## Emerging creative cities: mapping regional capitals in the Czech Republic and Slovakia

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*Abstract:* - Mapping the creative industries is a crucial basis for assessing the creative economy in the regions, particularly to develop creative clusters and the subsequent identification of stakeholders and networks. The article provides topic to discuss methods of secondary data quantitative analysis of the commercial creative industries from publicly available sources and reveals shortcomings in databases in the Czech Republic and Slovakia. The performed mapping takes into account a contribution of the time factor, where reveals the significant differences between enterprises in Czech and Slovak regional capitals. The article posts a foundation for facilitation of creative clusters and creative industries development strategies as instruments to support competitiveness at the city level.

Key-Words: - Czech Republic, creative industries, creative city, global city, global competiveness, Slovakia

### **1** Introduction

There have not yet been taken too many steps towards the analysis of creative industries at the city level in the Czech Republic and Slovakia. Among the key contributions, we considered [21] dealing with the spatial perspective of creative industries in the Moravian-Silesian Region with a special part focusing on the regional capital – the city of Ostrava. The remaining authors [6, 14, 16, 19] focus on the introduction to creative industries in the Czech Republic and Slovakia respectively where the main aims are the definition of creative industries, creative class, creative index, management issues and an evaluation of creative economy's impact.

Following the previous studies and in order to further research the creative industries in the Czech Republic and Slovakia, the question of methodical unification of mapping the creative industries arises to ensure the provision of a robust process. In terms of national conditions, however, this is hindered by a weak data base limiting research exclusively to a sector approach, i.e., mapping the creative industries firms rather than creative occupations. In addition to this level, there have occurred some fundamental differences in relation to available data sources in terms of distinctions of the creative industries to private, public and informal sector [22, Wiesand and Söndermann as cited in 14, 15]. The creative industries within the private sector are in a completely opposite situation to public one. There is neither a specialized database publicly available nor a methodology covering the private sector. Creative cities

Thus the aim of the paper is to improve the discussion on methodology for data collecting and analysis within the creative industries mapping at the regional level using secondary dataset. Nevertheless, the major objective is to map the creative industries at the city level comparison global cities and second cities, here defined as regional capitals, in terms of debate on the competitiveness of cities or urban regions [2].

### 2 Creative industries mapping

Mapping the creative industries plays a key role in assessing the position of creative industries in the economy [10, 11, 12] at any spatial level and particularly during facilitation of creative clusters [17]. Furthermore, the mapping of creative industries faces many difficulties in terms of their definition, methods of collecting information, availability of secondary databases, and the way of interpreting the results of the data processing. The mapping of creative industries is conducted at different spatial levels – global, national, and regional and, last but not least, city or local levels, respectively.

The following methods belong among quantitative methods of mapping creative industries

revealing their structure and spatial distribution [11, 12]:

- mapping the creative industries by the industry activity-based on sector definitions,
- mapping creative industries by occupations.

In the first case, according to [11, p. 8] the research focuses on:

- firm activity primarily the number of firms, the full time employees, sometimes banded according to their turnover and occasionally the degree of concentration of the industry,
- gross value add to the economy determined by national input/output tables or specialist surveys,
- exports the value of exports from the industry usually determined by both survey and extrapolation or from official product and service export statistics.

The industry sector of activity-based definitions, however, does not respect the relationship to the value chain within the creative industries [11]. The second case involves the mapping using the Creative Trident method. 'The model brings together those working in the creative industries and working in specialist creative jobs in other firms and organisations' [12, p. 3].

#### 2.1 Mapping methodology

Since the aim of the paper is a case study on differentiation and spatial distribution of creative industries firms in the regional capitals, the mapping was done at the city level as it had been presented for example in [7, 8, 20]. The European Cluster Observatory database [5] could not be used since the data is only available at NUTS 2 level. Thus, the creative industries commercial firms mapping was based on [Wiesand and Söndermann as cited in 14, 15] using a secondary database of Albertina 2011, summarizing data from all publicly available registers as data sources, including registers of tax authorities and other commercial databases. This database provides an advantage of the definition of the item of 'Predominant NACE' enabling to avoid the double-counting of firms within the creative industries. Thus every company is unambiguously assigned to a particular sector of the creative industries. As a result, the following variables from the database of Albertina 2011 were selected:

- firm name,
- type of ownership,

- firm size by number of employees broken down in categories by number of employees,
- registered office showing the regional capital
- date of firm registration, enabling to derive the length of trading

Further items were not selected for the following reasons:

- turnover incomplete data with nonemploying enterprises; various time periods of data sources
- export incomplete data with nonemploying enterprises; various time periods of data sources; export destination not spatially differentiated.

The companies which had been declared insolvent were removed from the collected database not being involved in any corresponding activities in relation to the creative economy. Predominant NACE sectors of creative industries firms were clustered with respect to [Wiesand and Söndermann as cited in 14, 15]. This resulted in the determination of the 'Derived predominant CZ NACE' variable containing twelve creative industries sector see Table 1.

Creative circle	Creative sector
Core arts fields	creative, arts and
	entertainment
	Photography
Cultural industries	broadcasting and news
	agencies
	motion picture and video
	Printing
	Publishing
	sound recording and music
	publishing
Creative industries activities	advertising and marketing
	Architecture
	Software
	specialised design

Tab. 1 Creative sectors by creative circles

Source: Authors' elaboration based on [18]

Number of employees in enterprises was set by calculating the mid-range of the corresponding categories number of employees. An imputation of series averages was used to perform number of employees in enterprises in the case of enterprises with no employees. Thus, the total number of employees was reached as sum of the results performed via abovementioned methods.

To improve the discussion on methodology for analysis within the creative industries mapping at the regional level a correspondence analysis was applied instead of location quotients, which are used

for delimiting industrial clusters and data are based on employment [23]. The correspondence analysis was selected both due to lack of original data on employment in micro creative industries firms and for revealing specialization of the regional capitals within creative industries sectors. The correspondence analysis is а method of factoring categorical variables and displaying them in a property space which maps their association in two or more dimensions [13]. Symmetrical normalization in the correspondence analysis was performed for comparing two variables - the derived predominant CZ NACE and the regional capitals due to standardizing on both row and column profiles in cross tabulation. Outlier points were treated as supplementary category. The supplementary elements do not contribute to the orientation of the factorial axis, but their relative contributions to the factorial axes and their coordinates are computed by the correspondence analysis.

A logistic regression was conducted to proof the assumption that type of ownership (private inland and foreign) are related to enterprises by size class (in accordance to the European Commission Recommendation 2003/361 regarding the small and medium-sized enterprises definition) and the regional's capitals typology separately delimited in the Czech Republic (Northeast regional capitals, Southwest regional capitals and Prague) and Slovakia (Bratislava, Regional capitals with presence of a technical university and new plants realized under direct FDI or machinery trade fairs and "Vice versa" regional capitals).

### 3 Creative industries in the Czech and Slovak regional capitals

The total of 64.249 companies was revealed as the result of creative industries mapping procedure in the Czech and Slovak regional capitals. Table 1 shows the detailed view on creative industries. The proportion of non-employing enterprises reached 74,1%. The creative enterprises with employees (16.650) consist exclusively of micro (14.680; 88.2%) and small enterprises (1.601; 9.6%) and medium-sized enterprises (310, 1.9%). Using  $\chi 2$  (p < 0.05) were not confirmed differences between the structure size of creative industries enterprises in the Czech and Slovak regional capitals.

Table 2 depicts an overview of creative industries enterprises and number of employees in creative in each city. The number of companies and

number of employees reflected the population The Czech Republic showed more than double of the creative industries enterprises compared Slovakia, which is due not only doubled population size but also economic, cultural and social significance of Prague from the perspective of global cities.

Tab. 2 Creative industries enterprises in the Czech and Slovak regional capitals

	Czech Republic		Slovakia	
Regional	No. of	No. of	No. of	No. of
capital	enterprises	employees	enterprises	employees
Praha	29353	89717		
Brno	5208	16795		
Ostrava	2238	5908		
Plzeň	1477	4215		
České Budějovice	1052	3985		
Liberec	1041	1963		
Hradec Králové	1002	2229		
Olomouc	938	2510		
Zlín	881	2643		
Pardubice	770	2246		
Ústí nad	721	1057		
Labem	/31	1957		
Karlovy	103	716		
Vary		/10		
Jihlava	340	925		
Bratislava			12420	38156
Košice			1797	4040
Banská			008	2245
Bystrica			998	2243
Prešov			852	1812
Žilina			777	2116
Nitra			744	2046
Trnava			586	1399
Trenčín			551	1218
Total	45524	135810	18725	53032

Source: Elaborated from Albertina 2011

The assumption that the Czech and Slovak structure of creative of creative circles are differ were justified using  $\chi 2$  (p < 0.001).

Figure 1, 2 and 3 portrayed a specialization of regional capitals by the creative sectors. The results of correspondence analysis showed the national capital of the Czech Republic as the most diversified city in terms of creative industries enterprises. However, the Slovak capital, Bratislava, was more specialized than Prague primarily due to proximity to Vienna. The majority of the Czech regional capitals clustered around advertising as one of the easiest creative sector to run a new business. Figure 3 and 4 showed the different patterns between the all regional capitals by creative industriesenterprises and regional capitals by employees in enterprises.

# Fig. 1 Czech regional capitals by creative industries enterprises



Source: Authors' analysis based on Albertina 2011





Source: Authors' analysis based on Albertina 2011

Multicollinearity was examined by regressing each independent variable on all the others, and no serious problems in this area were detected in both analysis ( $R^2 = 0.004$ ). A logistic regression analysis was conducted to determine the effects Type of ownership with the reference category (omitted) for Foreign enterprises (Wald  $\chi^2 p <$ 0.001). This is illustrated as in Table 3 and in Table 4. Overall, both models suggested that two predictors were revealed: Enterprises by size class and Capitals typology. Interaction terms were removed from the models if they were not significant. Both national capitals, i.e. Prague and Bratislava, reached the highest odds for foreign creative enterprises and Czech Southwest regional capitals differed from Northeast regional capitals.

The result for Slovak regional capitals reported the same pattern, i.e. the lower odds of occurrence of foreign enterprises in Regional capitals with presence of a technical university and new plants realized under direct FDI or machinery trade fairs and regional capitals without these precondition.

Fig. 3 Czech and Slovak regional capitals by creative industries enterprises



Source: Authors' analysis based on Albertina 2011

Fig. 4 Czech and Slovak regional capitals by employees of creative industries enterprises



Source: Authors' analysis based on Albertina 2011

Tab.	3	Logistic	regression	results
for Typ	e of o	wnership in the	Czech Republ	ic
(n = 45)	524)			

	В	Std. error	$Exp(\beta)$
Enterprises by size class $(1)^a$	1.304	0.130	3.684
Enterprises by size class (2)	1.007	0.149	2.738
Capitals typology CZE (1) <sup>b</sup>	1.622	0.122	5.063
Capitals typology CZE(2)	0.654	0.075	1.924
Constant	0.089	0.128	1.093
	1 1	4 11	0011

Source: Authors' analysis based on Albertina 2011

Note: The exponent of logistic coefficient shows the difference of the coefficient from 1. An exponent of coefficient greater than 1 indicates an increase in the odds for a unit change in the independent variable, while a coefficient less than 1 indicates a decrease in the odds for a unit change.

<sup>a</sup> Reference category (omitted) for Medium sized and large enterprises.

<sup>b</sup> Reference category (omitted) for Prague.

Tab. 4 Logistic regression results for Type of ownership in Slovakia (n = 18.725)

	β	Std. error	Exp(β)
Enterprises by size class $(1)^a$	1.425	0.231	4.158
Enterprises by size class (2)	0.935	0.249	2.547
Capitals typology SVK (1) <sup>b</sup>	1.166	0.111	3.208
Capitals typology SVK (2)	0.576	0.146	1.779
Constant	-0.326	0.229	0.721

Source: Authors' analysis based on Albertina 2011 <sup>a</sup> Reference category (omitted) for Medium sized

and large enterprises.

<sup>b</sup> Reference category (omitted) for Bratislava.

Fig. 4 Length of trading for creative industries enterprises in the Czech and Slovak regional capitals



Source: Authors's elaboration based on Albertina 2011

Figure 4 provided the contrast to time series of the length of trading for creative industries enterprises between the Czech and Slovak regional capitals. The first phase of creative industries enterprises' growth in the Czech Republic, with the concentration in 1989-1991, aroused after the systemic changes allowing private entrepreneurship. The second phase was portrayed by a striking growth in 2005-2009 and it was given primarily by the expansion phase of the business cycle at the global level. The fall of enterprises establishment at the turn of 2009 and 2010 is associated with the beginning of the economic recession. In contrast, the late creative industries enterprises' growth in the Slovakia was caused both the expansion phase of the business cycle at the global level and flat taxation.

### **4** Conclusion

The predominant percentage of non-employing enterprises corresponds to the findings in [1], as many sectors of creative industries do not require a considerable initial capital or office space for starting a business. The role of horizontal geographic position (called "Northwest-Southeast gradient" [3, 9]) was confirmed in the Czech regional capitals in terms of type of ownership and its spatial disparities within creative industries enterprises. The comparison of the length of trading between the Czech and Slovak regional capitals proved that even the same preconditions inherited from the central planned economy might not lead to the same growth peaks of creative industries enterprises, primarily in relation to systemic changes, namely market liberalization. The development and structure of the spatial distribution of creative industries enterprises in Slovakia was also affected by the settlement hierarchy, proximity to markets of developed EU countries, traditions of technical higher education and the presence of foreign actors from the commercial sector. The implementation of flat tax rate and simplification of the Slovak tax system stimulated growth not only in creative industries enterprises [4] during recovery within expansion phase of the business cycle in the mid 2000.

The used database does not allow identifying and analyzing creative industries firms doing business in selected cities with registered office the (headquarters) outside the region, which reduces the explanatory power of the mapping results. Publicly available company databases in the Czech Republic and Slovakia offer only an indicative framework for evaluating number of employees in the creative industries with no possibility of their identification accordance with the Creative in Trident methodology importance and effectiveness.

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