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Measuring Creativity in the EU Member States

Carlos Miguel Correia*, José da Silva Costa**

ABSTRACT: With the increasing role of creativity in economic growth, researchers have gained great interest in the study of the creative economy and placed it as an important topic in their research and political agendas. Given the increasing importance attributed by researchers and policymakers to the concept of creativity and creative economy, the increasing interest of researchers in defining and estimating indexes of creativity is no surprise. These indexes provide analytical tools to assess the economic impact of the creative economy and are useful to measure the effectiveness of political decisions. In this paper we compare twelve selected indexes of creativity and we identify their strengths and weaknesses. Then, based on the evaluated indexes of creativity, we propose a new one. Estimating the proposed index of creativity, we compare our results with Florida's global creativity index (Florida *et al.*, 2011).

JEL Classification: O30; O31.

Keywords: Creativity indexes; creativity; innovation.

Medición de la Creatividad en los Estados Miembros de la UE

RESUMEN: El continuo crecimiento del papel de la creatividad en el crecimiento económico ha generado un creciente interés entre los investigadores por el estudio de la economía creativa, convirtiéndola en una cuestión muy relevante dentro del ámbito político y de la investigación. Esta creciente importancia del concepto de la economía creativa ha generado un gran interés por la definición y la estimación de índices de creatividad. Estos índices son una herramienta analítica de gran utilidad para evaluar el impacto económico de la economía creativa, así como para la medición de la efectividad de medidas políticas. En este trabajo comparamos doce índices de creatividad alternativos identificando sus ventajas e inconvenientes. Posteriormente, basándonos en los índices de creatividad evaluados, proponemos uno nuevo. Los resultados obtenidos en la estimación mediante este nuevo índice de creatividad se comparan con los del índice de creatividad global de Florida desarrollado en Florida *et al.* (2011).

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Clasificación JEL: O30; O31.

Palabras clave: Índices de creatividad; creatividad; innovación.

1. Introduction

Creativity is a complex phenomenon with multiple dimensions and there is no simple definition capturing all of them. A psychological definition of creativity is «the process of producing something that is both original and worthwhile» (Csíkszentmihályi, 1999). There are many other definitions with slightly divergent meanings, but all of them generally agree with the one aforementioned. Although this definition claims that creative products have some kind of value, it can be of many different kinds and it is not necessarily economic. It can be social, historical, personal, cultural or symbolic. In fact, for a long time it was presumed that creativity was something without economic value and unsusceptible of economic analysis. That is one of the reasons why economists have ignored this subject for research, when compared to other science fields such as psychology and sociology.

Creative Economy is an «evolving concept, based on creative assets potentially generating economic growth and development» (United Nations, 2010), that consists of «all those activities which have their origin in individual creativity, skill and talent, and which have a potential for wealth and job creation through the generation and exploitation of intellectual property» (Department of Culture Media and Sports, 1998). These activities result from the action or interaction of enterprises, organizations and individuals in a creative place (New England Foundation for the Arts, 2007), and can be delineated according to their type of intellectual property: copyright, patent, trademark and design (Howkins, 2001).

Creativity and its importance to economic development is now more than ever a subject of debate and research, both by academic and political institutions. The creative economy is developing fast as it integrates and influences the rest of the economy. The value of world trade of creative goods and services reached \$624 billion in 2011, and that more than doubled from 2002 to 2011 (United Nations, 2013).

With the increasing role of creativity in economic growth, policymakers placed creativity as an important topic in their political agendas. The pioneer country was the United Kingdom by establishing the Creative Industries Task Force in 1997. Many other countries followed this trend and some are noteworthy. Flanders was the first region to organise the «Creativity World Forum» and one of the founders of the «Districts of Creativity Network» whose conferences have become a world benchmark in creativity discussion, with the participation of government leaders, entrepreneurs and knowledge institutions from the network. In 2002, the Australian Government has developed a report called «Creative Industries Cluster Study» (Department of Communications, Information Technology and the Arts, 2002). In the same year, the New Zealand Institute of Economic Research published the «Creative Industries in New Zealand: Economic Contribution» (New Zealand Institute of Eco-

conomic Research, 2002). More recently in 2011, Brazil has created the Secretariat for the Creative Economy under control of the Department of Culture. Almost every state of the United States of America has a public department, institution or organism dedicated to creativity as a motor of economic development and growth. Also many Asian countries are researching and investing on the creative economy. African countries are starting to take part on creativity matters which they see as a motor to revitalise less developed economies. The European Commission launched the European Year of Creativity and Innovation 2009. Its main goal was to raise awareness to the importance of creativity and innovation, contribute to economic prosperity as well as to social and individual wellbeing. Corporations have also perceived the importance of fostering creativity both in workers and managers and the necessity of deepening the knowledge about this phenomenon.

Given the increasing importance attributed by researchers and policymakers to the concept of creativity and creative economy, it is no surprise the increasing interest of researchers in defining and estimating indexes of creativity. These indexes provide analytical tools to assess the economic impact of the creative economy and are useful to measure the effectiveness of political decisions.

To compare twelve selected indexes of creativity and to identify their strengths and weaknesses was a first motivation in this paper. Then, based on the comparison done, we constructed a new index of creativity and estimated it for the EU member states. Finally we evaluate our index comparing our results with Florida's results (Florida *et al.*, 2011).

This paper is organized in the following way: in section 2, we present a comparison of twelve selected indexes of creativity; in section 3, we propose a new index; in section 4, we use the proposed index to measure the creativity on EU-27 at country level; finally, in the last section we present some conclusions.

2. A Comparison of Twelve Indexes of Creativity

We have selected, by a chronological order, twelve indexes of creativity that we consider to be the most relevant and indubitable references in creativity indexes literature. Then, we present a brief description of these indexes and we compare them identifying their strengths and weaknesses.

In the book «The Rise of The Creative Class» Richard Florida (2002) has pointed out the importance of the creative economy and has presented the concept of «creative class» in an occupational point of view, defined into two major sub-components: «super-creative core» and «creative professionals». Florida argues that policymakers should focus on «people climate» rather than on «business climate», that is, instead of investing on attracting firms and capital, cities should invest on its attractiveness to creative people. According to the author, the creative class is a key factor in economic development and those cities capable of attracting creative people are more likely to succeed, because this class includes those who are more innovative, more entrepre-

neurial and attract creative enterprises. He explains the geographical distribution of the creative class based on a 3T model: talent, tolerance and technology.

The «Creative Community Index» (SV-CCI) stems from a collaborative project between the Knight Foundation, Americans for the Arts, the City of San Jose Office of Cultural Affairs and Cultural Initiatives Silicon Valley (2002). In the SV-CCI the indicators are organized into four categories:

Outcomes - the desired outcomes of a healthy cultural life, broad-based creativity, social connectedness among diverse people and contribution to the quality of life in Silicon Valley;

Participation - residents' participation in arts and cultural activities, including the extent to which diverse people participate together;

Assets - the mix of cultural assets present in the community, including talent in the creative sector (non-profit, public and private), venues and facilities, and the aesthetic quality of our environment;

Leverage - the extent to which we leverage and build our cultural assets and encouraging peoples' interaction with them through arts education, leadership, investment, and policies.

A few years later, Florida, in a joint work with Irene Tinagli, designed his model to fit European reality (Florida and Tinagli, 2004). The main changes were made in the «tolerance» sub-index which was built based on a completely different set of indicators with a more subjective nature. Nevertheless, it keeps the main hypothesis of Florida's Creative Capital Theory whose relevance is proven empirically for European regions.

The Hong Kong Creativity Index (HKCI) was developed by the Centre for Cultural Policy Research of the University of Hong Kong and commissioned by Home Affairs Bureau, The Hong Kong Special Administrative Region Government (2004). The HKCI framework builds on a 5C's model: creativity outcomes; structural/institutional capital; human capital; social capital; cultural capital. The HKCI comprises 88 indicators. This option increases the difficulty of collecting data and analysing it, but, on the other hand, results in a more complete and effective assessment of a region's creativity and allows to extend the scope of indicators to other important dimensions.

The Czech Creative Index (CZCI) was developed by Kloudova and Stehlikova (2007), based on Florida's model and its index dimensions: «talent», «technology» and «tolerance». Their main concern was to analyse the creativity overall and individual scores of Czech regions in terms of regional similarities and geographic location. According to the authors, creative regions tend to cluster; there is spatial autocorrelation between creative regions, where individual regions affect one another and the neighbouring regions are similar; the hypothesis about the formation of a creative core or centre in Czech Republic was rejected.

The Composite Index of the Creative Economy (CICE) was developed to measure the creative capacity and capability of the Flanders District of Creativity regions (Bowen *et al.*, 2008). This index has three key dimensions: «innovation», «entrepreneurship» and «openness». These categories are clearly inspired in Florida's theory, but the CICE extends the selected indicators to new aspects such as business activity and ICT infrastructure. This index stands out by proposing an innovative method to

determine the weight that each indicator has on the index global value. Normally, in order to ease the index calculation, it is adopted a simple aggregation procedure which consists of assigning equal weights to each indicator which can be perceived as attributing the same importance to each dimension. Unequal weights can be determined based on the opinion of experts, but, this is an expensive procedure, not to mention that is a subjective judgement. The methodology proposed by the CICE selects the set of weights that maximise the index value for each region. A good performance in a particular dimension can reveal that it should be given a higher priority and each region will have its own set of weights.

The Creative City Index (J-CCI) was developed by the Fukuoka Benchmarking Consortium in the context of an international conference in 2008 (Fukuoka Benchmarking Consortium, 2008). The approach used in the construction of this index is noteworthy due to the classification of the selected indicators. The index comprises seventy-eight indicators which are separated into two main categories: «fundamental» and «flow» factors. This differentiation is useful for an evolutionary analysis of a creative city.

The European Creativity Index (ECI) was developed by KEA European Affairs as part of a study conducted for the European Commission (2009). The major purpose of this study was to extend the indicators of existing indexes to a dimension specifically related to arts and culture. This index comprises thirty-two indicators organized into six pillars: «human capital»; «openness and diversity»; «cultural environment»; «technology»; «institutional environment»; «creative outputs».

The Baltimore Creativity Index (BCI) was developed by Acs and Megyesi (2009) that adapted Florida's model in order to assess the potential of transforming Baltimore, a traditionally industrial region, into a creative region. Although BCI is essentially identical to FCI, a fourth dimension is included in the index: «territory». It accounts for territorial and communal amenities, also focusing on a «wage inequality index» and «housing affordability index». The study points out to the importance of Baltimore's geographical proximity to Washington, DC, a recognised creative and high-tech epicentre.

The Landry's Creative City Index (L-CCI) was developed in 2009 by Charles Landry and Jonathan Hyams in collaboration with Bilbao and the Bizkaya region (Landry, 2010). Very few details have been released to the public about the indicators and metrics used. On his website, Landry only identifies ten dimensions that characterise a creative place (political and public framework; distinctiveness, diversity, vitality and expression; openness, trust, tolerance and accessibility; entrepreneurship, exploration and innovation; strategic leadership, agility and vision; talent and the learning landscape; communication, connectivity and networking; the place and place making; liveability and well-being; professionalism and effectiveness).

The Creative City Index (CCI-CCI) was constructed for the Beijing Research Centre for Science of Science (BJSS), Beijing Academy of Science and Technology (BJAST) (ARC Centre of Excellence for Creative Industries and Innovation, 2012). The CCI-CCI comprises seventy-two indicators grouped into eight dimensions (creativity industries scale and scope; micro-productivity; attractions and economy of

attention; participation and expenditure; public support; human capital; global integration, openness, tolerance and diversity). The first three dimensions are new inclusions in indexes.

Recently, the Martin Prosperity Institute (Florida *et al.*, 2011) published the results of a new index of creativity (The Global Creative Index – GCI) for eighty two countries using data for the period 2000 to 2009. Twenty five countries are EU member states. The index, as the other indexes developed by Richard Florida, considers three dimensions: technology (R&D as a percentage of GDP; professional researchers engaged in R&D per million capita; patents granted per capita); talent (rate of enrolment in tertiary or post-high school education; share of country’s labour force engaged in a higher degree of problem solving in their everyday work); tolerance (survey on tolerance towards ethnic and racial minorities; survey on tolerance towards gays and lesbians).

Table 1. Checklist of Indexes Dimensions and Indicators

<i>Dimensions</i>		<i>Indexes</i>											
		<i>1. FCI</i>	<i>2. SV-CCI</i>	<i>3. F-ECI</i>	<i>4. HKCI</i>	<i>5. CZCI</i>	<i>6. CICE</i>	<i>7. J-CCI</i>	<i>8. ECI</i>	<i>9. BCI</i>	<i>10. L-CCI</i>	<i>11. CCI-CCI</i>	<i>12. GCI</i>
1	Human Capital, Creative Class and Education	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Openness / Diversity / Tolerance	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
3	Cultural Environment and Tourism		✓		✓			✓	✓		✓	✓	
4	Technology and Innovation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	Regulations and Financial Policies		✓		✓				✓		✓	✓	
6	Employment, Outputs and Outcomes		✓		✓				✓			✓	
7	Entrepreneurship		✓		✓		✓	✓			✓		
8	Infrastructure				✓						✓	✓	
9	Liveability and Amenities						✓			✓	✓	✓	
10	Branding and Notoriety		✓								✓	✓	
Number of Indicators		9	11	9	88	6	8	78	32	9	?	72	7

FCI-Florida’s Creative Index (2002); SV-CCI – Silicon Valley’s Creative Community Index; F-ECI – Euro Creativity Index; HKCI – Hong Kong Creative Index; CZCI – Czech Creative Index; CICE – Composite Index of the Creative Economy; J-CCI – Creative City Index; ECI – European Creativity Index; BCI – Baltimore Creativity Index; L-CCI – Landry’s Creative City Index; CCI-CCI – Creative City Index; GCI – Global Creative Index.

Two of the indexes are developments of the first index constructed by Florida in 2002 (F-ECI; GCI). The CZCI and BCI indexes are similar to Florida’s creativity index, but they stand out because more attention is attributed to territory. The other

indexes are quite different in what concerns the number and type of indicators, the included dimensions, the underlying theoretical framework and the adopted methodology. Table 1 presents a checklist of the indicators covered by the indexes, organised into ten dimensions which we take as key creative aspects and which comprise all the indicators. These dimensions will also serve as a basis for the construction of our own index.

Table 2. Indexes Strengths and Weaknesses

<i>Index</i>	<i>Strengths</i>	<i>Weaknesses</i>
1. FCI	One of the most popular, successful and discussed indexes with high acceptance by policymakers. Focuses on «People climate» instead of «business climate».	Too broad definition of creativity, including industries and occupations beyond the so-called creative. Limited number of dimensions to assess such a complex phenomenon as creativity.
2. SV-CCI	Emphasises the importance of culture for creativity, technological progress and social connectedness.	Built on personal interviews and surveys which makes it very specific to Silicon Valley and difficult to use in other regions.
3. F-ECI	The first rank of European countries.	Only 14 European countries analysed.
4. HKCI	Comprises 88 indicators which make the index more complete and effective.	The large number of indicators also increases the difficulty of collecting data and analysing it.
5. CZCI	Introduces spatial matters into the analysis.	Only tested in Czech Republic.
6. CICE	Proposes an innovative method to determine weights: endogenous weighting	Reduced number of dimensions and indicators.
7. J-CCI	Differentiation between fundamental and flow factors, focused on the analysis of cities evolution over time.	Does not provide information about methodology and metrics.
8. ECI	Very good set of dimensions and a proper number of indicators. Specifies the data sources.	Not tested empirically. Data sources only at country level.
9. BCI	Spatial dimension added to the analysis through territorial amenities and the study of proximity impact on creativity.	Only analyses Baltimore.
10. L-CCI	Ten dimensions well explained with an efficient coverage of creativity. Uses both an internal and an external assessment and a web based survey.	Methodology and metrics not revealed to public.
11. CCI-CCI	Gathers the best of all previous indexes and presents some new indicators.	Ignores an important dimension: entrepreneurship.
12. GCI	Covers 82 countries; improvements in the measurement of tolerance	Limited number of dimensions.