and the Western bloc, and the chapter provides us also with an insight into the differences between them. The new macro-regions of the world were also outlined on the basis of a new economy-centred approach (First, Second, Third World, regional economic integrations), and the measurement of development was determined by economic producion (GDP). Gyuris points out that after the political changes in 1968 and the subsequent oil crises, the exclusivity of massively technology- and economy-oriented interpretations of development faded and led to new approaches towards development policies. New measurement methods were developed, such as the Human Development Index (HDI).

One of the indicators of development may be the degree of social inequalities, and since they are often connected to different geographical locations, spatial disparity has become the focus of observations. The remaining and newly discovered micro- and macroscale forms of disparities and spatial injustice require new ways of (critical) seeing.

With the help of statistical data and graphs Gyuris illustrates the challenges of measuring global differences and interpreting the results. Data on inter-country inequality in GDP (Weighted Standard Deviation) and on concentration of the GDP and population (Hoover Concentration Index) show a significant decrease in differences between nations from 1992 to 2015, and similarly positive results are obtained if life expectancy or infant death indexes are taken into account. However, if we do the comparison with GDP based indicators excluding China, we see that declining global inequalities are mainly due to the rapid economic growth of China. Other global data, which also suggest positive trends, disguise intra-national disparities as well, and comparisons based on an "exclusive focus on the national scale" (p. 42) may lead to 'methodological nationalism' (Wimmer, A. and Glick Schiller, N. 2002). At the end of the chapter the reader can become familiar with the arguments of post-developmentalist and anti-developmentalist thinkers, who belong to the various critical approaches towards the highly contested concept of development.

Critical approach to spatial development continues in Chapter 3. Marcin Wojciech Solarz looks into the spatial language of global development. In his opinion, after the 1940s we can observe a terminological 'Big Bang' (p. 54), where the classification, categorisation and labelling of countries have become widespread. The most long-lasting classifications prove to be the division of the three worlds (First, Second and Third World) and the North-South dichotomy, despite the fact that these concepts are more than 50 years old and both international relations and the structure of the international community today are fundamentally different. According to Solarz, it is possible to outline a hypothetical evolutionary cycle for the spatial language of global development, which consists of four

phases, preceded by an initial phase that the author is calling "drive to revolution" (p. 60). This period is characterised by expressions referring to human development such as the Agricultural Revolution (12,000 BC) or the Age of Discovery (15th century). This long phase ended with the Industrial Revolution, which already belongs to the author's first phase ("pre-take-off", p. 60), and the time when the Europeanisation of the world began, and this Europe-centred approach was also reflected in expressions used to describe development. In the second phase, i.e. after the World Wars, we can witness the Big Bang of spatial development terminology. In the third phase from around 1980 the diversity of denominations did not decline, but they have lost their spectacular character. We are currently in this phase, so the fourth, latest phase is more hypothetical than the whole theory itself. This evolutionary theory divided into phases draws attention to the interlinkages between social environment, increasingly recognised spatial disparities and their assigned denominations. Solarz also outlines the scale of specific development terms (distinguishing between large, medium and small terms) and then embarks on an interesting intellectual adventure. He analyses the relationship of the North-South divide and the definition of prosperity from a philosophical perspective. He illustrates on maps how the world would look like in contrast to the current North-South dichotomy based on Hobbes's, Locke's and Rousseau's social contract theory. In each case, two criteria from the philosophical approach (e.g. security felt and proportion of homicides) are investigated on basis of current data. Thus can become Niger a 'northern' country next to Norway, and France a 'southern' country along with the USA. Solarz points out that the notions of the 'rich North' and 'poor South' are more than oversimplified. Therefore, he presents newly defined boundaries and draws attention to the importance of the Human Development Report and well-being indicators.

In the first part of Chapter 4, the authors Voicu Bodocan, József Benedek and Raulariu Rusu analyse the globalised urban space and world city formations from national and world economy perspectives. They emphasise the crucial role of international flows (mainly transport) in the formation of world cities as well as the importance of locational attributes. In addition to being part of commercial processes these cities can be viewed as part of diplomatic networks as well, since most of the world cities are capital cities. After suburbanisation, urban sprawl, re-urbanisation and gentrification the authors introduce recent trends emerging in urban policy and urbanisation. Capital and world cities in post-socialist Central and Eastern Europe (CEE) had to pass through rapid transition after 1990. Competition for investment has resulted in territorial inequalities and has magnified existing disparities. At the end of the chapter the characteristics of real estate development and suburbanisation are presented through specific examples from CEE countries and cities. The authors also highlight potential tensions between the inner city and outer suburbs, and the role of local governments and public bodies in urban management. The Romanian and Hungarian case studies provide ample insight into the deeper layers of urbanisation and urban policies.

Chapter 5 deals with the flow of goods, commodities and people within the topic of global transport. The authors (Attila Jancsovics, Imre Bitter, Cathy Macharis, Balázs Németh, Vilmos Oszter and Gábor Szalkai) after reviewing global maritime, rail, road and air transport, analyse the current trends of urban mobility. Thereafter they focus on the territorial rearrangement of trade routes (e.g. because of the rise of Asia or new maritime, land and air routes etc.) and the characteristics of global flows of various types of products (e.g. liquid and bulk products) and people (e.g. tourism). In addition to examining the increasing environmental burden of transport, the global expansion of new solutions is also discussed, like the emergence of electric vehicles. Current trends show a steep rise in air traffic and the emergence of new global hubs, which is illustrated in the chapter by a case study on Dubai, demonstrating the increasing global role of the central city of the United Arab Emirates. The last section of the chapter focuses on dominant trends, current challenges and emerging solutions in urban mobility.

In Chapter 6 Anna M. Solarz analyses the global role, distribution, emergence and future trends of religions. The role of religions in international relations is often overlooked, though it is an important component of soft power in world politics. Due to the unscientific character of religions and the deeply rooted paradigm of secularisation, social sciences and human geography have paid less attention to this subject, although Peter Berger examining desecularisation processes refuted general anticipations asserting that the world is increasingly turning away from religions (Berger, P.L. 1999). Therefore, Solarz promotes new research perspectives in examining the interconnections between religion and international relations. A major part of the chapter is dedicated to introducing the most important religions by numbers, so we get a general overview about the distribution of religions in the world based on data from the World Religion Database and the Pew Research Center. While analysing the figures, it becomes obvious that there are several possibilities for categorising religions. Contemporary data can prefigure trends in the future, especially if one considers the age distribution of religious followers and that the role and weight of religions and continents will surely change in time. In the final part of the chapter, the focus is again international relations and the way the perceived negative and positive aspects of religions effect on them. Negative connotations are based on a long tradition,

an approach that sees religions as sources of conflicts. The actions of the Islamic State and Islamic terrorism seem to support this interpretation, but Solarz points out that religions are not to be observed through this prism. Among the positive influences of religions, she mentions religiously motivated individual attempts (e.g. of Mahatma Gandhi, the Dalai Lama and Desmond Tutu) and religious international organisations involved in international development and humanitarian assistance. The effects of various religions differ from region to region, because the role they play in distinct societies differ as well. Therefore, it is not possible to formulate general statements about religions expected to be true everywhere in the world.

Evidence of the environmental damage caused by humankind is backed up by ever more shocking data, which Anna Dudek, Jerzy Makowski and Joanna Miętkiewska-Brynda are providing in Chapter 7, reporting on, inter alia, the startling growth rate of deforestation and rhino horn smuggling. The authors unconventionally analyse environmental problems, like the effects of invasive alien species and the fragmentation and isolation of the various habitats of biotic communities. Although transboundary movements of hazardous waste are attempted to be controlled by international treaties, the city of Guiyu in China has become the world's largest electronic waste storage 'facility' since the mid-1990s. The chapter deals with the problems of marine pollution and exploitation as well. Environmental threats of the mining of submarine mineral resources are enumerated in detail, illustrating that it is not so easy to find solutions for such problems. After exploring the links between deforestation and popular products (e.g. palm oil), threats to protected areas are also highlighted in detail in relation to trends of rhino and elephant poaching.

Marek Madej in Chapter 8 describes the twenty-first century processes of global conflicts, wars and terrorism, distinguishing state-based conflicts from non-state conflicts and incidents of one-sided violence. Since currently Africa has the most armed conflicts, the author describes the continent as the "heart of darkness". Europe and the Western hemisphere are characterised by him as "oases of calm" and Asia and the Middle East as "hot" regions (p. 172). He investigates in a separate case study how drug related crime in Mexico turns into armed conflict. The author also uses tropes while analysing international terrorism, e.g. "explosive Asia and Middle East", "African slippery slope", "not so-so-calm Europe and America" (p. 176). There is a lot of similarity between the geography of terrorism and the territorial distribution of armed conflicts, but Madej points to significant differences as well. The chapter is closed by the introduction of multinational armed interventions in the wider Middle East region. As a conclusion the author emphasises the importance of small-scale investigations since large scale analyses could easily overlook local 'oasis of peace'.

Which factors determine the state of human health? Izabella Łęcka analyses this complex and difficult question in the closing chapter. After a brief introduction of global (Planetary Health) and local scales, the author presents the different grouping options of diseases based on different aspects. Then she provides a detailed assessment of the epidemiological transition models. These, similarly to the population transition model, link birth and death rates and population growth to the state of public health and the spread of epidemics. The author links specific regions, countries and groups of countries to stages of the model from "pestilence and famine" (first stage) to "high quality of life with persistent inequalities" (last stage) (p. 191). However, the epidemiological transition theory cannot be universal because of the lack of reliable statistics and records on the cause of death, e.g. in Africa. In the rest of the chapter, each continent is analysed with special attention to certain countries or regions. Finally, the author describes the relationship between migration and disease and its geographical aspects.

In the introduction of the book, Marcin Wojciech Solarz characterises the pre-globalisation world as a set of macro- and micro-worlds coexisting under opaque glass domes. As he argues, the "Revolution of Globalization" shattered these opaque domes. One can also apply the metaphor to the book itself, which discusses crucial themes of human geography in the 21st century and makes them more clearly visible and intelligible by shattering the opaque glass domes above them. The Central European aspects of the book are also important, as most chapters cover this region as well. The place of the region in the division of the world, its development, its demographic status, its religions, its exposure to migration etc. are topics that may be of interest to not only researchers but the general public as well. The volume can very well be recommended to both students of social and natural sciences, as well as to researchers interested in the subject.

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Pieter Judson's history of the Habsburg Empire from the 18th century to the end of WWI offers a grand and potentially ground-breaking retelling of modern Central and East Central European history. Starting with the administrative and institutional 'experiments' of Maria Theresa and her sons Joseph II and Leopold II in the 1700s, the study concludes with a critical discussion of the legacy of Habsburg laws and imperial practices within the successor states created in 1919 and 1920. Along the way, Judson offers insightful and compelling reinterpretations of familiar periods and events like the Metternich era, the revolutions of 1848–1849, the dualist settlement of 1867, and the other so-called 'nationalist settlements' after 1900. Though clearly a work of history, Judson's study nevertheless has much to offer geographers, and in particular historical geographers whose research focuses not just on the geography of the region, but also on geographies of empire and the relationship between imperialism, identity formation, and knowledge production more generally.

Judson admits from the outset that the periodisation of his analysis is rather standard, and that the general outline of his narrative therefore follows a

familiar pattern. What is new and novel about his presentation, however, lies in his efforts to examine how the empire itself was built and sustained not just from the top down, but also from the bottom up. Focusing on the state-building initiatives of successive generations of Habsburg leaders, Judson shows that, far from being simply distant and sometimes despotic agents of imperial oppression, the royal architects of empire managed to engage their subjects in meaningful, productive, and even progressive ways. Moreover, by opening up the various social, political, economic, cultural, and intellectual spaces necessary for the building of a modern state, imperial visionaries and technocrats created mechanisms – at times unintentionally – that allowed the people to engage directly and also critically with the structures, narratives, and practices of empire.

The result of Judson's impressive scholarly undertaking is an original and provocative retelling of the history of the Habsburg Empire in Central and East Central Europe. Approaching the history of the Habsburg Empire "from the point of view of … shared institutions, practices, and cultures," Judson deliberately challenges "the nation-based narratives to which students of the Habsburg Empire are accustomed" (p. 4). By foregrounding what he identifies as "the common experiences of empire" (p. 14), he asks his readers to consider not only the centrality of imperial frames within the day-to-day workings of the Habsburg state and its constituent parts (both local and regional), but also empire itself as a key organising principle in the lives of its citizens. Though he does not deny that significant tensions existed within the empire, and that the state was willing to exercise its monopoly on violence and mobilise against its citizens on numerous occasions, Judson nevertheless concludes that 'empire' itself never fully suppressed the initiatives of its various peoples, but rather served as both the locus of and vehicle for the development of modern ideas, institutions, practices, and identities, even in the most reactionary times.

Though some readers (myself included) might at first glance recoil from a revisionist narrative like Judson's that appears, on the surface at least, to treat imperialism in an arguably 'positive' light, it is important to note that Judson is no apologist for empire, and is careful throughout the book to remind us that whatever progress was made under the guise of empire came at a cost. For example, reflecting on the bureaucratic and military 'force' that Emperor Francis Joseph I required in order to impose his otherwise "forward thinking program of economic, social, and cultural renewal" after 1849, Judson notes – quite
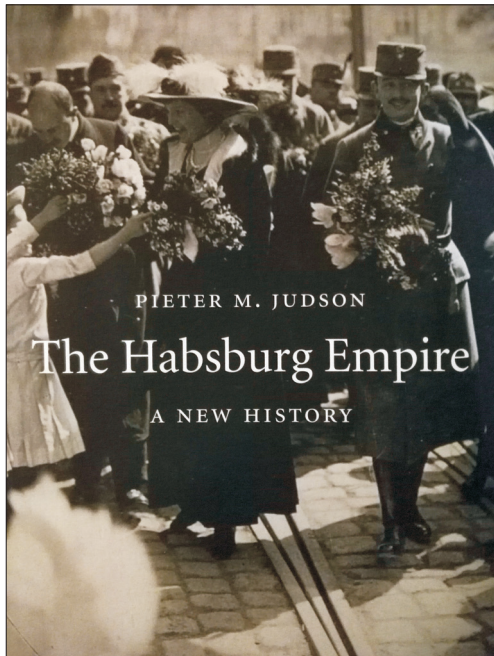
astutely – that "the price for this style of reform was the imposition of a police state" (pp. 218–219). Observations like this are prominent throughout the book, and are a constant reminder that the creators of the Habsburg Empire often found themselves having to balance "dynamic transformation" with "authoritarian control" (p. 219).

In stressing this trade-off between liberalism and authoritarianism within the Habsburg modernist-imperialist project, JUDSON argues that the Habsburg Empire was not a unique case, but rather behaved like other modern and modernising states in Europe. Despite unique developments and cultural features, the Habsburg state faced challenges similar to those of other European states, and found itself having to manage and sometimes respond forcefully to problems caused by the "increased social mobilization and increased social conflict" that came to define modernity and the modern era (p. 268). By drawing clear parallels with other state-building projects in Europe, JUDSON successfully challenges a set of stereotypes that have long persisted in studies on the Habsburg Empire and East Central Europe more generally, studies that all too often have taken claims about the region's purported difference, backwardness, and inherent despotism as a point of departure. Noting that these assumptions and associated narratives were solidified in the interwar period and further amplified during the Cold War (especially by scholars focused on the nationalist histories of the successor states), JUDSON advocates for a rethinking of the Habsburg case, one that is free of the distortions that have coloured so much of the scholarship to date.

From the point of view of geography, and especially historical geography, there is much to like in JUDSON's book. Though geography itself is not an explicit category of analysis that JUDSON employs, his study nevertheless covers some key themes and developments that would no doubt be familiar to historical geographers and students of geography more generally. For example, he does a particularly fine job throughout the text of describing the transformation of towns and urban landscapes since the 18th century, especially with the explosion of industrialisation and industrial centres in the wake of the Napoleonic Wars. He also charts the growth of transportation and communication networks that were developed by the imperial state during the 19th century, noting as he does so the specific ways in which these networks facilitated economic growth and connectivity throughout the empire, thus giving it a discernable and increasingly cohesive structure.

As JUDSON makes clear, the transformation of the Habsburg Empire's material base was part of a much broader modernist project that manifested in various ways throughout Europe, but which shared a common impulse to map the territorial expanse of the state and its various landscapes, to count

populations, to number houses and catalogue their inhabitants, to learn more about the people's living conditions, and to work to improve the lives of imperial subjects, if only to render them more useful to the state building projects that have characterised modern history since the Enlightenment. This impulse arguably reached a pinnacle in late-nineteenth and early-twentieth-century projects such as the *Kronprinzenwerk* (Crown Prince Project, officially titled *Die österreichisch-ungarische Monarchie in Wort und Bild*, or The Austro-Hungarian Monarchy in Words and Pictures). Initiated under the patronage of Crown Prince Rudolf, the *Kronprinzenwerk* mobilised over 432 experts who, between 1885 and 1907, produced essays for a twenty-four-volume encyclopedia "on the flora, fauna, geological character, and ethnography of each crownland" (p. 328). Drawing on Deborah COEN's work on the development of the sciences within the context of empire (COEN, D. 2010), JUDSON suggests that the collective project of scholars working in multiple scientific and geographic fields reflected "imperial ways of thinking about space, climate, and weather patterns" (p. 328).

The relationship between science, geography, and empire building became especially pronounced by the end of the 19th century, as the Austro-Hungarian Monarchy pursued its colonial goals more and more aggressively on its eastern and especially southern borders. As JUDSON argues, by the turn of the century, Austria-Hungary's 'liberal empire' came to embody a civilisational mission in the East and the South. Liberal empire builders, he claims, wrapped themselves "in the mantle of civilization," and in so doing created and reinforced a popular orientalist or quasi-orientalist trope that "nationalists, religious activists, elite liberals, and the dynasty could all claim as their own" (p. 327). Quoting an 1895 interview with Benjamin von Kállay, Austria-Hungary's minister of finance and administrator of Bosnia-Herzegovina, "Austria is a great Occidental Empire, charged with the mission of carrying civilization to Oriental peoples" (p. 329).

According to JUDSON, the concerted efforts of the Habsburg imperial state to connect and map its diverse territories and populations, and then to project these spatially-grounded notions of the civilised Habsburg state against the empire's eastern and southern 'other', brought Habsburg citizens into new relationships with each other, as well as with the always-modernising imperial state. JUDSON suggests that the different forms of knowledge and modern spaces created by empire builders opened up both actual and conceptual conduits of power that were by no means one-way streets. Though developed as instruments of modernisation and colonisation, the tools, spaces, and discursive regimes developed by the architects of empire provided very real opportunities for individuals and communities to enter into dialogue and negotiation with the state. In

advocating for themselves, and by utilising the tools (maps and census data, for example), institutional structures, and educational practices introduced by imperial bureaucrats, people not only came to 'know themselves' according to the terms and categories created and imposed by the state, but also began to imagine themselves as part of a community, or more accurately a network of communities, that at its highest level was synonymous with the empire itself.

Perhaps the true value of Judson's book, then, is that it reminds us that empire was not a distant backdrop against which nation-building geographers, cartographers, and scientists did their work, but rather was an important framework, not just practically and politically, but also conceptually, and even ideologically. Admittedly, geography, cartography, and related scientific disciplines are by no means the focus of his book. If anything, the impact of imperial structures on the development of science and geography within the Habsburg Empire is mentioned only briefly, or merely hinted at throughout his study. However, as he makes clear in the introduction, scholars would do well to consider his arguments when looking at the development and practices of numerous fields, "from meteorology to seismology to anthropology" (p. 8), not to mention scholarly disciplines which focused on the empire's diverse geology and landscapes, as well as its flora and fauna, and human populations. As he notes, "the fundamental idea of a regularized and integrated imperial space shaped research questions and methodological approaches," especially during the 19th century, when a wide range of disciplines and specialisations emerged to deal with the practical and conceptual problems of modern state building (p. 8). The scientific labour of a vast cadre of bureaucrats, scholars, and civic-minded bourgeois professionals did not merely come to "reflect" the empire as it expanded and was consolidated since the eighteenth century, but also "actively forged an explicit vision of a particularly Habsburg Empire, one that united different cultures as it promoted [both directly and indirectly] their autonomous development" (p. 8).

Despite the obvious achievements of Judson's ambitious study, there is undoubtedly not enough attention paid either to geography or to Hungary itself to satisfy Hungarian geographers and historians, though in all fairness the same could be said of the rest of the former Empire's constituent parts, including the regions that make up modern day Austria. However, as important as it is to an understanding of modern Central and East Central Europe, to complain of a lack of focus on national and even regional history and geography would be to miss the broader point of his work, namely the empire itself as a lens of analysis and understanding.

Ultimately, Judson's book does not dismiss the importance of nationalism and nation-building as central categories of understanding and inquiry in Central and East Central European history. What he opens up, therefore, is the possibility for more complicated approaches to, and nuanced questions about, this region's road to modernity. As he convincingly argues, by the beginning of the 20th century, for a wide array of reasons, "many ideologists of empire harboured nationalist beliefs, and nationalists regularly sought political solutions within the legal framework of empire" (p. 10). Historical geographers who have looked seriously at the careers and worldviews of key nationalist geographers trained in the Habsburg Empire at the end of the nineteenth century would likely agree with Judson's claim. As he stresses and attempts to illustrate throughout the book, "concepts of nationhood and ideas of empire depended on each other for their coherence. As intimately intertwined subjects, they developed in dialogue with each other, rather than as binary opposites" (pp. 9–10).

In the end, Judson's compelling study reminds researchers to think outside of the nationalist 'boxes' that we all too often work in. To move forward as historical geographers of Central and East Central Europe, and as historians of the geography of this region, we would do well to follow his lead, and to continue to press for new critical approaches that will help us see 'outside' the narrow and often parochial parameters of the nation. Judson's suggested frame may not be palatable to every researcher, and there is certainly much to be debated with regards to his approach and conclusions, but a work like this deserves careful consideration, and in my mind is certainly a step in the right direction. I have no doubt that Judson's book will prove to be an important work that scholars in many fields will consult and discuss for years to come.

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