Benchmarking Romania's creative competitiveness

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Abstract. An extensive academic debate on the role of creative industries in economic development is manifestly emerging. Our paper aims at carving out the distinctive economic dynamics that these industries are generating by investigating and assessing their economic impact and further determining the extent of their contribution to stimulating national competitiveness. Based on an empirical study in Romania, we explore the primary and secondary impacts of the creative industries; we propose a composite index for measuring creative capabilities and assess their effect on the creative competitiveness of the Romanian economy. By making an initial attempt at coherent tabulations, our paper produces some estimates of the creative industries contribution to the economy and allows for discerning the relative competitiveness of the Romanian creative capabilities through benchmarking with the European countries. Our results reveal the disparities among the European countries and provide evidence on the catching-up potential of the Romanian creative industries.

1. INTRODUCTION

Creative industries have started to attract quite an extensive academic consideration in the past two decades. Responding to the fast growth of these industries, many studies are focusing on the contribution of the creative industries to economic development, predominantly in terms of employment, regional development and urban dynamics (OECD, 2007; Andari et al., 2007; Cooke and Schwartz, 2007).

It has become evident that the correspondences and tensions around the issues of creative industries and economics (Hesmondhalgh, 2007; 2008) pose significant challenges to contemporary academic inquiry and policy-making.

Recent literature suggests that the creative industries are an important, developing sector, fundamental to economic growth (Cunningham, 2008). The core characteristics of these activities have been described as the key to modern economic competitiveness in advanced economies1 (DCMS, 1998). Therefore, creativity and innovation are thought to drive the economy, while the ability to nurture and attract creative people and industries are credited with the potential to become a vital component of economic competitiveness in the next decades.

Citing other research and his own, Florida believes that "creativity and diversity work together to attract talent, generate high-tech industries, and spur regional growth (2002, p. 265)."

Creative industries use ideas and talent as central factors of production, while their main output is intellectual property. From arts and entertainment, to software development and technology, to law and education, and to engineering and the applied sciences, an increasing proportion of the value that is added to industrial production consists of intellectual content, that becomes the valuable commodity in much of modern trade (Swenson, Eathington, 2003).

Being interlinked with a large number of other sectors as well as public organisations and consumers, the creative industries benefit from a diversified mix of client-activities along the value chain and may stimulate growth in a variety of other industries by providing creative inputs.

The value chain linkages, the shared infrastructures and the knowledge spill overs generated by the creative industries at the level of the economy prompt the need for a more complex framework for investigating and assessing their overall economic impact.

The existing mapping documents of the creative economy, although oriented mainly towards measuring employment and business activities within selected industrial classifications, emphasized that the economic impact of creative industries extends beyond the production of cultural goods or the employment of creative people and may have a more general role in driving and facilitating the process of change across the entire economy (Potts, Cunningham, 2008).

Our main aim is, therefore, to enlarge the general understanding on how the creative industries influence an economy. The development of an appropriate and robust methodology is critical to attaining this aim. We therefore distinguish a multidimensional view over the overall economic impact of the creative industries, by constructing a four-layer assessment framework/model.

Based on an empirical study in Romania, we explore the primary and secondary impacts of the creative industries; we propose a composite index for measuring creative capabilities and assess their effect on the creative competitiveness of the Romanian economy. By making an initial attempt at coherent tabulations, our paper produces some estimates of the creative industries contribution to the economy and allows for discerning the relative competitiveness of the Romanian creative capabilities through benchmarking with the European countries. Our results reveal the disparities among the European countries and provide evidence on the catching-up potential of the Romanian creative industries.

2. EMPIRICAL APPROACH

2.1. The research scope and objective

Recent research regarding the development potential of an economy have validated the hypothesis according to which the presence of creative activities is capable of stimulating the economic growth of the region in which they are located (Florida, Tinagli, 2004; Cunningham, 2006; Cunningham, Higgs, 2008). A potential explanation for this result is the fact that creative activities provide such cultural or scientific fa-

cilities that make a region more attractive to people with a higher education level – exactly the same category of personnel which is required for knowledge-intensive activities, with the most rapid growth.

Many of the researchers in the creative industries field have stated that the economic impact thereof cannot be estimated solely on the grounds of the number of jobs created, their argument being that the prevalence of creative activities also has a significant indirect impact on the regional economy. The attractiveness of a region to highly qualified personnel leads to an improvement in the localization advantage for technology intensive activities. This phenomenon has been intensively documented by Florida (2002).

The numerous attempts to study the size and impact of the creative industries have resulted in creative industries mapping studies commissioned especially by governments at national, regional and even city level. One of the first such studies, that became the template for the following mapping documents was issued by the DCMS (United Kingdom) and used data from household and industry surveys or from surveys of businesses within specific industries. Subsequent studies aimed at a more comprehensive approach (Hong Kong), measuring employment in the creative sector (France) or even attempting at the examination of specific creative occupations (Australia).

Our research is linked to the empirical literature on creative industries mapping, although it deviates from some of the standard methodologies. This paper intends to estimate the direct and indirect economic impact of creative activities in Romania, as well as to build a creative competitiveness index, using the results of estimations for tertiary and quaternary impacts of creative industries.

Creative industries could play an important role in the Romanian economy, through their potential to address recent challenges: they have the capability to generate value, by supporting and even imposing the development of business models able to promote the trade of such products or services with a unique nature. Many of the creative industry segments have a potential to add value to each level of the value chain, for each industry of the national economy. Raising awareness as to the *transformational* role of creative industries requires an in-depth understanding of their contribution to economic development. Therefore, this research will focus on studying the actual economic impact of creative activities, on one side and on investigating the total economic contribution of creative activities in their capacity as *activator* for development.

The concept of *creative industries* is relatively new in Romania, therefore the research methodology employed in order to determine the economic impact of creative industries is based upon approaches, methods of analysis, indicators and interpretations thereof which are used in countries where such activities have already been part of the economic policy concern of governments. This measuring exercise aims at evaluating the impact and analyzing the value of creative industries in Romania, while the result of our research could become an instrument to support the creation and development of economic, cultural and educational policies.

According to the methodology proposed by Harry Chartrand (1984), subsequently adopted by other authors, and most importantly by decision makers in the field of cultural policies, adapted and extended in our research, the economic impact of creative activities may be captured by means of estimating indicators corresponding to each of the four levels described below:

a. level 1 – direct economic impact of creative industries, determined based on their direct and quantifiable contributions to GDP, gross value added, employment and exports

b. level 2 – indirect economic impact, determined based on the indirect but quantifiable contributions of creative activities, by estimating the inter-industrial links and the degree of integration with other industries

c. level 3 – induced economic contribution, of an intangible nature, and, by consequence, difficult to quantify, of creative activities to stimulating *creative capacity,* by increasing the innovation level (tertiary impact)

d. level 4 – induced economic contribution, difficult to estimate of creative industries on stimulating the creative capacity by improving the quality of life (quaternary impact).

Starting from the impact model proposed by Chartrand, this research aims at investigating and evaluating the contribution of creative industries to increasing the competitiveness of the Romanian economy. In order to achieve this final objective, the benchmark methodological framework is extended and adapted to suit the different conditions and development stages of European economies.

2.1. The research data and methodology

The methodology employed is preponderantly quantitative. In order to ensure the accuracy of the data, and given that creative activities are not well served by statistical standards and conventions, all accessible databases have been consulted, while selecting only relevant information, which secures the possibility to obtain a thorough and consistent result.

The absence of detailed and comprehensive statistics regarding creative industries has imposed the harmonization of data for a shorter time interval than initially envisaged.

Whereas for determining the direct and indirect economic impact of creative industries, relevant indicators for the Romanian economy have been used, and their evolution has been analyzed, in order to calculate the creative competitiveness index, the other European countries have been studied as well, thus obtaining in addition a positioning of Romania's economy in the European context.

In order to estimate the direct impact of creative activities, indicators such as turnover, gross value added, number of employees, average value added per employee and exports were calculated. Considering that, at the beginning of 2008 the classification of economic activities (NACE codes) has been revised, we have used the correspondence between NACE codes belonging to both classifications. Our attempt was to operate with data series as extensive as possible, depending on their availability. The main sources of information have been the Eurostat, the National Statistics Institute of Romania, the OCDE and UNCTAD databases, and the analyzed time period is 2000-2009.

Creative industries, benefitting in their majority and as a general rule from a comparatively higher level of research & development and innovation expenses than other industries may play a significant role in increasing economic performance. Their importance resides not only in the technology incorporated in their outputs, but mostly in their positive impact on the other economic activities. As mentioned before, these may be direct, as a consequence of producing intermediate products, or indirect, by increasing the national stock of knowledge, available for the other economic activities.

At the same time, some of the creative industries, especially the technologically intensive ones are characterized by: obtaining a temporary monopoly rents, determined by barriers arisen at the time of competition entering the market; generating a cumulative specialization process, due to abrupt learning curves and economies of scale; offering high salaries to employees in these activities; attractiveness for investments of multinational companies; high demand on markets with a large growth potential.

One method to analyze the extent to which creative activities are interlinked with upstream and downstream industries is by using the input-output tables in the national accounts system. Considering that intermediate outputs constitute the main vehicle for knowledge diffusion by creative activities, through processing the data in the input-output tables the secondary impact on the economy of these activities can be estimated.

The current research aims at calculating indicators which reveal the integration/ influence degree of creative activities at the level of the overall national economy. To this end, we have employed OCDE data

contained in the I-O matrix for the years 2005-2010, as well as information from the Romanian National Institute of Statistics.

In order to measure the intensity of links among industries and the level of integration, for the purpose of ordering them according to this criterion and selecting key-sectors (Hirschman, 1958; Rasmussen, 1957), we calculated 2 indexes, corresponding to the upstream and downstream links.

The upstream links intensity index, U_j, has the following expression:

$$U_j = \frac{\frac{1}{n}\sum_{i=1}^{n} b_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}}$$, where b_{ij} are elements of the B inverse matrix (total unit consumptions), and n is the

number of industries taken into calculation.

The numerator of the expression, $\frac{1}{n}\sum_{j=1}^{n} b_{ij}$, indicates the increase of the output, on average, of an in-

dustry i, corresponding to an increase by one unit of the final demand of the industry j; the denominator indicates the general average increase, for all industries i and j. If $U_j > 1$, an increase by one unit of the final demand of the industry j determines an increase above the average of a branch i from upstream.

$$U_i = \frac{\frac{1}{n}\sum_{j=1}^{n} b_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}}$$, where b_{ij} are identical with those in the previous expression.

If $U_i > 1$, an increase by one unit of the final demand, on average, of an industry j implies an increase above the average of the output in industry i.

In order to obtain a more precise indicator of the degree of influence that an activity has over the national economy, Cuello, Mansouri and Hewings (1992) are weighing the total consumption coefficients bij with the relative size of the industries i / j that the analysed activity is linked with upstream or downstream. It is considered that this degree of influence is proportional to the economic relevance of the branches from where it receives and mostly towards where it sends intermediate goods. This relative measure can be calculated as the weight of production or employment of an industry in the total production or employment of the economy. Thus, the following indicators are constructed:

Weighted Index of Upstream Links Intensity, V_j:

$$V_j = \frac{\frac{1}{n}\sum_{i=1}^{n} \alpha_i b_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}}$$, where $\alpha_i = \frac{P_i}{\sum_{i=1}^{n} P_i}$ and P_i = production value of the branch i

Weighted Index of Downstream Links Intensity, V_i:

$$V_i = \frac{\frac{1}{n}\sum_{j=1}^{n} \alpha_j b_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} b_{ij}}$$, where $\alpha_i = \frac{P_j}{\sum_{j=1}^{n} P_j}$

The interpretation of the weighted indexes is similar to the one for simple indexes, with the difference that the former ones indicate the potential of an industry to induce changes in the total demand, whereas the letter reveal the degree of integration of the respective activity in the national economy.

Given the nature of the tertiary and quaternary impacts, as well as the difficulty to estimate them based on conventional indicators, this research aims to estimate the potential contribution of creative industries to stimulating economic growth starting from the construction of a system of indicators for approximating the *creative capacity* of an economy, essential for further determining its *creative competitiveness*.

The indicators used for quantifying the tertiary and quaternary contribution of creative industries to increasing the creative capacity have been grouped on three dimensions, by calculating:

1. The *creative workforce index* – the benchmark indicators used for constructing this index aim at measuring the availability of creative workforce with appropriate skills and knowledge, its development potential, as well as its quality, using as fundamentals the standard of living, the individual satisfaction towards the standard of living, as well as income inequalities.

2. *The creativity market index* – the benchmark indicators used for constructing this index aim at revealing the importance of the international market for stimulating internal creativity reserves; moreover, indicators such as the purchasing power, or the industrial demand for creative inputs could reflect the extent to which creative industries have a potential for development domestically and the capacity to penetrate the international market.

3. *The creative infrastructure index* – the benchmark indicators used for constructing this index aim at assessing the existing institutional framework; the protection of creative property is essential for the development of a market for creativity; moreover, the correct functioning of market institutions secures the possibility to create and trade creative content.

Each of these composite indexes is approximated by using an integrated system of proxy indicators or indexes.

The Creative Workforce Index is a composite index calculated as the average of the social diversity index, the creative class index and the innovative capability index. The Creativity Market Index is a composite index as well, having three indicators in its structure: the creative exports index, the value-added of knowledge intensive industries and the GDP per capita. The creative infrastructure index is computed as an average of a regulatory framework efficiency indicator, an intellectual property protection indicator and a freedom of expression indicator.

All these indicators are compiled for 15 European countries and for a time period that allowed for the collection of coherent series of data and for the indices to become operational, without any significant omissions as far as the reported data are concerned. The comparison with other European countries allows for benchmarking Romania in relation to European countries also insofar as the level of relative creative competitiveness is concerned, determined by the cumulative effect of the existing and analysed creative capacities.

Due to the fact that the investigated indicators have different denominations and ranges, in order to make them compatible, the following methods have been used:

- for sub-indicators that are part of the nine proxy indicators: the indicator values have been categorized by countries for each separate year, a value of 100 has been assigned to the country with the highest corresponding indicator value and subsequently rankings have been allocated to each country, by reference to the maximum value of 100. The index has been subsequently computed as an average of the rankings given to each country, for each indicator and each separate year.

- for the aggregate indexes, the standard deviation method has been used.

The standard deviation measures the relative discrepancies between the analysed countries. For each of the 9 indexes or indicators which compose the 3 indexes, average values are computed for all analysed countries. Then, a dispersion of values is calculated, as a root mean square deviation of individual values.

Thus, the standard deviation for every indicator has been calculated using the following formula:

$$S = \{\sum (x_i - \underline{x})^2/N\}^{1/2},$$

where

S = standard deviation
x_i = value of the indicator for the country i
$\underline{x}$ = average value of the indicator for the analysed countries
N = number of countries

The standardised value for each country indicators are computed as follows

$$Z_i = (x_i - \underline{x})/S$$

In order to obtain a thorough interpretation of results, the scores Z are converted into ratings (R_i) ranging from 1 to 100, by using a logarithmic transformation:

$$R_i = \{e^{Z_i} / (1 + e^{Z_i})\}*100$$

The ratings obtained will become the competitiveness indexes corresponding to the analysed countries.

For the purpose of benchmarking all the analyzed countries to Romania, all the R_i ratings are normalized with Romania's rating, by using the following formula:

$$CC_i = R_i / R_{ro}$$

Thus, the *creative capacity* of Romania has been assigned the value 1 and is compared with the scores obtained by the other analysed countries.

The major difficulties encountered in our research reside in the lack of sufficiently extensive data series for the creative activities; the complete absence of information regarding certain indicators for different periods or countries; the lack of detailed information on certain creative activities, which leads to the calculation of some indicators based on aggregate information.

One of the main reasons for potentially obtaining underestimated indicator values is the fact that some creative activities have been completely left out from the calculations, due to the inexistence of statistical data (e.g. NACE 9 codes).

In spite of these omissions, the research results offer strong evidence that creative activities have a significant impact on the Romanian economy.

3. DESCRIPTIVE RESULTS

3.1. Measuring the direct economic impact of creative industries

The direct economic impact of creative industries is measured through their contribution to gross value added formation, to employment and exports.

Table 1.

Percentage of gross value added generated by creative industries (NACE rev 1)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
European Union (27 countries)	0,4	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,2
European Union (25 countries)	0,4	0,3	0,3	0,3	0,3	0,3	0,2	0,2	0,2	0,2
European Union (15 countries)	0,4	0,3	0,3	0,3	0,3	0,3	0,2	0,2	0,2	0,2
Belgium	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,1		
Bulgaria										
Czech Republic	0,5	0,5	0,5	0,4	0,3	0,3	0,3	0,2	0,2	0,2
Denmark	0,1	0,1	0,1	0,1	0,1	0,0	0,1	0,1	0,1	0,0
Germany	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1	
Estonia	1,1	1,1	1,0	1,0	0,9	0,7	0,7	0,6	0,5	0,4
Greece	0,7	0,7	0,6	0,7	0,6	0,5	0,4	0,4	0,6	0,7
Spain	0,5	0,5	0,4	0,4	0,4	0,3	0,3			
France	0,3	0,3	0,3	0,2	0,3	0,2	0,2	0,2	0,2	0,2
Italy	0,9	0,9	0,8	0,8	0,8	0,7	0,7	0,7	0,7	
Cyprus	0,4	0,3	0,3	0,2	0,2	0,1	0,1	0,1	0,1	0,1
Latvia		0,8	0,8	0,9	0,8	0,7	0,6	0,4	0,3	0,3
Lithuania	2,3	2,3	2,1	1,9	1,6	1,5	1,3	1,0	0,8	
Luxembourg	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Hungary	0,8	0,8	0,7	0,6	0,4	0,3	0,3	0,3	0,3	0,2
Netherlands	0,1	0,1	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Austria	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Poland	0,6	0,6	0,5	0,5	0,5	0,4				
Portugal							0,9	0,8		
Romania	**1,5**	**1,6**	**1,6**	**1,6**	**1,4**	**1,3**	**1,1**	**1,1**	**1,0**	**1,0**
Slovenia	0,9	0,8	0,7	0,6	0,6	0,5	0,4	0,4	0,4	0,3
Slovakia	0,8	0,8	0,8	0,8	0,7	0,6	0,6	0,6	0,5	0,4
Finland	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Sweden	0,1	0,1	0,1	0,0	0,1	0,0	0,0	0,0	0,0	
United Kingdom										
Iceland										
Norway	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0		
Switzerland	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1

Source: own calculations, based on data from EUROSTAT

The calculations reveal the relatively higher contribution of creative industries, approximated through activities corresponding to the NACE rev 1 codes, in the total gross value added in Romania (around 1% for the latest data available), as compared to other European countries, as well as to the European average (situated at about 0.3% for the last ten of years).

As far as the percentage of people employed in creative industries is concerned, the numbers show that Romania has one of the most labour intensive creative sectors in Europe; while the percentage of people employed in the creative industries is among the largest in Europe (2.7%, as compared to 0.6% in the EU), the productivity is decreasing, further explaining the downward trend in the contribution to GVA.

Table 2

Percentage of employment in the creative industries (NACE rev 1)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
European Union (27 countries)	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6
European Union (25 countries)	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4
European Union (15 countries)	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4
Belgium	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	:
Bulgaria	:	:	:	:	:	:	:	:	:	:
Czech Republic	1.2	1.2	1.1	1.0	1.0	0.9	0.7	0.6	0.6	0.6
Denmark	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Germany (including former GDR)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	:
Estonia	2.6	2.7	2.8	2.1	1.9	2.3	2.2	1.9	1.7	1.4
Ireland	:	:	:	:	:	:	:	:	:	:
Greece	1.7	1.5	1.4	1.3	1.1	1.1	1.0	1.0	0.9	0.9
Spain	1.0	0.9	0.8	0.7	0.7	0.6	:	:	:	:
France	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	:
Italy	1.5	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.1
Cyprus	1.0	0.9	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2
Latvia	1.8	1.7	1.8	1.7	1.6	1.4	1.3	1.2	1.1	1.0
Lithuania	3.0	3.2	3.2	3.4	3.3	2.8	2.6	2.3	1.9	:
Luxembourg	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hungary	2.5	2.4	2.2	2.1	1.7	1.5	1.4	1.2	1.0	1.0
Malta	:	:	:	:	:	:	:	:	:	:
Netherlands	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Austria	:	:	:	:	:	:	:	:	:	:
Poland	:	:	:	:	:	:	:	:	:	:
Portugal	:	:	:	:	:	2.6	2.5	:	:	:
Romania	**2.6**	**2.7**	**3.7**	**3.5**	**3.7**	**3.5**	**3.4**	**3.0**	**2.7**	**3.0**
Slovenia	2.1	1.9	1.7	1.5	1.4	1.2	1.1	1.0	0.9	0.7
Slovakia	2.0	2.0	1.9	1.9	2.0	1.7	1.6	1.3	1.1	1.2
Finland	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Sweden	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	:
United Kingdom	:	:	:	:	:	:	:	:	:	:
Iceland	:	:	:	:	:	:	:	:	:	:
Liechtenstein	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	:	:
Switzerland	:	:	:	:	:	:	:	:	:	:
Former Yugoslav Republic of Ma...	6.5	6.9	6.7	7.2	7.7	7.6	7.6	8.0	7.8	6.9

Source: own calculations, based on data from EUROSTAT

The analysis of the GVA/employee, used as a proxy for the sector productivity level, indicates that Romania is positioned far below the EU level (with an almost five times lower productivity level), suggesting that the creative activities developed are not generating a high level of value added.

Table 3

Comparative analysis creative sector – overall economy, Romania and EU

	total GVA, mil EUR	GVA creative ind, mil EUR	total employment, 000 people	employment creative, 000 people	GVA/employee, EUR	creative GVA/employee, EUR
European Union (27 countries)	11.115.382,5	26.971,0	227.691,6	1.474,6	48.817,7	18.290,4
European Union (25 countries)	10.969.127,1	25.569,8	214.500,4	1.072,7	51.138,0	23.836,9
Romania	**99.723,50**	**997,0**	**9.365,9**	**281,4**	**10.647,50**	**3.543**

Source: own calculations, based on data from EUROSTAT

As can be observed in the table below, the decomposition of the total creative value added indicates that activities such as "television programming", "market research", "computer programming" have the highest productivity level, and the highest contribution to the overall generation of gross value added.

Table 4

Gross value added/employee, Romania, top 10 activities

NACE Rev.1	NACE Rev.2	Creative industry	EUR, 2009
O922	J602	Television programming and broadcasting activities	329,0
K7413	M732	Market research and public opinion polling	247,0
	J591	Motion picture, video and television programme activities	217,0
K722	J620	Computer programming, consultancy and related activities	198,0
K743	M712	Technical testing and analysis	179,0
O922	J601	Radio broadcasting	176,0
K726	J639	Other information service activities	174,0
K742	M711	Architectural and engineering activities and related technical consultancy	173,0
DE223	C182	Reproduction of recorded media	164,0
K7221	J582	Software publishing	164,0

Source: own calculations, based on data from EUROSTAT

The analysis of creative industries exports has revealed the fact that Romania is positioned very close to the European average (2.61% of all exports in Romania, as compared to 2.84 at the EU level), which indicates a high intensity of creative industries exports. It is also worth emphasising that the trend of creative activities exports is ascending, at a faster pace than similar exports at European level.

3.2. Measuring the indirect economic impact of creative industries

The secondary economic impact of creative industries indicates the extent to which creative activities represent intermediate outputs for other downstream industries and induce production, thus creating spin-off effects, as well as the extent to which creative industries are using inputs from other upstream activities.

In order to measure the secondary economic impact of the creative industries and determine the intensity of the inter-industry links, for the purpose of selecting the target-sectors that are most likely to enhance the internal coherence of the economy, the intermediate consumption input-output tables have been used and the upstream and downstream intensity links indexes have been computed.

In the analysis we have employed the OECD database and we have also used the OECD classification by 36 industries of the Romanian economy for the period 2000-2010. For the calculation of the indexes U_j, U_i, V_j and V_i we have used the total consumption matrix B (domestic production and imports).

Our results indicate that sectors which include creative activities, namely "Research & Development", "Computing and office equipment industry", "Cellulose, paper and cardboard and paper and cardboard items", "Other service activities for companies", "Information technology and related activities", and "Wholesale and Retail" generally have below average values for both the upstream and the downstream links intensity indexes. The activities with a downstream index value above one, indicating that they supply intermediate inputs above the overall economy average are "Research & Development" (1.02) and "Computing and office equipment"(1.24). On the other hand and as expected, these are sectors that consume intermedi-

ate products below average, which is reflected in the U_j scores of 0.58 and 0.78, respectively. The cellulose, paper and cardboard and paper and cardboard items industry is a sector using intermediate products slightly above the average (1.01) and supplies intermediate products close to the average (0.99). All the other creative activities use and supply intermediate inputs/outputs below the economic branches' average.

It is also worth noticing that our results confirm the potential of "research and development" to induce changes in the total economic demand/consumption, the highest among the creative activities analyzed (with a Vi score of 0.99).

The activity with the highest upstream integration level is "Wholesale and retail trade", while also having a high level of influence on upstream industries.

Table 5

Upstream and downstream intensity links indexes, 2000-2010; (*) represent activities with a creative constituent

Item. no.	Processing Branches	Indicators' Values:			
		Uj	Ui	Vj	Vi
1	Electrical machines and devices industry	0,98	1,01	0,13	0,13
2	Industry of road transport means	0,48	1,01	0,02	0,16
3	Wood processing industry	0,73	1,01	0,08	3,60
4	Textile industry and textile products, textile clothing, furs and leathers	0,89	1,01	0,21	0,93
5	(*) Research, development	0,58	1,02	0,03	0,99
6	Industry of medical devices and precision instruments, optical and clock-making instruments	0,52	1,03	0,02	0,15
7	Industry of metallic constructions and metallic products	1,02	1,09	0,57	0,12
8	Rental of cars and equipment	1,78	1,09	0,42	0,19
9	Production of rubber items and plastic materials	1,30	1,11	0,50	0,18
10	Manufacturing of equipment for mechanical energy production and use	0,83	1,12	0,43	0,16
11	Non-metal mineral products manufacturing	0,83	1,12	0,15	0,19
12	Ore extraction and preparation	2,85	1,13	0,89	0,18
13	Other transport equipment	0,58	1,19	0,03	0,20
14	Coke, crude oil and nuclear fuels processing	0,57	1,24	0,14	0,13
15	(*)Computing and office equipment industry	0,78	1,24	0,07	0,16
16	Basic chemical products manufacturing	1,43	1,24	1,27	0,30
17	Production and distribution of electric power	2,66	1,32	1,26	0,14
18	Basic metals	1,68	1,48	0,43	0,18
19	Public administration and defence, mandatory social assistance	0,44	0,67	0,00	0,16
20	Education	0,46	0,71	0,00	0,19
21	Mail, courier and telecommunications activities	1,15	0,73	0,25	0,07
22	Financial, banking and insurance activities	0,91	0,75	0,27	0,11
23	(*) Wholesale and Retail	1,90	0,76	1,40	0,71
24	Real Estate Transactions	0,83	0,78	0,12	0,13
25	(*)Data processing and related activities	0,56	0,80	0,02	0,13
26	(*)Other services activities for companies	0,66	0,87	0,05	0,12
27	Transport and storage	1,53	0,88	0,70	0,11
28	Agriculture, hunting economics, forestry and fishing	1,26	0,90	25,08	17,92
29	Hotels and restaurants	0,62	0,91	0,07	1,57
30	Industry of equipment for radio television and communications	0,54	0,94	0,03	0,12
31	Other collective, social and personal services activities	0,97	0,95	0,21	0,29
32	Health and social assistance	0,46	0,95	0,02	0,34
33	Manufacturing industry; recycling	0,49	0,99	0,01	1,05
34	Manufacturing of food products, drinks and tobacco industry	1,00	0,99	0,73	4,14
35	Constructions	0,70	0,99	0,25	0,21
36	(*) Industry of cellulose, paper and cardboard and of items made from paper and cardboard	1,01	0,99	0,12	0,51

Source: own calculation, based on OECD Input-Output tables

3.3. Estimating the tertiary and quaternary impact of creative industries.
Determining creative capacity and creative competitiveness

The evaluation of the tertiary and quaternary impacts of creative activities starts from the hypothesis that creative industries function as upstream activities and that the economic value they generate can multiply into the economic system as they are used and traded by other industries, thus improving the creative capabilities of the overall economy and potentially increasing its creative competitiveness.

An economy is assessed to derive competitiveness from creative activities if its creative capabilities are increased through the use of interlinked creative activities that contribute towards increasing the creative vitality.

For estimating the tertiary and quaternary economic impact, we have employed an adapted and extended version of the methodology proposed by Chartrand, by adding indicators and constructing them in order to better delineate the contribution of creative industries to stimulating the *creative capacity* of European states.

The creative capacity ratings calculation and the evaluation of the creative industries role as an activator of economic growth have been undertaken by constructing and computing a system of indicators on three dimensions, used as proxy and built according to the above mentioned methodology:

The results obtained for each of the composite indicators, subsequently used for constructing the creative capacity index, are shown below.

For the *creative workforce index*, the aggregate results for each indicator and for the entire analysed period reveal that the values registered in Romania are the lowest in Europe; the innovative capability, calculated using innovation expenses and the degree of innovation at company level has one of the lowest levels in Europe. The social diversity index has a comparatively higher value for all European states, determined by the high level of life satisfaction and a low level of the Gini coefficient. Overall, considering also the size of the creative class, Romania ranks the last among the European countries, while having a growth rhythm above the European average.

As far as the *creativity market index* is concerned, our results indicate that Romania has significantly higher values of the creative exports as compared to all the other calculated indicators, compensating for the low GDP/capita, as well as for the low level of value added generated by creative activities. Considering the aggregate value of the creativity market index, Romania ranks before Poland, Slovakia, Bulgaria and Lithuania as a consequence of its performance determined by creative exports. It is important to emphasize that the value added generated by creative activities, even though raking among the lowest in Europe, has increased significantly (the indicator has evolved from 2.5 in 2006 to 3.63 in 2009).

The results obtained for the *creative infrastructure index* are also ranking Romania as the last among the European countries, as a combined effect of the values computed for property rights protection and freedom from corruption. Nonetheless, the business freedom indicator, measuring the quality of the business environment indicates a better position for Romania by comparison with other European countries.

Starting from the results previously obtained and by employing the explained methodology, we have constructed a creative capacity index, aimed at benchmarking Romania's creative capabilities.

The creative capacity index positions Romania by comparison to other European countries, indicating the potential of the Romanian social and economic environment to constitute a localization advantage for companies in the field of creative industries.

As far as the indicators for creative are concerned, the only countries with creative capacities lower than Romania are Lithuania, Slovenia and Bulgaria. Even though Romania has one of the lowest GDP per capita among the analysed countries, except for Bulgaria, the score obtained for the creativity market index is determined by the level of value added generated by creative activities and exports of creative goods and services. For this indicator too, countries which are ranking lower than Romania are Slovenia, Slovakia, Lithuania and Bulgaria.

As far as the contribution of infrastructure-related indicators to the creative capacity, namely the regulatory framework of creative activities, Romania has a weak raking by comparison to the other European

countries especially for the indicator revealing the protection of intellectual property. The business infra-structure, however, is more conducive to the development of creative activities than in many other European countries, including the Czech Republic, Greece or Hungary.

Table 6

The aggregate Creative Capacity Index

| CREATIVE CAPACITY INDEX	MANPOWER			MARKETS			INFRASTRUCTURE INDICATORS		
	Social diversity	Size of creative class	Innovative capability	Copyright Exports	GDP per capita	VA	Business Freedom	Property Rights	Freedom From Corruption
Austria	3,35	4,48	1,15	0,70	3,87	1,10	1,37	5,11	4,42
Belgia	2,95	6,51	1,23	0,42	3,59	1,24	2,01	4,60	3,72
Bulgaria	3,07	2,13	0,93	0,76	0,97	0,96	0,81	0,95	1,43
Cehia	2,55	3,00	1,60	0,72	2,17	1,03	0,44	3,64	1,79
Finlanda	1,43	7,03	1,08	0,67	3,57	1,16	2,12	5,17	4,95
Franța	1,77	6,15	1,75	0,84	3,25	2,38	1,77	3,64	3,72
Germania	1,10	5,61	2,35	1,42	3,59	2,61	1,87	5,11	4,19
Grecia	1,71	2,97	1,53	0,56	2,69	1,03	0,94	2,06	1,63
Ungaria	2,73	3,82	0,99	1,63	1,59	1,03	0,94	3,64	2,08
Irlanda	3,53	5,78	1,25	0,66	4,30	1,19	2,03	5,11	3,81
Italia	2,76	4,82	1,81	0,82	3,12	1,95	1,20	2,06	2,01
Lituania	0,93	3,25	0,95	0,41	1,40	0,95	1,57	2,06	1,85
Norvegia	1,90	7,87	1,27	1,40	5,15	1,09	1,89	5,11	4,62
Polonia	1,36	2,82	1,15	0,73	1,35	1,11	0,25	2,06	1,25
Romania	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
Slovacia	3,33	2,82	0,94	0,67	1,79	0,97	0,81	2,06	1,69
Slovenia	0,79	3,19	0,94	0,68	2,52	0,96	1,15	2,23	2,96
Spania	1,06	3,80	1,62	1,30	3,12	1,57	1,20	3,64	3,41
Marea Britanie	3,36	7,36	2,76	1,30	3,58	2,62	1,93	5,11	4,48

Source: own calculations
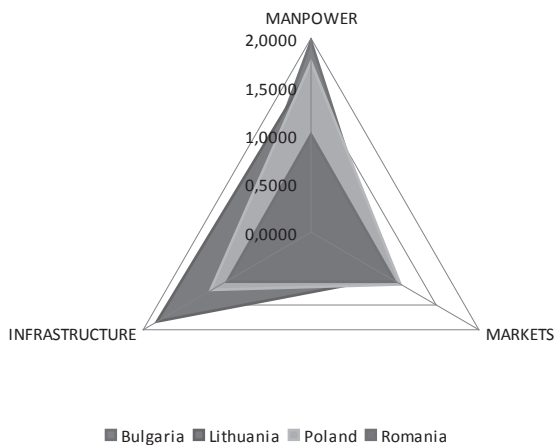
Figure 1. Romania's creative competitive profile by comparison with other European countries
Source: own calculations.

The results of the competitiveness index calculation illustrate how Romania distances itself from the other European countries, ranking in the last positions and demonstrating the need to stimulate creative potential reserves in order to close this gap. The differences in value among each of the aggregate indexes represent a potential indication of the catch-up strategy that Romania would need to implement in order to fuel creative vitality. Since the most encouraging competitiveness level has been obtained for the creativity market index, the export potential that Romania has for creative goods and services has been confirmed as being able to generate the highest creative potential. Therefore, the conduciveness of the domestic environment for increasing creative competitiveness relies on the export capacity.

4. CONCLUDING REMARKS

The academic debate about issues such as the definition and structure of creative competitiveness, the possibility and techniques for assessing it, the proper scale of analysis (national, regional or firm), the crucial variables (macroeconomic or microeconomic), as well as the involvement of public policy is still ongoing.

Still, one of the most important outcomes of these debates is the realization of the fact that creative industries development can lead to economic growth. A 2010 report on the global creative economy by the United Nations Conference of Trade and Development concludes, "In 2008, despite the 12 percent decline in global trade, world trade of creative goods and services continued its expansion, reaching $592 billion and reflecting an annual growth rate of 14 percent during the period 2002-2008. This reconfirms that the creative industries have been one of the most dynamic sectors of the world economy throughout this decade."

With the current recession, creative industries seem to have gained even more currency in the academic and public discourse; they are credited with the potential to kick-start sustaining growth courses under increasing global competition and shrinking financial resources. Nurturing the development of creative activities is increasingly considered by governments as a way of rebalancing their economies. While in the US the federal government is set to play a more active role in catalysing creative clusters, the European Commission is also launching a strategy to support the development of such clusters across Europe.

Under this framework, the analysis of Romania's creative capacity, as well as of its creative competitiveness reveals that the creative activities potential to stimulate economic growth remains largely unexploited. The proposed methodology for measuring the impact of creative industries on the Romanian economy, as well as for determining its creative capacity and, ultimately, its creative competitiveness provides an operational framework in an area where little prior research exists. Our research also revealed Romania's creative capacity gaps as compared to other European countries, which are likely to affect its creative competitiveness if not properly addressed.

The results obtained confirm that one of the possibilities for maximizing the propagation effects that creative activities can have on the overall economy would be to strengthen the upward and downward links between industries using creative inputs and all other industries, as well as to multiply the interference between research and development activities and other industries. Moreover, attracting and employing creative talent can prove to be an important factor for stimulating innovation, for exploring new sources of value added generation, for adding flexibility to local production processes and for developing creative clusters, as a source of intelligent and self-sustainable economic growth.

The major insights gained through this research suggest a quantitative creative competitiveness assessment methodology that could serve as a framework for further research. Since creative clusters have been documented in the literature as the appropriate form of spatially organising creative activities, the identifica-

tion of these clusters, as well as the actual mapping of the Romanian creative industries can constitute a key challenge for further empirical research in this area.

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