CREATIVE KNOWLEDGE NETWORKS – A ROMANIAN PERSPECTIVE

Carmen Beatrice Pauna, Ph.D.[1],
Marioara Iordan, Ph.D.[2],
Mihaela-Nona Chilian, Ph.D.[3],
Tiberiu Diaconescu, Ph.D.[4]

Abstract

The advanced economies are continuously pursuing economic restructuring, moving further from manufacturing and services towards the creative sectors with high value added, and the more recent economic recessions and crises seem to speed up such a trend. However, according to specialists, creativity itself does not act and does not sustain on its own, but needs to be cultivated (Mokyr J., 1990). It has to be constantly encouraged and reproduced within the companies, at local/regional level and in the entire society, especially in circumstances of a continuously changing environment where all the economies have to coexist and develop. A key role in this respect has the creative class and, especially, the "creative professionals", who work in a series of knowledge-intensive industries. The involvement of universities in order to ensure labor penetration on the creative job market requires from their part to promote innovative educational methods, in the sense of merging the business education with the creative education. Investing in R&D, enforcing adequate educational policies, ensuring collaboration between universities and business companies in both drawing up curricula and adequately integrating the creative professionals in the labor market are but a few of the priorities of a modern society.

The main research question of our paper[5] is focused on the dynamics of creative industries in Romania and on the possibilities of interconnection between the economic agents and academia in order to promote networks in the creative and cultural industries. In this respect, based on the method of creative industries mapping and on domestic and international economic and business statistics, the paper attempts a first analysis of the share, development and spread of creative sectors in the national economy and, especially, in the regional economies. Though the results reveal certain positive trends regarding the development of creative sectors at national and regional level, there are also signs of stagnation or volatility of activity, and of high concentration in certain regional centers and low spillover power of the current creative networks and clusters. Thus, eventual unreasonably high policy expectations must be adjusted to the Romanian realities, requiring, among others, a realistic approach regarding the evolution of the creative workforce and the need of functional connections of the creative and cultural activities within and outside their local headquarters.

Keywords: creative class, creative economy, creative industries, sustainable regional development, cluster, Romanian regions

JEL Classification: L80, O18, R11, R12

Theoretical issues and literature review

The advanced economies are continuously pursuing economic restructuring, moving further from manufacturing and services towards the creative sectors with high value added, and the more recent economic recessions and crises seem to speed up such a trend. However, according to specialists, creativity itself does not act and does not sustain on its own, but needs to be cultivated (Mokyr J., 1990). It has to be constantly encouraged and reproduced within the companies, at local/regional level and in the entire society, especially in circumstances of a continuously changing environment where all the economies have to coexist and develop. In recent times, researchers

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[1] Institute for Economic Forecasting, Bucharest, Romania, e-mail: carmenbpauna@gmail.com
[2] Institute for Economic Forecasting, Bucharest, Romania, e-mail: miordan@ipe.ro
[3] Institute for Economic Forecasting, Bucharest, Romania, e-mail: cnona@ipe.ro
[4] Institute for Economic Forecasting, Bucharest, Romania, e-mail: diaconescutiberiu@gmail.com
[5] The paper presents some results of research theme "Industriile creative si dezvoltarea regionala in Romania", coordinator Carmen Beatrice Pauna, Institute for Economic Forecasting, 2016, manuscript.

interested in studying the growth of cities and regions have focused on other kinds of capital, namely, *creative* and social capital. The concept of creative capital was popularized by Florida (2002) in *The Rise of the Creative Class.* According to Florida, the *creative class* - comprising professionals such as doctors, lawyers, scientists, engineers, university professors, and, notably, bohemians made up of artists, musicians, and sculptors - possesses *creative capital* and this group produces ideas, information, and technology and it is these outputs that are increasingly important for the growth of cities and regions. Consequently, cities and regions that want to succeed must attempt to attract members of this creative class who, according to Florida, are the wave of the future (Batabyal and Nijkamp, 2010; Crociata *et al.*, 2015).

Consequently, in the past few years, the issue of culture-led and creative-led development has become increasingly present in the economic debate, the basic assumptions being that the *creative economy* can contribute to a substantial degree to the shaping of a competitive knowledge-based economy, possibly conducive to a sustainable economic growth with more and better jobs and greater social cohesion. Especially at the local level of analysis is possible to appreciate in to a greater detail the different channels through which culture and/or creativity have an impact on the long-run growth trajectories at regional and/or urban level (Scott, 2004; Pratt, 2004; Santagata, 2002; Stam *et al*., 2008; Piergiovanni *et al*., 2012; Sacco and Crociata, 2013; Crociata *et al.*, 2015). The *cultural and creative industries (CCIs)* have recently become highly relevant with regard to creative economy research (Cho *et al*., 2016); the interest in their economic impact being also raised by some evaluations of the economic dimension of CCI in Europe and elsewhere (KEA, 2006, 2009; UNESCO, 2013). They have increasingly been considered as drivers of local economic development and innovation and as able to provide excellent opportunities to exit the economic crisis (UNESCO, 2013). In fact, they represent a strategic priority sector on the European Union (EU) agenda, and an important instrument of regional and urban innovation policies, as well as of economic growth (UNCTAD, 2008).

The definition of the CCI sector boundaries and the measurement of its economic impact is, however, not simple. Regarding the former, the difficulties involved in the fuzzy and multidisciplinary nature of creativity were largely addressed in the literature (see, for instance, Markusen *et al*., 2008). The most widely extended definition of creative industries is that of the DCMS (2009) which defined creative industries, as "those industries that are based on individual creativity, skill and talent. And which have the potential to create wealth and jobs through developing intellectual property". The DCMS (2009) definition of creative industries includes advertising, architecture, art and antiques markets, computer and video games, crafts, design, designer fashion, film and video, music, the performing arts, publishing, software, television and radio within these activities, although it excluded the heritage sector, archives, museums, libraries, tourism and sport (De-Molina *et al.*, 2011). Empirical studies are many, either including a more wide-ranging definition and, thus, expanding any policy implication to a greater number of sectors (EC, 2010) or sticking to the core and comprising only the activities with a predominantly creative workforce (DCMS, 2013; Bakhshi *et al*. 2013).

The complex relationship between creative industries and place competitiveness was deeply influenced by Florida's findings (2002, 2005, 2008) on the United States (Crociata *et al.*, 2015). In that sense, the relationship of each creative business with its location is a complex balance of factors. According to Comunian *et al*. (2010), four interrelated dimensions seem to determinate the potential of certain location to support the growth of creative economy: infrastructures, governance, soft infrastructures, markets, while Pratt (2008) suggests that in addition to studying the location of cultural and creative industries it could be suitable to analyze closer the operation of these industries with the rest of the economy. Some studies focused on the localisation and clustering of creative industries and services (Lazzaretti *et al*., 2008; Power and Nielsen, 2010; Branzanti, 2015; De-Miguel-Molina *et al*. 2012); others attempted to outline the geography of the creative sector in European countries, highlighting national peculiarities (Bertacchini and Borrione, 2013; Trippl *et al*. 2013; Cruz and Teixeira, 2015; Bobirca *et al*., 2009, Bobirca and Draghici, 2011). Among the EU regions that were considered as the most dynamic regions of creativity in Europe in the first decade of 2000s, researchers found most of the Polish and Czech regions, Romania and Croatia, large parts of continental Greece and Turkey, and the three Baltic countries, and it may be argued that the strategic orientation of structural funds available to these regions throughout the 2000s toward the development of Small Medium Enterprises (SMEs) in creative and knowledge-intensive sectors has been one of the main drivers of this leverage (Crociata *et al.*, 2015).

Recent studies on the association between the growth in CCIs and general economic growth, as measured by per capita gross domestic product have revealed certain trends among the EU regions: the European regions with above-average concentrations of creative industries were generally characterised by higher economic prosperity, the wealthier regions having a higher share of creative workers among their active population and the CCIs being important components of, and contributors to, the economies of such regions (Power and Nielsen, 2010; Crociata *et al.*, 2015); the growing places attracted symbolic workers, while places experiencing an economic downturn tended to lose them, triggering a ‘‘global competition for talent.’’ (Crociata *et al*., 2015), CCIs play a pivotal role in and have been acknowledged as a crucial element for, culturally-led local development and employment growth, as well as for the innovation and creation of new firms (Lazzaretti *et al*., 2017); the causal effect between creative work and growth was not direct and simple, but complex and strongly mediated by policy and governance conditions, the cultural and creative attractors did not cause a multiplier effects by boosting local economy in a sort of post-industrial Keynesianism; it was more likely that large cultural and creative attractors would have a positive impact on the local economy if the latter was already highly productive and efficiently organized (Crociata *et al.*, 2015); the creative industries do not appear to represent a panacea for ending the crisis, as argued by many critics; rather, they may generate important trajectories of growth and development as a result of their high degree of related variety (Lazzaretti *et al*., 2017); the creative services are the most important to explain the differences in GDP per capita across the EU regions, some creative services being more important in the wealth of regions than others; there is evidence of a powerful association between the effects of creative services and medium-high- tech manufacturing on the GDP per capita (De-Molina *et al*., 2011, 2012).

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The creative industries in Romania at national and regional levels

In earlier studies on the dimension of creative economy in Romania, by expanding the methodology proposed by Florida and Tinagli (2004), Bobirca *et al*. (2009) and Bobirca and Draghici (2011) have built a creativity index able to assess both the creative potential of Romania and of the other EU countries. The results showed that for some of the European countries the percentage of people employed in creative occupations is constantly over 30% (Sweden, Denmark, the Nederland’s, Finland, Germany), demonstrating their orientation towards an occupational structure that favors the development of the creative sector. Romania registered the highest average growth rate of creative class, but also a very low value of the index itself, close to other EU countries such as Bulgaria, Latvia, the Czech Republic and Lithuania. The creative class represents only 17% of the working class in Romania, but the Romania was placed on the top position with respect to the growth potential of the creative class, suggesting an important development potential of creative activities (Bobirca and Draghici, 2011). However, the relevance of their findings remains questionable.

A national network of creativity poles may play an important role in augmenting the capacity of creative activities to attract other economic activities; aspect highlighted in other researches on emergent territorial systems in Romania (Peptenatu *et al*., 2012; Stoian *et al*., 2014; Pintili *et al*., 2015). Based on an extensive bibliography regarding individual development activities included in the category of creative industries, as well as on theoretical studies on the development of creative activities, Stoian *et al*. (2014) and Pintili *et al*. (2015) analyzed the creative industries in Romania also at territorial level. The results revealed the increasing share of creative economic activities, and the strong negative impact of the 2008-2010 economic crisis. The entrepreneurial profile of the creative sector of the national economy shows significant changes in the number of firms. Growth was recorded in the production of software, advertising, film production, consulting activities, architecture, etc. (Pintili *et al*., 2015). At territorial level, the findings showed that creative activities have developed in territorial systems with the highest polarizing capacity. Thus, Bucharest revealed as the most important creative pole in Romania, followed by Cluj, Timisoara, Iasi, Oradea, Constanta and Sibiu. These cities registered a considerable growth in the number of companies and turnover (Stoian *et al*., 2014).

The current paper also attempts a mapping of the creative industries in Romania, based on the most recent (crisis and post-crisis – 2008-2014) domestic and international economic and business statistics, and an analysis of the share, development and spread of creative sectors in the national economy and, especially, in the regional economies. Data were collected from the Eurostat (SBS and Innovation databases). However, the chosen databases do not provide a very detailed detailing of the creative sectors; consequently, the data available regional (NUTS2) data on more aggregated creative services sectors were used, namely: i) retail sale of cultural and recreation goods in specialized stores, ii) publishing activities, iii) motion picture, video and television programme production, sound recording and music publishing activities, iv) programming and broadcasting activities, v) architectural and engineering activities; technical testing and analysis, vi) advertising and market research. Also, some results pertaining to the most creativity-related side of innovation indicators (designs and trade marks) are also presented for the Romanian NUTS2 and NUTS3 regions. Although such indicators are usually analyzed in connection with innovativeness, their higher content-related features may also reveal useful insights regarding creativity and CCIs at national and territorial levels.

The dynamics of both number of companies and number of employees in the selected sectors[1] were generally positive in all the Romanian regions during the crisis and post-crisis period (2008-2014), except for the programming and broadcasting activities, which revealed a significant decline until 2011 (Appendix 1). Smaller declines were also revealed until 2011 by retail sale of cultural and recreation goods in specialized stores, architectural and engineering activities; technical testing and analysis, advertising and market research, while the publishing activities showed strong

[1] Due to text limitations, only results for the number of employees are presented. Rest of results are available on request.

advance, especially in the number of companies. However, the dynamics of the number of employees were more regionally-specific in the case of all analyzed sectors, except for the architectural and engineering activities; technical testing and analysis, where closely resembled the dynamics of the number of companies. A greater variability in the employees' dynamics may signal different regional business environments, a situation that is not analyzed here.

However, if companies' dynamics were mostly similar for the creative sectors in the regional economies, the shares of regions in total number of companies and total number of employees varied largely, revealing a very strong trend towards concentration of activities, mostly in the Bucuresti-Ilfov Region and to a lesser extent in other regions (Nord-Vest and Vest, where the Cluj and Timisoara creative hubs are located – see the European Creative Industries Alliance Platform)[1]. Thus, the Bucuresti-Ilfov Region concentrated in 2014 over 68% of the number of companies and over 74% of the number of employees of the motion picture, video and television programme production, sound recording and music publishing activities, over 53% of the number of companies and over 64% of the number of employees of the advertising and market research activities and over 44% of the number of companies and over 53% of the number of employees of the publishing activities. Also, in the case of programming and broadcasting activities and architectural and engineering activities; technical testing and analysis, the concentration of employees in the Bucuresti-Ilfov Region was much higher than the concentration of companies, revealing a possible strong size bias in favor of the most developed region of Romania. Coupled with the higher variation in the regional dynamics of creative services employees, it may signal a higher vulnerability of the creative sectors companies in the other regions of Romania, especially in the less developed ones.

The strength of the creative industries companies in the Romanian regions and the high concentration of creative activities in only a handful of creative poles is also revealed by the county and regional shares of community designs (CD) and European Union trademarks (EUTM) applications (without commenting the very low, though increasing, shares of such Romanian applications in the EU total - Appendix 2). Thus, the Bucharest Municipality has the lion's share in both the Romanian CD and EUTM applications, though recording a declining trend in the case of the former. The other "creativity" poles in Romania also reveal a fluctuating trend - (Bihor, Cluj, Satu Mare, Brasov, Mures, Bacau, Iasi, Constanta, Prahova, Ilfov, Dolj, and Arad counties in the case of CD and Bihor, Cluj, Brasov, Iasi, Prahova, Ilfov, Arad and Timis in the case of EUTM). Lower, but quite constant shares in the Romanian EUTD applications also reveal most of the counties of the Nord-Vest, Centru, Nord-Est and Sud-Est regions, while in the case of CDs, the applications originating in other counties of Romania are quite sporadic. However, one must also take into account the specific features of the CDs and EUTMs, the former being more complex in nature and also partly related to manufacturing, while the latter are more related to wording and imagery and IT.

Though the results reveal certain positive trends regarding the development of creative sectors at regional level in Romania, there are also signs of stagnation or volatility of activity, and of high concentration in certain regional centers and low spillover power of the current creative networks and clusters. Thus, eventual unreasonably high policy expectations must be adjusted to the Romanian realities, requiring, among others, a realistic approach regarding the evolution of the creative industries and workforce and the need of functional connections of the creative and cultural activities within and outside their local headquarters.

[1] Data available on request.

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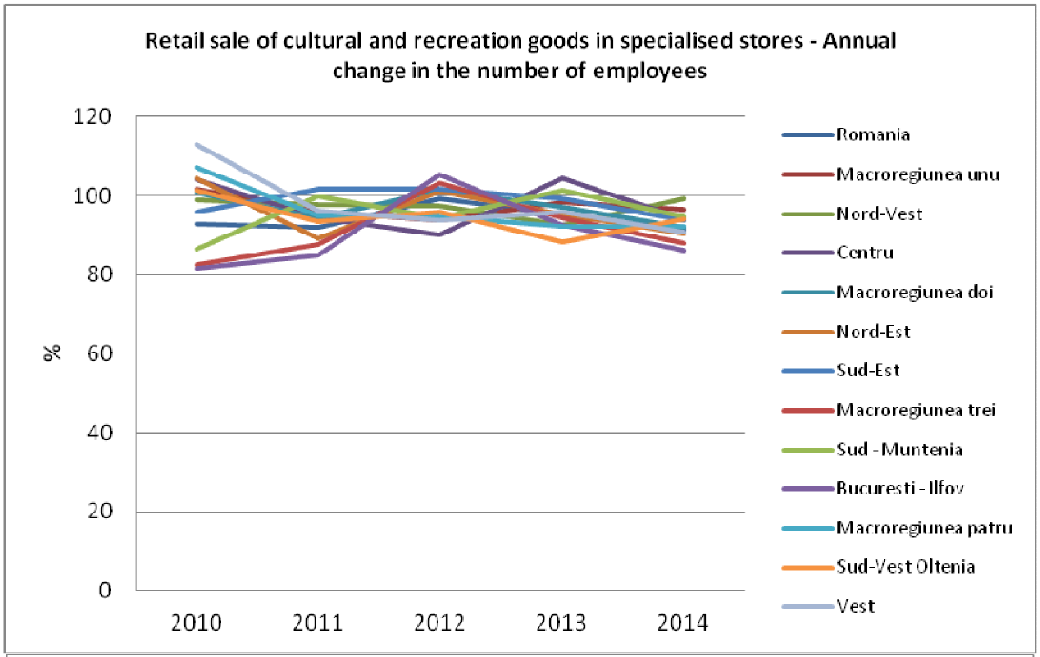
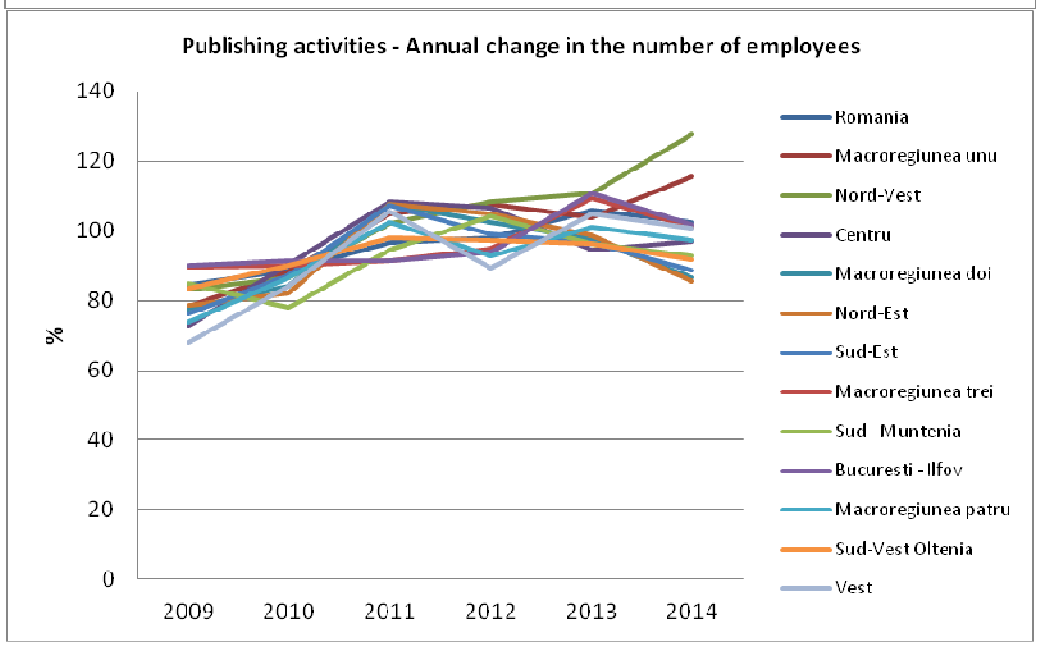
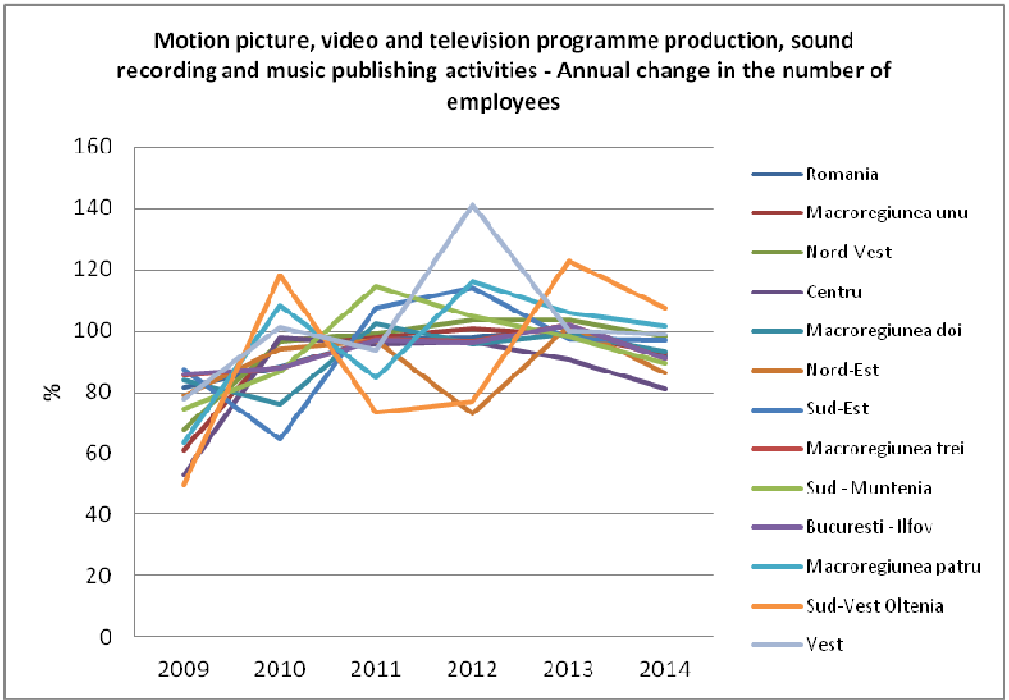
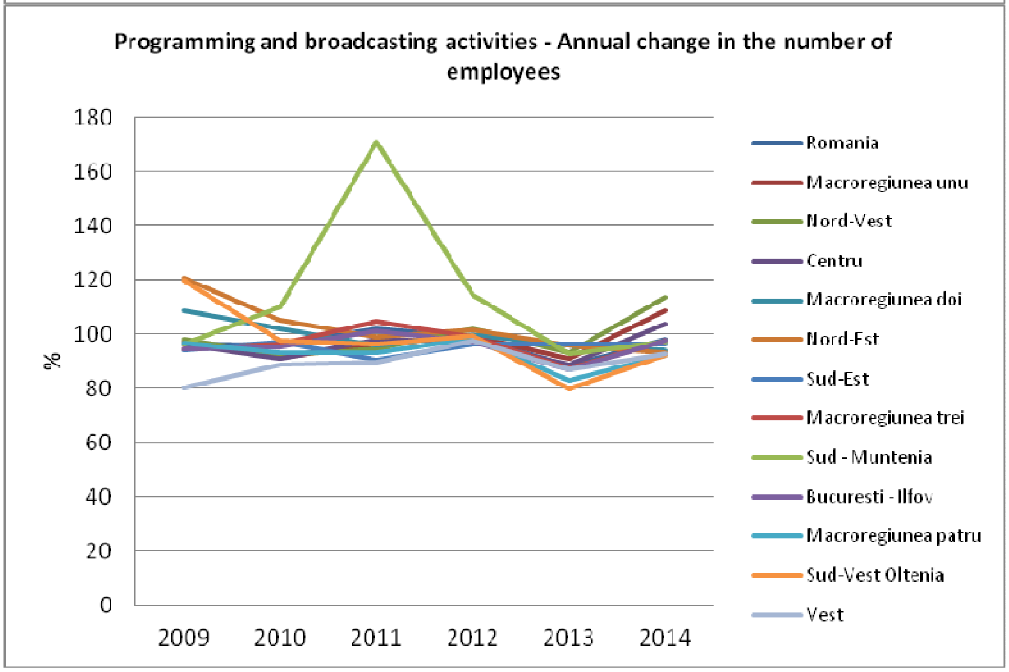
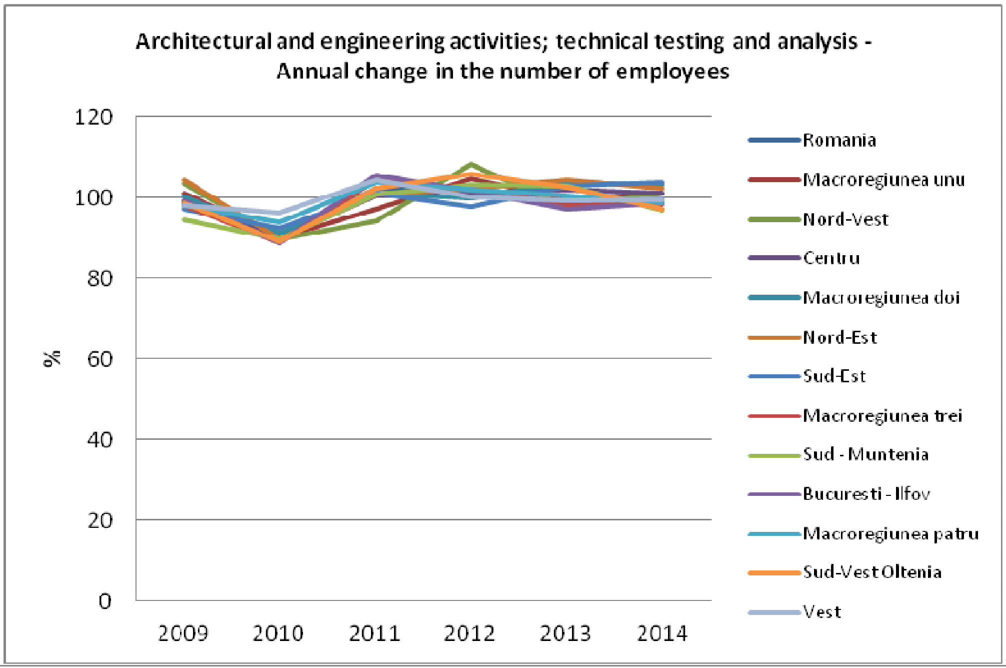
Appendix 1. Creative services sectors in the Romanian regions – Annual changes in the number of employees

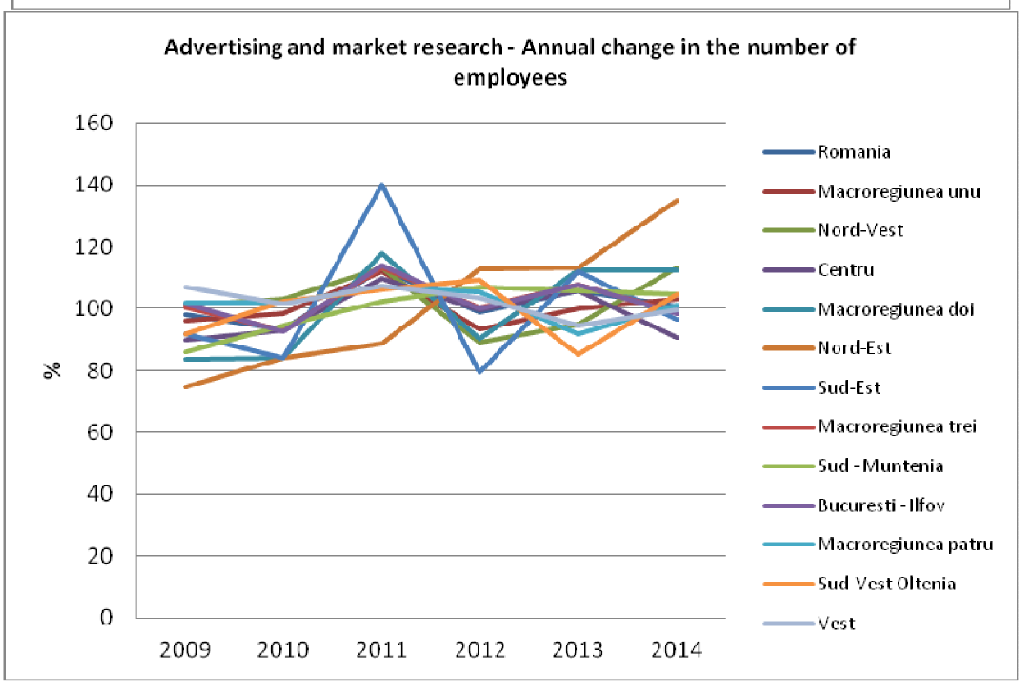

Retail sale of cultural and recreation goods in specialised stores - Annual change in the number of employees
120
100
80
60
40
20
0
%
2010
2011
2012
2013
2014
Romania
Macroregiunea unu
Nord-Vest
Centru
Macroregiunea doi
Nord-Est
Sud-Est
Macroregiunea trei
Sud - Muntenia
Bucuresti - Ilfov
Macroregiunea patru
Sud-Vest Oltenia
Vest


Publishing activities - Annual change in the number of employees
140
120
100
80
60
40
20
0
%
2009
2010
2011
2012
2013
2014
Romania
Macroregiunea unu
Nord-Vest
Centru
Macroregiunea doi
Nord-Est
Sud-Est
Macroregiunea trei
Sud Muntenia
Bucuresti - Ilfov
Macroregiunea patru
Sud-Vest Oltenia
Vest


Motion picture, video and television programme production, sound recording and music publishing activities - Annual change in the number of employees
%
160
140
120
100
80
60
40
20
0
2009
2010
2011
2012
2013
2014
Romania
Macroregiunea unu
Nord Vest
Centru
Macroregiunea doi
Nord-Est
Sud-Est
Macroregiunea trei
Sud - Muntenia
Bucuresti - Ilfov
Macroregiunea patru
Sud-Vest Oltenia
Vest


Programming and broadcasting activities - Annual change in the number of employees
%
180
160
140
120
100
80
60
40
20
0
2009
2010
2011
2012
2013
2014
Romania
Macroregiunea unu
Nord-Vest
Centru
Macroregiunea doi
Nord-Est
Sud-Est
Macroregiunea trei
Sud - Muntenia
Bucuresti - Ilfov
Macroregiunea patru
Sud-Vest Oltenia
Vest





Source: Authors' computations, on the basis of Eurostat data.

Appendix 2. Community design (CD) and European Union trademarks (EUTD) applications by NUTS 3 regions in Romania - Share in national total, %

CD	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Macroregiunea unu	33.33	50.00	39.13	50.00	29.63	30.56	30.00	31.48	16.36	16.39	23.64	25.25
Nord-Vest	16.67	50.00	30.43	50.00	29.63	25.00	26.00	24.07	7.27	4.92	20.00	11.11
Bihor		*50.00*	*30.43*	*44.44*	*18.52*	*11.11*	*18.00*	*12.96*	*3.64*	*1.64*	*3.64*	*6.06*
Bistrita-Nasaud					3.70			3.70				1.01
Cluj	*16.67*				*3.70*	*5.56*		*1.85*	*1.82*	*1.64*	*5.45*	*2.02*
Maramures							4.00	1.85	1.82		1.82	1.01
Satu Mare				*5.56*	*3.70*	*8.33*	*4.00*	*3.70*		*1.64*	*7.27*	*1.01*
Salaj											1.82	
Centru	16.67		8.70			5.56	4.00	7.41	9.09	11.48	3.64	14.14
Alba										1.64		
Brasov	*16.67*					*2.78*	*2.00*	*1.85*	*1.82*	*1.64*		*5.05*
Covasna									3.64	4.92		
Harghita			8.70			2.78			1.82	1.64		3.03
Mures							*2.00*	*5.56*		*1.64*	*1.82*	*6.06*
Sibiu									1.82		1.82	
Macroregiunea doi			4.35		14.81	11.11	4.00	5.56	3.64	6.56	3.64	12.12
Nord-Est			4.35		14.81	2.78		1.85	1.82	4.92	3.64	12.12
Bacau					*7.41*							*10.10*
Iasi			*4.35*						*1.82*	*4.92*	*1.82*	
Neamt								1.85				2.02
Suceava					3.70	2.78						
Vaslui					3.70						1.82	
Sud-Est						8.33	4.00	3.70	1.82	1.64		
Braila								1.85				
Constanta						*5.56*		*1.85*	*1.82*	*1.64*		
Galati						2.78						
Vrancea							4.00					
Macroregiunea trei	66.67	50.00	52.17	27.78	29.63	19.44	58.00	42.59	58.18	67.21	49.09	43.43
Sud - Muntenia			13.04					1.85	1.82	4.92	3.64	9.09
Arges										1.64		2.02
Dâmbovita								1.85				
Giurgiu											3.64	3.03
Prahova			*13.04*						*1.82*	*3.28*		*4.04*
Bucuresti - Ilfov	66.67	50.00	39.13	27.78	29.63	19.44	58.00	40.74	56.36	62.30	45.45	34.34
Bucuresti	**66.67**	**50.00**	**34.78**	**27.78**	**18.52**	**16.67**	**40.00**	**37.04**	**43.64**	**54.10**	**34.55**	**28.28**
Ilfov			*4.35*		*11.11*	*2.78*	*18.00*	*3.70*	*12.73*	*8.20*	*10.91*	*6.06*
Macroregiunea patru				11.11	7.41	8.33	4.00	1.85	12.73	6.56	12.73	5.05
Sud-Vest Oltenia						8.33	2.00	1.85	1.82	3.28	5.45	
Dolj						*8.33*			*1.82*	*3.28*	*5.45*	
Olt								1.85				
Vâlcea							2.00					
Vest				11.11	7.41		2.00		10.91	3.28	7.27	5.05
Arad									*3.64*		*5.45*	*1.01*
Caras-Severin					7.41					3.28		2.02

CD	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Hunedoara				11.11			2.00				1.82	
Timis									7.27			2.02
Unknown NUTS			4.35	11.11	18.52	30.56	4.00	18.52	9.09	3.28	10.91	14.14
EUTD	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Macroregiunea unu	35.71	16.67	5.26	17.01	22.67	23.66	17.51	19.44	24.60	17.19	21.72	21.97
Nord-Vest	35.71	16.67	4.21	10.31	15.56	15.52	9.79	9.72	13.42	11.83	11.15	15.56
Bihor	*28.57*	*13.89*	*1.05*	*4.64*	*6.67*	*6.87*	*2.37*	*2.56*	*1.92*	*2.23*	*2.94*	*3.89*
Bistrita-Nasaud					0.89	2.04	0.89	0.51	1.92	0.22	0.39	0.46
Cluj	*7.14*	*2.78*	*3.16*	*3.61*	*5.33*	*3.82*	*5.34*	*3.58*	*4.79*	*6.47*	*4.70*	*6.41*
Maramures					0.44	0.76		2.56	1.92	2.01	1.57	1.83
Satu Mare				2.06	1.78	2.04	0.89	0.51	2.88	0.89	1.37	2.52
Salaj					0.44		0.30				0.20	0.46
Centru			1.05	6.70	7.11	8.14	7.72	9.72	11.18	5.36	10.57	6.41
Alba						0.51		1.02	0.32	0.45	0.39	0.69
Brasov			*1.05*	*5.15*	*3.11*	*2.54*	*2.37*	*3.07*	*4.15*	*2.46*	*5.28*	*3.43*
Covasna				0.52	0.89	0.51	0.59	0.77	0.32	0.22	1.76	
Harghita				0.52	0.89	2.04	1.19	0.77	1.60	0.22	0.39	0.92
Mures				0.52	2.22	1.27	2.08	2.05	1.60	0.45	1.96	0.92
Sibiu						1.27	1.48	2.05	3.19	1.56	0.78	0.46
Macroregiunea doi		13.89	14.74	13.92	13.33	11.20	12.76	6.39	9.27	8.48	8.61	7.32
Nord-Est		13.89	11.58	10.31	8.00	6.62	8.31	3.07	5.43	4.24	4.89	5.49
Bacau			1.05	3.09	3.11	3.05	4.45	1.53	2.24	1.56	0.78	0.69
Botosani					0.89							
Iasi		*13.89*	*10.53*	*5.15*	*2.67*	*1.27*	*1.48*	*0.77*	*1.92*	*1.56*	*2.15*	*3.43*
Neamt				2.06	1.33	0.25	0.89	0.51	1.28	0.22	0.78	0.46
Suceava						1.78	1.48	0.26		0.89	1.17	0.92
Vaslui						0.25						
Sud-Est			3.16	3.61	5.33	4.58	4.45	3.32	3.83	4.24	3.72	1.83
Braila						1.27			0.32	0.45	0.20	0.46
Buzau					0.44		0.30	0.51	0.96	0.45	0.39	0.23
Constanta			2.11		2.22	1.27	1.48	0.51	1.60	2.23	0.59	0.46
Galati				1.03	1.33	1.53	1.78	1.79	0.64	0.45	1.76	0.46
Tulcea				0.52	0.44							0.23
Vrancea			1.05	2.06	0.89	0.51	0.89	0.51	0.32	0.67	0.78	
Macroregiunea trei	35.71	33.33	73.68	51.03	42.22	37.40	45.10	57.54	47.60	50.67	48.92	48.74
Sud - Muntenia		11.11	5.26	5.15	3.56	3.56	2.37	4.09	2.56	2.90	3.52	5.03
Arges				0.52		0.76					0.20	0.46
Calarasi		8.33										0.23
Dâmbovita								0.51			0.39	
Giurgiu					0.44	0.25						0.69
Prahova		*2.78*	*5.26*	*4.64*	*3.11*	*2.54*	*2.37*	*3.32*	*2.56*	*2.90*	*2.94*	*3.66*
Teleorman								0.26				
Bucuresti - Ilfov	35.71	22.22	68.42	45.88	38.67	33.84	42.73	53.45	45.05	47.77	45.40	43.71
Bucuresti	**35.71**	**22.22**	**65.26**	**41.75**	**36.00**	**28.50**	**39.76**	**49.62**	**39.30**	**36.83**	**38.55**	**35.01**
Ilfov			*3.16*	*4.12*	*2.67*	*5.34*	*2.97*	*3.84*	*5.75*	*10.94*	*6.85*	*8.70*
Macroregiunea patru	14.29	8.33	2.11	7.73	5.78	4.83	4.45	4.35	4.79	3.57	4.11	6.41

CD	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Sud-Vest Oltenia	7.14		1.05	1.55	0.44	2.29	1.19	1.02	0.64	1.12	1.57	1.83
Dolj	7.14			1.03	0.44	0.76	0.30	0.26	0.32	0.45	1.17	0.46
Mehedinti										0.45		
Olt						0.76			0.32		0.39	0.23
Vâlcea			1.05	0.52		0.76	0.89	0.77		0.22		1.14
Vest	7.14	8.33	1.05	6.19	5.33	2.54	3.26	3.32	4.15	2.46	2.54	4.58
Arad	*7.14*	*8.33*		*2.58*	*3.11*	*1.27*	*0.30*	*0.77*	*0.96*	*0.45*	*1.17*	*1.37*
Caras-Severin										0.22	0.20	
Hunedoara						0.25		0.77	1.60	0.67		1.37
Timis			*1.05*	*3.61*	*2.22*	*1.02*	*2.97*	*1.79*	*1.60*	*1.12*	*1.17*	*1.83*
Unknown NUTS 1	14.29	27.78	4.21	10.31	16.00	22.90	20.18	12.28	13.74	20.09	16.63	15.56

Source: Authors' computations, on the basis of Eurostat data.