



CREATIVE CITIES: THE POTENTIAL OF PORTUGUESE CITIES

by

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Biography

Carla Isabel Pinto Oliveira was born in Oporto on 19 May of 1982 and did all her studies in Oporto and suburbs.

In 2000 she entered to Faculdade de Letras do Porto where she graduated in 2004 in Geography. In the same year she joined Faculdade de Engenharia do Porto and in 2007 she obtained a master degree in Environment Planning and Urban Project, focusing her studies in urban planning and natural hazards, especially in preventing forest fires.

In 2008 she started working as consultant in urban and regional planning, namely in the application of QREN funds. Since 2009, she has been working in urban and regional planning consultancy and project management in a Regional Development Agency. As professional aims, she intends to improve her knowledge about the various dimensions of the territory, so that her work may be more sustained in the long run.

Hence, in order to increase her knowledge about economy and city management, she joined the *Mestrado em Economia e Gestão das Cidades* of Faculdade de Economia do Porto in 2009.

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Abstract

The Creative Cities emerge today as the territorial expression of the Knowledge Economy, illustrating the importance of creativity and economic growth in developing regions. These cities have on one hand a number of features that make them more attractive for the Creative Class, and on the other hand, the Creative Class itself promotes the existence of these same characteristics. Identifying these characteristics is important in assessing the potential of a city as a Creative City and for increasing its attractiveness. For this purpose, the existence of indexes to measure the potential of a city and to set policies for intervention is essential. To set an index it is important to identify the variables that illustrate the creative potential of a city, and then to apply this index to cities under evaluation. Additionally, the creative potential of a city should always be assessed in relation to other cities.

In this work, after the identification of the variables that influence the potential of creativity of a City, we define a Composite Index of Creativity to evaluate this potential, which can be applied either to cities or other geographical units. We applied our index to Portugal, namely to regions NUTS 3 of Portugal mainland and to the municipalities of *Area Metropolitana do Porto*.

Keywords: creative cities, index of creativity, regional policy, Portugal

JEL-codes: Z1, R51

Resumo

As Cidades Criativas surgem na actualidade como a expressão territorial da Economia do Conhecimento, ilustrando a importância da criatividade no desenvolvimento e crescimento económico das regiões. Estas cidades, por um lado apresentam uma série de características que as tornam mais atractivas para a Classe Criativa, e por outro lado, a Classe Criativa fomenta a existência destas mesmas características. A identificação destas características é importante na avaliação do potencial de uma cidade enquanto Cidade Criativa e no fomento da sua atractividade. Para este objectivo é fundamental a definição de índices que permitam medir o

potencial de uma cidade e construir políticas de intervenção. Para definir um índice será importante, em primeiro lugar, a identificação das variáveis que ilustram o potencial criativo de uma cidade, e posteriormente a aplicação desse índice às cidades em avaliação. Atente-se que o potencial criativo de uma cidade deverá ser sempre avaliado em relação a outras cidades.

Neste trabalho, após a identificação das variáveis que influenciam o potencial de criatividade de uma cidade, definimos um Índice Compósito de Criatividade para avaliar esse mesmo potencial, que poderá ser aplicado quer a cidades quer a outras unidades geográficas, tendo aplicado o mesmo à realidade portuguesa, nomeadamente às NUTS 3 de Portugal Continental e aos municípios da Área Metropolitana do Porto.

Palavras chave: cidades criativas; índice de criatividade, política regional, Portugal

JEL-codes: Z1, R51

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1. Introduction

Contemporary societies are characterized by intense processes of change, which in most cases brings several constraints to the cities. *“Today many of the world’s cities face periods of transition largely brought about by the vigour of renewed globalization”* (Landry, 2000, p. xiii). Cities have experienced a dramatic shift, away from their economic base in manufacturing and distribution, to service-orientated activities - mainly, banking, finance and insurance, and management consultancies. The fact that manufacturing jobs have declined and moved to other locations, has led to a relative and absolute predominance of service activities (Pratt, 2009). During these transition periods, most of the physical, economic and cultural infrastructures become misfit, and demand a reorientation. This situation requires the adoption of policies for urban regeneration.

Creativity, nowadays, is seen as a mean of promoting urban regeneration, by fostering a creative economy. *“Creativity is inherent in anything to doing with renewal and regeneration and is open to all”* (Trueman and Cook, 2006, p. 3). The Creative Economy attracts people, generates employment and revitalizes cities.

Landry (2000) states that creativity on its own does not provide the solution to urban problems, but at least it gives decision-makers an idea about how innovations can emerge, and some new ways of thinking about the city and how to understand urban dynamics.

The relationship between creativity and the promotion of urban development, as well as the recognition of cultural and creative activities in promoting economic and territorial development, has been recognized by many academics. In fact, there is a growing consensus between politicians and academics about the importance of creativity in revitalizing the cities. As Hall (2000, p. 640) states:

“Nations and cities have passed at extraordinary speed from a manufacturing economy to an informational economy and from an informational economy to a cultural economy. (...) Culture is now seen as the magic substitute for all the lost factories and warehouses, and as a device that will create a new

urban image, making the city more attractive to mobile capital and mobile professional workers.”

The Creative Economy is then seen as a form of urban regeneration in all its dimensions. Additionally culture, as a way of promoting the Creative Economy, is seen as the catalyst to form this type of economy. Culture is a way of articulating community needs and it can contribute to regeneration by incrementing participation in, and ownership (Evans, 2005).

Creativity is not economics; however, the relationship between Creativity and Economy can produce value and wealth, reflected in a spread of patents, copyright, trademarks, and another intellectual property (Howkins, 2001). This result is the Creative Product, which is defined “*as an economic good or service that results from creativity and has economic value*” (Ibid, p. X).

The cities comprise the majority of the population (United Nations, 2006) and thus have a key role in the economic development of countries. Cities are the face of nations; they increase the attractiveness of a country, as long as they are competing among themselves.

The Creative Economy aims at revitalizing traditional industries of manufacturing, services and entertainment. Moreover, the economic dimension of creative activities affects other areas such as urban regeneration. The presence of artists, students, art galleries, bars, etc. is a plus for the recovery of devitalized areas. Cities are increasingly crucial to improve competitiveness, citizenship and life quality. “*Creativity, as the new economic force, changes the way cities compete*” (Acs and Megyesi, 2009, p. 421).

It is a fact that in today's world, where urban competitiveness is strong and it is necessary to create spots of distinctive and unique attraction, creativity can play a more important role than just revitalize: it can even generate new and stronger urban spots.

Based on these assumptions, there are many cities that have already distinguished themselves as Creative Cities, which are highlighted by the presence of talent and innovation. Several cities have invested in digital media city districts and variants in industrial-scale facilities, like Poble Nou (Barcelona @22), Fashion City and World Jewellery Centre (Milan), Orestad (Copenhagen), and creative precincts in

Helsinki (Arabianranta) or Toronto (MaRS) (Evans, 2009). We can also refer Hollywood (Scott, 2010), Manningham, an inner city quarter of Bradford (Trueman and Cook, 2006), Montreal (Cohendet *et al.*, 2010), Hoxton (Pratt, 2009) and Wollongong, in New South Wales, Australia (Waitt and Gibson, 2009).

Although research about the Creative Economy has tended to assume that large cities are the core of creativity, we cannot ignore that many workers in ‘creative’ industries choose to live and work in small urban centers, which illustrates the importance of rethinking the Creative Economy in place (Waitt and Gibson, 2009).

Richard Florida (2002; 2003; 2005) developed a series of works about the creative economy, focusing on the role played by what he calls the Creative Class. Florida states that “*creativity is a fundamental and intrinsic human characteristic*”, and so, “*all human beings are creative and all are potentially members of the creative class*”, although, only a few “*are fortunate enough to be paid to use their creativity in their work*” (Florida, 2003, p. 8). Florida only states that creative centers are succeeding because creative people want to live there. The question is why. Why do some places attract more creative people and develop Creative Cities and others do not? Florida (2003, p. XX) identifies what he calls the “3Ts of economic development” – Technology, Talent and Tolerance – as “*the key to understand the new economic geography of creativity and its effects on economic outcomes lies*. According to this author, the 3Ts are all critical elements to attract creativity and members of the creative class, with each element being a necessary but itself insufficient condition. So, “[*t*]o attract creative people, generate innovation and stimulate economic development a place must have all three.”

In addition to the 3T’s list, Acs and Megyesi (2009), in a case study where they evaluate Baltimore as a Creative City, refer the Territory as a fundamental dimension in the development of a Creative City. Territory accounts for territorial and communal amenities. Other authors, for example Carta (2009, p.3), also considered the 4T’s.

In Portugal, a creative city is a flag in urban promotion initiatives. Given the decline of the historic centers of major cities, it is necessary to develop new centers of attraction, as it stimulates both the regional and international competitiveness.

In Portugal, many municipalities have embarked on projects to promote their city as a Creative City, such as Óbidos and Porto. Some initiatives have also been

supported by European Union funds, which once again set the perspective of the Creative Economy as a new development paradigm.

Florida and Jacobs (Hospers and Dalm, 2005) say that despite a Creative City cannot be built from scratch, it is still possible to build for the creative city. Hospers (2003b, p. 143) also says that “*knowledge, creativity and innovation cannot be planned from scratch by local governments. However, creative cities par excellence such as Austin and Barcelona demonstrate that local policymakers in fact can play a part in preparing cities for the requirements of the knowledge economy*”.

It is essential the presence of several factors, such as the 3Ts reported by Richard Florida - Tolerance, Technology and Talent (Florida, 2002; 2003; 2005), and the 4th T dimension- Territory, referred by Acs and Megyesi (2009), to ensure the success of any creative city that could emerge.

The Portuguese situation has very distinct traits comparing to the American reality, and it is also different from what happens in most European countries. So, it is imperative to assume that the success factors for the development of a Creative City in Portugal, and probably in the Mediterranean countries, have to face some specific factors although being inspired by the Anglo-Saxon literature.

So, which factors can contribute to the creation of a Creative City in the Portuguese reality? And what is the potential of some territories as creative hubs?

Starting with the premise that creativity and Creative Industries are means for promoting not only urban regeneration, but also the competitiveness and attractiveness of cities, our work has three main objectives: (i) identify the success factors for the development of a creative city in Portugal; (ii) based on these factors, create an index for assessing the potential for creativity that exists in the cities; (iii) and, given the high investment in creative activities in some regions in Portugal, evaluate the potential success that each of them can have as Creative Cities, or Creative Municipalities.

The structure of the work is the following: first, a critical literature review focused on Creative Industries and Creative Cities will be developed and the main underlying concepts will be highlighted; second, based on the conclusions drawn from the previous section, an index of the creative potential of Portuguese cities will be constructed; finally, this index will be applied to Portuguese reality. Given that cities in Portugal are not administrative units and there are not many data available for that

geographic unit, the index will be applied to the scale of NUTS 3 and given the huge investment that is expected for the Creative Industries in the North Region of Portugal, particularly in *Área Metropolitana do Porto* (Fundação de Serralves, 2008), the index will be also applied to municipalities that integrate it.

2. On Creativity, Economics and Geography: a literature review

“Nearly 70 years ago, in a marvellous essay, Keynes predicted that eventually the world might reach the position where we no longer need to care about the basic economic problem of survival that has plagued the human race since beginning of time, but are able at last to do only the things we find agreeable and pleasurable. He unforgettably wrote: Thus for the first time since his creation man will be faced with his real, his permanent problem—how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest have won for him, to live wisely and agreeably and well” (Keynes in Hall, 2000, p. 641).

A sequence of transformations that have occurred in the economy and the society during the XX century allowed the emergence of new kinds of working, living, and being in our days. In the first part of the XX century, urban success generally meant specialization in manufacturing. The declining of transport costs and the lower relative importance of manufacturing explain why, at the beginning of the XXI century, successful cities have moved from manufacturing into other industries (Glaeser and Saiz, 2003). *“The 21st century’s economy is a knowledge economy”* (Hospers, 2003a, p. 260), where new activities have achieved an important role in the cities and in people’s life. Hartley (2005, p. 1) argues that *“creativity will be the driver of social and economic change during the next century”*.

In the Creative Economy, regional advantage is more often in places that can quickly assemble the talent, resources, and capabilities essential to turn innovations into new business ideas and commercial products (Florida, 2005). Thus, the Creative Economy and Creative Activities represent an important role at present economy, and they are important factors in territories’ competitiveness and economic regeneration.

2.1 Defining concepts: Creative Economy, Creative Industries and Creative Cities

Peter Hall defines the Creative Economy as “*the marriage of art and technology*” (Hall, 2000, p. 647). Cultural activities, allied to innovation and technological development can generate important kinds of business. However, the development of knowledge and innovation is not only about new technologies: innovation is possible as well in the field of organization, marketing and logistics (Hospers, 2003b). Creativity is more than just culture: it is also a way of making money and generating economic activities with new ideas. The Creative Economy is a result of combining economic activity with a highly educated segment of the workforce around a wide variety of creative individuals, promoting the raise of a diverse range of industries such as technology, entertainment, journalism, finance, high-end manufacturing and art (Stern and Seifert, 2008). Thus, Creative Economy is a kind of economy where the focus is centred in Creative Individuals and Creative Industries.

Florida (2005, p. 49) argues that “*Knowledge and creativity have replaced natural resources and the efficiency of physical labour as the sources of wealth creation and economic growth. In this new era, human capital, or talent, has become the key factor of production*”. Landry (2000) agrees and refers that creative resources, as culture, are the fresh materials of the city and its value basis, replacing coal, steel or gold. Evans (2009) claims that the Creative Economy encompasses design products, experiences and services that have captured increasing proportions of consumer surplus through distinction, and have reduced the economic price sensitivity between luxury and basic or functional goods. So, people are encouraged to consume products not only because of their function but also because of their design and their affordable price. It is a new way of consuming art.

So, we can assume that the Creative Economy is a field of the economy where the focus is on developing something new or having a new idea, which is capable of promoting the creation of more activities around that, generating jobs and money; and this creativity can be brought by culture, innovation, new activities or products. Landry considers Creativity as a kind of multifaceted resourcefulness involving the capacity to assess and find one’s way solutions for intractable, unexpected, unusual problems or

circumstances. He recognises that Creativity is context dependent and that the traditional view of artists, and possibly scientists, as the principal generators of creativity could be widened to include people operating in politics, business and social organisations, in teams, groups and as individuals. In fact, Creativity runs throughout a project, and cities need creative implementers as well as innovative new ideas. “*Creativity is the ability to generate something new*” (Howkins, 2001, p. ix). Howkins (2001) argues that all kinds of Creativity must have three essential conditions: personality, originality and meaning. The personality refers to the individual, because only people are creative. People are fundamental in the creative process. Originality refers to something being new, or reworking something that already exists. The meaning aims to create a relationship between namer and named; it could have a personal or trivial meaning. This condition is psychological, because it is subjective and it will diverge from each one. The meaning that the creative person gives frequently differs from the way that people look at it.

Flew (2005) argues that the interest in Creativity within the Knowledge Economy comes from the idea that everyone is creative, or has creative potential (Florida, 2002, 2003, 2005; Howkins, 2001). The knowledge-based economy promotes knowledge generation and creativity as the central activities of economic and urban growth mechanisms, and literature indicates a strong correlation between creative places and economic growth. “*In recent years the concept of creativity has come to the agenda of urban planning and development, and given birth to a number of new concepts. Creative city, creative class, creative capital, creative economy, creative industries, creative milieu are among these new concepts used by many scholars and urban policy makers*” (Durmaz *et al*, 2008, p. 1). So, it is necessary to create mechanisms to promote the roots for the establishment of the Creative Economy and for that to rise not only in the individuals, but in all community, in the city, or territory.

Porter (2005) argues that there is a paradox in economic geography of our era, an era of global competition. On one hand, “*it is widely recognized that changes in technology and competition have diminished many of the traditional roles of location*” (*Ibid*, p. 259) which has contributed to a loss of the importance of location. On the other hand, if we consider economic geography from a microeconomic based perspective, we see that clusters have a significant role in global economy. Porter (*Ibid*) emphasizes the

importance of clusters in the Creative Economy, because clusters are geographical concentrations of related industries, with specialized suppliers, service providers, and firms, in a particular field that compete but also cooperate, maximizing the services and infrastructures. These clusters are important features in all economy scales because “*clusters represent a new unit of competitive analysis along with the firm and industry*” (*Ibid.*, p. 260). Once more, it is recognised the importance of geographic space to settle a Creative Economy. In the Creative Economy these clusters are frequently linked with Creative Industries. Creative Industries are usually located in Creative Clusters or in Creative Sectors because of the advantage of agglomeration, and Creative Clusters and Creative Sectors are commonly used as synonyms (Evans, 2009).

The term Creative Industries started to be used after the late 1990s (Pratt, 2008). The term became known after the UK Creative Industries Task Force produced its first mapping document, in 1998 (DCMS, 1998). As defined by the UK’s Department of Culture, Media and Sport (DCMS, 1998; 2000), Creative Industries are those activities that 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. The Creative Industries include several activities such as: advertising; antiques; architecture; crafts; design; fashion; film; leisure software; music; performing arts; publishing; software; TV and radio. Moreover, Flew (2005) claims that the concept of Creative Industries is related to the increase of the Knowledge Economy and the growing importance of innovation, research, development, investment in Information and Communication Technology activities (ICTs), education and training.

Hartley (2005) suggests that Creative Industries are major components of advanced economies and represent an important part of core industries in many cities. The concept of Creative Industries seeks to illustrate the theoretical and practical convergence of the Creative Arts (individual talent) with Cultural Industries (mass scale), in the context of New Media Technologies (ICT’s). Hence, Creative Industries are based on individuals with creative arts skills, in alliance with technology, making marketable product, with an economic value laying in their cultural or intellectual properties. Hartley also argues that the Creative Industry is itself a product of local history, and so, the idea of Creative Industries varies geographically, depending of the heritage and circumstance.

Creative Industries can promote and distinguish cities, which became known due to the importance of some of their most important creative industries, like Hollywood, worldwide known because of the cinematographic industry. These cities are called Creative Cities. As cultural resources are embodied in people's creativity, a Creative City aims to create the conditions in which people think, plan, and act creatively.

Hall (2000) was the first of several recent authors to explore the concept of a Creative City and the conditions for a creative business environment. However, he limited his view of creativity to a cultural perspective and argues that, in most urban centres, economies have moved from manufacturing to an information and cultural base in a short time period. Hence, we may state that it is not a simple task to indicate precisely what a creative city is. *"The creative city is a phenomenon that belongs to every era, but that no single city always shows creativity. In the course of history we come up against various types of creative cities: technological-innovative, cultural-intellectual, cultural-technological and technological-organisational cities."* (Peter Hall in Hospers, 2003a, p. 262)

Florida (2005, p. 1) claims that *"[c]ities are cauldrons of creativity"*. Cities have always been the vehicles for mobilizing, concentrating, and conduit human creative energy, and to turn that energy into technical and artistic innovations, new forms of commerce and new industries.

Creative Cities are spaces you want to be in, because the Creative City is a city that is attractive to, and populated by, a creative class who works in the New Economy, or more likely in high-tech and bio-tech (Tay, 2005; Pratt, 2008). The city has a particular role in the New Economy because cities retain their importance in economic and creative development; consumption and innovation are implicated in strategies for social, economic and political revitalizations, and despite the importance of virtual communication, face to face interaction, networking and trading remains essential (Landry, 2000; Tay, 2005).

Durmaz (2008) argues that a Creative City is an entity that could be developed through Policy, with a well designed creativity strategies; Economy, with a strong presence of Creative Industries, and through Society by a creative community.

Costa (2007) claims that territory is very important in the development of Creative and Innovative Activities and so most of these activities are developed in urban spaces, and in some cases specifically in metropolitan areas.

These several perspectives about Creative Cities converge in many points and leave us with two issues: one is that cities are producers of creative individuals and activities, and are simultaneously producers of consumers of those activities and creative products. That is why cities are so important to the Creativity Economy. The Knowledge Economy asks for Creative Cities because cities are in the root of the economy. Hospers (2003a, p. 260) says that “*Cities are the locations par excellence where knowledge, creativity and innovation flourish.*”; it is precisely in a world that is becoming increasingly more integrated, that cities must lean more and more heavily on their specific local characteristics. Moreover, with their unique characteristics each city must define the dimensions in which it excels and in which it can distinguish itself in the competition with other cities in the Knowledge Economy (Hospers, 2003a).

Cohendet *et al.* (2010, p. 92), to better define the notion of Creative Cities, suggest three different layers as the basic components of the creative processes in local innovative: the Underground (the level of individuals), the Upperground (the level of formal firms and institutions) and the Middleground (the level of communities) milieus. The Upperground is the level of formal institutions such as creative or cultural firms or institutions, whose specific role is to bring creative ideas to the market; the Underground brings together the creative, artistic and cultural activities taking place outside any formal organization or institution based on production, exploitation or diffusion; the Middleground appears as a critical intermediate structure linking the Underground to the Upperground. The Middleground is the essence of the creative city and the basis for understanding how the creative, artistic and cultural industries on one side and the individuals who work in related occupations on the other side interact in creative processes (Cohendet *et al.*, 2010).

Creative Cities in the modern world are typically organized around production systems marked by shifting interfirm networks and flexible labour markets (Hospers, 2003; Scott, 2010). These structures provide an essential framework for high levels of information generation and interchange, and for frequent experimentation by individual firms in regard to industrial processes and products. One important relation that is

established in the Creative City is the duality that exists between the production system and the urban cultural environment, which ideally enhances and potentiates one and each other (Scott, 2010).

One of the origins of the concept of Creative City lays in thinking about why some cities seem to have adjusted to change over the last two decades: cities like Barcelona, Sydney, Seattle, Vancouver, Helsinki, Glasgow, Rotterdam, Dublin, etc. These and other thriving cities seem to have made economic and social development work for them (Landry, 2000).

In the next subsection, we will detail the crucial characteristics of the creative city and also the main issues associated with this concept.

2.2 The Creative City: main characteristics, success factors and major constraints and threats

Landry (2000, p.105) considers that “[t]here are a number of preconditions for a city to be truly creative and if creativity is to embed itself into the organizational fabric of a city.” He defines at least seven groups of factors, with a series of indicators developed for each: Personal qualities; Will and leadership; Human diversity and access to varied talent; Organizational culture; Local identity; Urban spaces and facilities; Networking.

The *Personal qualities* are important because there can be no creative organizations or cities without creative individuals. These creative individuals need to be brought into play at strategic points because, though not everyone in the creative city needs to be creative, it depends on a critical mass of open-minded, courageous and fresh thinkers (Landry, 2000). The Personal qualities for Landry have the same aim as Talent for Florida.

Landry uses the *Will and Leadership* as a way of being; he states that the creation of will involves seven qualities as defined by Assagoli (1973 in Landry 2000): harnessing energy, dynamism and intensity; discipline and control; concentration, focus and attention; resolve, readiness and a willingness to make decisions; patience, perseverance and tolerance; initiative and courage; and the capacity to organize,

integrate and synthesize. It is also necessary a degree of generosity, empathy and understanding. These are the characteristics of the leaders; and the cities need leaders. A Creative City has leaders of all kinds, in entrepreneurial and public, business and voluntary bodies. Leaders must define what they want their city to be, and establish the goals to get there.

Human diversity and access to varied talent converge for the social and demographic conditions. Landry (2000), as Florida, recognizes the importance of ethnic mixture in opposition to xenophobia. “*A lively civil society usually depends on a history of tolerance*” (Landry, 2000, p. 111).

With the *Organizational culture*, Landry means the form in which organizations are structured. Organizations that tend to be hierarchical, over-departmentalized and internally focused, which have too much bureaucracy, are less innovative.

Local identity is important because “*strong identity has positive impacts and creates the preconditions for establishing civic pride, community spirit and the necessary caring for the urban environment*” (Landry, 2000, p. 118).

Urban spaces and facilities converge for the idea of Territory used by Acs and Megyesi (2009). This dimension corresponds to the conditions of the public space, urban centers, meeting places, public and cultural facilities.

“*Networking has two aspects: networking within a city and networking internationally*” (Landry, 2000, p. 125). As Scott (2010) claims, creativity flows in a globalized world, where connections are essential and the existence of networks is basic.

Trueman and Cook (2006), based on Hall (2000), Florida (2003), Landry (2000), Hospers (2003a, 2003b) and Scott (2006), synthesize ten dimensions for Creative Cities: Technology and research; Innovation; Culture; Diversity; Identity; Profile; Leadership; Networks; Instability and Security. “*These ‘creative ingredients’ should be coordinated into a distinct profile that differentiates itself from other quarters or cities, providing a positive image for inward investment and a supportive network and leadership for progress to be made*” (Trueman and Cook, 2006, p. 7).

Based on several authors, and adapting the Trueman and Cook (2006) proposal, we have defined four dimensions that explain the success of Creative Cities (Table 1):

Human Capital; Geography and Physical Environment; Social Environment; and Economic Environment.

Table 1 – Success Factors of Creative Cities

	Human Capital	Geography and Physical Environment	Social Environment	Economic Environment
Hall (2000)	<ul style="list-style-type: none"> • Original knowledge and competencies. 	<ul style="list-style-type: none"> • Transport and communications networks. 	<ul style="list-style-type: none"> • Diverse milieu (different cultures and individuals); • Structural instability (community in constant change). 	<ul style="list-style-type: none"> • Imbalance between needs and opportunity jobs; • Flexible financial base.
Landry (2000)	<ul style="list-style-type: none"> • Human diversity; • Personal qualities; • Creative individuals; • Will and leadership. 	<ul style="list-style-type: none"> • Urban spaces and facilities. 	<ul style="list-style-type: none"> • Tolerance; • Local identity; • Safety and security; • Resources: information and leadership; • Organizational Culture. 	<ul style="list-style-type: none"> • Networks; • Innovative environment; • Critical mass: urban space.
Florida (2002, 2003, 2005)	<ul style="list-style-type: none"> • Creative class; • Talent. 	<ul style="list-style-type: none"> • Concentration of people. 	<ul style="list-style-type: none"> • Tolerance (gay index). 	<ul style="list-style-type: none"> • Relative importance of high tech activities (high tech index); • Relative importance of innovation efforts (innovation Index: as patents per capita); • Technology.
Hospers (2003a; 2003b)	<ul style="list-style-type: none"> • Human and cultural diversity. 	<ul style="list-style-type: none"> • Diversity (mix of work and residential space); • Concentration, density of interaction; • Positive image of the territory. 	<ul style="list-style-type: none"> • Instability (community in constant change). 	<ul style="list-style-type: none"> • Innovation-technology; • Major cultural technological events.
Scott (2006, 2010)	<ul style="list-style-type: none"> • Low skilled and high skilled labour mix. 	<ul style="list-style-type: none"> • Internationalization • Agglomeration; • Dense networks, • Interdependent clusters. • Joint ventures and strategic partnerships. 	<ul style="list-style-type: none"> • Historical and cultural traditions; • Camaraderie; • Diverse life styles; • Instability and flexibility of social dynamics. 	<ul style="list-style-type: none"> • Creative-filed environment; • Distinctive goods and services; • Diverse industries and life styles.
Pratt (2008, 2009)		<ul style="list-style-type: none"> • Proximity to big places (global cities). 	<ul style="list-style-type: none"> • Intrinsic value in culture and cultural practices that attract creative people. 	<ul style="list-style-type: none"> • Labour pool - high-tech industries; • Creative clusters.
Cohendet et al. (2010)	<ul style="list-style-type: none"> • The <i>Underground</i> (Creative, artistic and cultural individuals). 		<ul style="list-style-type: none"> • Importance of communities; • <i>The Underground</i> (creative, artistic and cultural activities). 	<ul style="list-style-type: none"> • Innovative firms and institutions (<i>The Upperground</i>); • Firms with financing capacity.
Stern and Seifert (2007; 2008)			<ul style="list-style-type: none"> • Cultural diversity; • Tolerance. 	
Carta (2009)			<ul style="list-style-type: none"> • Cooperation; • Cultural diversity; • Communication. 	
Acs and Megyesi (2009)		<ul style="list-style-type: none"> • Territory; • House in affordability (attract people to live there). 		

The Human Capital dimension covers both the characteristics of individuals and the community when understood as subject. The dimension of Geography and Physical Environment incorporates the physical characteristics of the territory, covering elements as location, climate, amenities, transports, etc.. The Social Environment dimension covers the characteristics of the society in terms of how it works as a group. Finally, the Economic Environment dimension is related to the economic base, capturing the features of market functioning and economic activities. All these dimensions are supported by the related literature that we explore next.

The 1st dimension, called Human Capital, refers essentially to people. Jane Jacobs argues that *“Just like all cities, creative cities are about people.”* (Jane Jacobs in Hospers and Dalm, 2005, p. 8) Just as people cannot be planned from scratch, creative places in the city are just like living beings: they are born, grow, decay and can rise again. Jacobs claims that the streets are the vital organs of the creative city, and it is the street’s intrinsic dynamics that contributes to creativity and economic growth.

Landry (2000) agrees with Jacobs, arguing that people are the cities’ crucial resource because human cleverness, desires, motivations, imagination and creativity are replacing location, natural resources and market access as urban resources. *“The creativity of those who live in and run cities will determine future success.”* (Landry, 2000, p. xiii)

For Richard Florida these people are the Creative Class, *“if you are a scientist or engineer, an architect or designer, a writer, artist or musician, or if you use your creativity as a key factor in your work in business, education, health care, law or some other profession, you are a member.”* (Florida, 2002, p. xxvii) However, creativity is not limited to members of this Creative Class, because all workers may be creative in certain valuable ways. Florida (2003) defines the core of the creative class as those professionals whose economic function is to create new ideas, new technology and/or new creative content. He includes a group of creative professionals who may be in business, finance, law etc., and although he sees working class and service class as mostly paid to execute according to plan, he does recognise that creativity is not

restricted to some individuals. Like Landry, he recognises that creativity is a social process (Trueman and Cook, 2006, p. 4).

Durmaz *et al.* (2008) claims that in a knowledge-based economy, human capital is regarded as an engine of economic and social growth, and has gained an equivalent importance comparing to physical and financial capital. Moreover, the human capital theory is now being replaced by the theory of “creative capital”, which primarily concerns creative people, the creative class (*e.g.*, professionals in architecture, arts, design, and media), as the source of creativity. *“In this new era, creativity concept is also gaining an increased prominence amongst urban planners and policy makers, influencing the development strategies of cities, and luring the attention towards creative industries as a significant driver of urban growth”* (*Ibid.*, p.1).

Florida (2003) recognizes that creativity is an intrinsic human characteristic and that all human beings are creative and potential members of the creative class. Places where the creative class concentrates are called “creative centres”, which are places that tend to be economic winners of our age. These places are succeeding because creative people want to live there. He also states that concentration is the “new geography of creativity”:

I define tolerance as openness, inclusiveness, and diversity to all ethnicities, races, and walks of life. Talent is defined as those with a bachelor’s degree and above. And technology is a function of both innovation and high-technology concentrations in a region” (Florida, 2003, p. 10).

Human Capital, especially Creative People, or Creative Class, is recognized as being one of the most important dimensions for the success of a Creative City.

Scott (2010, pp. 199-200) argues that *“in today’s world, the reach of many cities extends well beyond immediate national boundaries, and cities with a strong incidence of creative sectors are generally in the vanguard of this trend.”* Globalization is filled with both threats and opportunities for the creative cities: urban agglomeration is actually intensifying across much of the new economy, and the forms of economic competition that exists, especially between creative cities, are increasingly tending to varieties of monopolistic competition. Many of the most dynamic firms in creative cities

all over the world are engaged in international networks of creative partnership with one another, and decentralization is also in evidence in certain segments of the modern economy. A large scale agglomeration is one of the necessary (but not sufficient) conditions for the emergence of creative cities as distinctive geographic units on the contemporary global landscape. This connection has two main points: decreased costs of the many, varied and constantly, changing transactional relations; and, creation of networks of specialized and complementary producers, that tend to generate flows of positive externalities (Scott, 2010). Additionally, the existence of networks (Hall, 2000), internationalization and important and strategic partnerships are essential to promote urban attractiveness.

Pratt (2009), on the other hand, considers that the important location is not only at the city centres, but also proximate to big places, because rents are cheaper and the agglomeration effect also can be felt. The contributes of Scott (2006, 2010) and Pratt (2008, 2009) conduct us to the 2nd dimension that we call Geography and Physical Environment (Table 1), focused on the importance of geographic location and territory characteristics to the emergence and survival of a Creative City. As mentioned before, Acs and Megyesi (2009) add Territory to Florida's 3 T's, defining 4 T's: Territory accounts for territorial and communal amenities. The amenities and the physical characteristics of environment can promote attractiveness to the city and increase its potential as a Creative Place. Hospers and Pen (2008) also defends that a positive image of the city is critical, stressing the importance of territorial marketing.

The Social Environment is the 3rd dimension, identified by several authors as essential (Stern and Seifert, 2007; Carta; 2009, Florida, 2005). Stern and Seifert (2007) argue that communities with striking differences based on social class, ethnicity and household structure are consistently more likely to have high cultural participation, house many cultural groups, and provide studios and shelter for artists. *“Research in Philadelphia, San Francisco, Atlanta, and Chicago has documented the range and depth of the connection between social diversity and the arts”* (Stern and Seifert, 2007, p. 3). We can say that these communities are more open to tolerance, and tolerance is seen as an important key to accept creativity (Florida, 2002, 2003, 2005; Landry, 2000; Stern and Seifert, 2007).

Carta (2009) defined “Three Cs” of the Creative City - Culture, Communication and Cooperation. Carta argues that the most important factor in terms of urban creativity is Culture, which encompasses the city’s identity: *“the talent of a city, its most distinctive and competitive resource, is its cultural identity, its diversity as a product of its history.”*(*Ibid.*, p. 1) Communication is the city’s ability to inform, divulge information and involve in real time its citizens and multitude of users. Cooperation is more than just tolerance; it is the explicit acceptance of diversity, through cooperation between all city residents, between city centres and suburbs, and all its diverse component parts.

Florida (2005) argues that despite immigrants are important to regional growth, other types of diversity exist that have proved being more important, like the gay population; the Gay Index is a good measure for diversity because it is strongly associated with regions with high-tech industry concentration. *“Gays not only predict the concentration of high-tech industry, they also predict its grow”* (*Ibid.*, p. 41). Florida states that homosexuality represents the last frontier of diversity in actual society.

Hospers and Pen (2008) argues that we cannot force creativity or “construct” a knowledge-intensive city; there are a few factors that can increase the chances of developing urban creativity and contribute to an urban knowledge economy. In general terms these factors are concentration, diversity and instability. *“Urban creativity is first stimulated by the presence of a substantial number of people at a certain location. Concentration leads to the critical mass required for sufficient human interaction and communication”* (Hospers, 2003a, p. 263). More important to creativity than cities are the people who live there. Diversity is *“not just variation between the citizens, their knowledge and skills and the activities they pursue, but also variation in the image the city projects as far as buildings are concerned”* (Hospers, 2003a, p. 264).

Instability is seen as social flexibility and constant mutation, but also as an important element to promote creativity and Creative Places (Hall, 2000; Hospers, 2003a; Hospers *et al*, 2008; Scott, 2006, 2010).

The 4th dimension is Economic Environment. This dimension is closely related to the other dimensions, and we can underline some factors crucial at this level such as

the presence of Technology and Innovation (Florida, 2002, 2003, 2005) and of Creative Clusters (Pratt, 2008, 2009).

After the overview of the relevant literature on the topic of creative cities, and since there is some vagueness concerning the ongoing debate, it is crucial to summarize the most important contributions of the several cited authors concerning the characteristics of a Creative City (Table 1). The most important dimensions of a Creative City, which are simultaneously main characteristics and success factors, are related to people (cultural consumers and producers); the existence of a creative class (individual qualities, talent); location (proximity to big places, geographical concentration); technological development, innovation; tolerance and cultural diversity, and the territory itself.

Most of the literature underlines the factors that increase the potential of a Creative City, and rarely refers to the constraints. When they do, they often mention one negative point: gentrification (Trueman and Cook, 2006; Landry, 2000; Waitt and Gibson, 2009; Stern and Seifert, 2008), which is a consequence but not a factor of development.

Gentrification is the major problem of Creative Cities (Trueman and Cook, 2006; Landry, 2000; Waitt and Gibson, 2009; Stern and Seifert; 2008). Creative transformations in places stimulate gentrification, especially in the inner city, and intensify processes that points away older working-class generations as deindustrialisation gains pace. *“Creative industries grow in ex-industrial and old residential innercity neighbourhoods, ‘funkifying’ them and contributing to escalating housing prices which further exclude the poor and displace those on low incomes (who have in turn lost jobs in heavy industries vacating such cities)”* (Waitt and Gibson, 2009, p. 1224).

Landry (2000) observes that artists are the harbingers of gentrification as they tend to congregate in run down areas and generate support structures of shops and services. *“They make the area respectable for subsequent more middle class incomers”* (Landry, 2000, p. 7). So, gentrification has two sides: on one hand it puts away the natural locals, but on the other hand it attracts higher classes to move there. This leaves us with a problem: where do people with lower incomes go?

In the next section of this work we will develop an index which allows us to evaluate the creative potential of cities, based on the dimensions of Creative Cities and their respective variables.

3. Measuring the creative potential of a city

The creative potential of a city can be measured through the analysis of the four dimensions described in the previous section. Capturing these dimensions demands, according to several authors (Acs and Megyesi, 2009; Carta, 2009; Cohendet *et al.*, 2010; Florida, 2002, 2003, 2005; Hall, 2000; Hospers, 2003a, 200b; Hospers and Pen, 2008; Landry, 2000; Pratt, 2008, 2009; Scott, 2006, 2010; and Stern and Seifert, 2007), considering a large number of variables in the analysis, as we can see in Table 2.

The dimension Human Capital can be measured by the importance of variables such as the qualification level of the population (Florida, 2002, 2003; 2005; Florida *et al.*, 2008; Glaeser and Saiz, 2003; Megyesi and Acs, 2009; and Trueman and Cook, 2006), the predominance of young adults (Florida *et al.*, 2008), and the number of foreign-born people in the region (Florida, 2002, 2003, 2005). Nevertheless, this last variable is also related to Social Environment, and because it is an important indicator at this level, we decided to consider it in this last dimension.

According to the literature, Physical Geography and Environment can be measured by variables such as climate (Glaeser and Saiz, 2003), proximity or presence of major urban centers (Pratt, 2008), or housing prices and rents (Acs and Megyesi, 2009), as a way of attracting residents. This last variable makes some areas more attractive and enhances the urban sprawl for them.

Social Environment can be captured by society tolerance (Florida, 2002, 2003, 2005; Florida *et al.* 2008; Megyesi and Acs, 2009; and Stern and Seifert, 2007). Tolerance can be measured, for example, by a Gay Index, which reports the number of gay couples (Florida, 2002, 2003, 2005; Florida *et al.* 2008; Megyesi and Acs 2009), or by ethnic diversity (Stern and Seifert, 2007).

Economic Environment is certainly the dimension that gathers more agreement among authors in what concerns its measurement. Professional occupation, counted as the number of occupations or employees in Creative Industries, is a key variable to measure the importance of this dimension (Boschma and Fritsch, 2009; Florida *et al.*, 2008; Evans, 2009; Megyesi and Acs, 2009; Waitt and Gibson, 2009). Also relevant in this dimension is the number of firms in Creative Industries (Howkins, 2001; Pratt,

2008). In Table 2 we present a distribution of the variables and methodologies referred in the literature, integrated in the 4 dimensions that we suggest.

In the assessment of the Economic Environment dimension it is also relevant considering a Technology Index, based on professions and jobs (Acs and Megyesi, 2009; Florida, 2002, 2003, 2005; Florida *et al.*, 2008). In addition, the importance of innovation may be captured for example by using the number of patents (Florida, 2002, 2003; Glaeser and Saiz, 2003).

Most of the literature uses descriptive statistics to characterize the creativity of the analyzed areas. From the authors who actually apply some kind of index Florida (2002, 2003, 2005), Florida *et al.* (2008), Boschma and Fritsch (2009), and Glaeser and Saiz (2003) stand out. Glaeser and Saiz (2003) use correlation analysis to establish relations between variables, but they did not create any index neither apply the results in geographic terms. Florida (2002, 2003, 2005) develop several indexes related to Creativity and its variables: Gay Index – Number of gay couples; Bohemian Index - Number of writers, designers, musicians, actors, directors, painters, sculptors, photographers and dancers; Innovation Index - number of Patents; Tech-Pole Index - number of persons with bachelor's degree and above and number of high tech industries; Melting Pot Index - foreign-born people in region. Based on these indexes, Florida creates two composite Indexes: Composite Diversity Index – Gay Index plus Bohemian Index and Melting Pot Index; and Creativity Index, which results from the sum of the Creative Class, the Gay Index, Innovation Index, and Tech-Pole Index, and represents the 3 T's: Talent, Tolerance, and Technology.

Boschma and Fritsch (2009) applied Florida's concept of Creative Class, and Technology, and use multivariate estimation models to analyze several European locations and offer a ranking.

The approaches by Florida, and Boschma and Fritsch are very interesting because composite indexes are most useful in connecting different dimensions as we want to integrate. So, these indexes can be a bottom line to build our own index.

Hence, based on the revised literature, we reinforce the idea that the above identified four dimensions are critical to the success of a Creative City. So, we systematize the variables that can be used to measure each dimension, having in mind the construction of an index for assessing the creative potential of cities. Moreover,

based on the literature, we also realize that the best way to evaluate creativity in cities is through a composite index.

Table 2 – Measuring the creativity of urban areas: categorization of studies by methodological approach

Author	Time Period	Geographic Unit	Methodological approach	Main explanatory variables (proxies)	Dimension of Creative City
Cohendet <i>et al.</i> (2010)	2003-2009; 2003-2004	City (Montreal)	Descriptive statistics	Number of workers in Creative Industries Presence of financing sources Number of events Number of firms in Creative Activities	Economic Environment
Scott (2010)	2006	City (Hollywood)	Descriptive statistics	Data from Picture Industry: revenues; percentage of establishments; percentage of employment	Economic Environment
Acs and Megyesi (2009)	1990-2000	Baltimore Metropolitan Statistical Area	Descriptive statistics (Florida (2002)'s Indexes in a scale of 0 to 1, + Dimension of Territory)	Tolerance - Gay index Bohemian index Migration (migration of population aged 25+; foreign-born population) Education level (population aged 25+ with a bachelor's degree or higher) Creative occupations (population aged 25-34) Technology index (Number of scientists, writers, artists, educators, architects, engineers, athletes, entertainers, etc.) Innovation index Wage inequality index House inaffordability index (Households paying less than 35% of incoming)	Social Environment Human Capital Economic Environment Geography and Physical Environment

Author	Time Period	Geographic Unit	Methodological approach	Main explanatory variables (proxies)	Dimension of Creative City
Boschma and Fritsch (2009)	2002	7 countries in EU (Denmark, England and Wales, Finland, Germany, The Netherlands, Norway and Sweden)	Multivariate estimation models	Creative occupations (ISCO 88) (Number of professionals)	Economic Environment
Evans (2009)		Cities	Descriptive statistics	Employment concentration in Creative Industries (number of Creative Industries; percentage of employment) Economic contribution of Creative Industries (incomes)	Economic Environment
Waitt and Gibson (2009)		City (Wollongong)	Quantitative (Descriptive statistics) and qualitative analysis	Employment in arts and recreation services (percentage of employed persons)	Economic Environment
Florida <i>et al.</i> (2008)		Cities (USA)	Correlation analysis	Creative class (Individual creative occupations) Sum of wages and income Tech pole index (Universities per capita)	Economic Environment
				Human capital	Human Capital
				Number of gays and lesbians	Social Environment
Pratt (2008)	10 years	City (Hoxton)	Participant observation; Interviews	Price of rents (cheap rents) Proximity to city (London) Creative class Creative clusters	Geography and Physical Environment Human Capital Economic Environment

Author	Time Period	Geographic Unit	Methodological approach	Main explanatory variables (proxies)	Dimension of Creative City
Costa (2007)		Portugal and Lisboa	Quantitative (Descriptive statistics) and qualitative analysis.	Value added generated in the cultural sector Branches of CAE considered for estimating the use of the cultural cluster in Portugal Municipal expenditure with local culture	Economic Environment
Stern and Seifert (2007)	1990-2000	City (Philadelphia)	Descriptive statistics	Ethnically diverse block groups (percent of block groups)	Social Environment
Trueman and Cook (2006)	2001; 2003	Inner City Quarter of Bradford (Manningham)	Descriptive statistics	Economic activity (percent businesses by economic activity; businesses with more than 50 employees) Qualifications (qualification degrees for population aged +16-74) Ethnicity (Number of persons by ethnicity)	Economic Environment Human Capital Social Environment
Glaeser and Saiz (2003)		Many different scales	Correlation analysis	Share of persons 25 or older with a bachelor's degree Colleges per capita in 1940 Murders per 1,000 population Patents per worker Unemployment rate Family income Wages and Manufacturing wages Museums Health establishments per capita Eating and drinking establishments per capita Amusement and recreational service establishments	Human Capital Social Environment Economic Environment

Author	Time Period	Geographic Unit	Methodological approach	Main explanatory variables (proxies)	Dimension of Creative City
Florida (2002; 2003)		Cities (USA)	Descriptive statistics - Index calculation; Correlation and rank	Tolerance - gay index (number of gay couples)	Social Environment
				Talent - bohemian index (number of writers, designers, musicians, actors, directors, painters, sculptors, photographers and dancers)	
				Melting Pot index (foreign-born people in region)	
				Composite diversity index	
				Technology - Tech-Pole index (number of persons with bachelor's degree and above; number of high tech industries)	Economic Environment
Howkins (2001)		Cities	Descriptive statistics	Core industries of the creative economy	Economic Environment
				Number of patents	
				Number of trademarks	
				Copyrights	

3.1 Defining a Creative Index

The creation of a composite index is an effective method for evaluating the creative potential of a city (Florida, 2002, 2003, 2005). As we already mentioned, this author has developed a series of indexes representing the dimensions he considers as crucial for the success of creative cities, and, based on these indexes, he calculates a Creativity Index that allows ranking different cities according to their creative potential.

Boshma and Fritsch (2009) analyze the regional distribution and economic effect of the Creative Class for 7 countries in EU, with the aim of testing some of Florida's arguments in different European countries. These authors propose three research questions: how big are the differences in the share of the creative class across European regions, and how concentrated is the regional distribution; what determines a region share of the creative population; and how does the creative class affects entrepreneurship, innovation and regional growth.

According to Boshma and Fritsch (2009), Florida's main hypothesis is that the Creative Class is a key driver of urban and regional growth. *"The creative class is not evenly distributed across space: not every city or region is equally well supplied with members of the creative class. Instead, the Creative Class is attracted to places that are characterized by, among other things, an urban climate of tolerance that is open to new ideas and newcomers. Its members have a nonconformist lifestyle that combines disciplined work ethics with hedonistic values"* (Boshma and Fritsch, 2009, p. 3). So, with the aim of defining and measuring the Creative Class, Boshma and Fritsch (2009) implement a three steps procedure. First, they adopt Florida's definitions of Creative Occupations, distinguishing the Creative Core, Creative Professionals, and Bohemians. The Creative Core are people whose economic function is to create new ideas, new technology and/or new creative content, like scientists, engineers, architects and professionals of design, education, arts, music and entertainment; the Creative Professionals are those who work in business areas and finance, law, health care and related fields; and the Bohemians are engaged in cultural and artistic occupations. Second, in order to achieve an international comparison, Boshma and Fritsch (2009) use the International Standard Classification of Occupations (ISCO 88) to select professions

that belong to the creative class at the three-digit level (see Table 3). Third, they assign these classifications to their national data sources in an effort to make the data as comparable as possible.

Table 3: The Creative Occupations

Groups of Creative People	Occupations (ISCO Code)
Creative core	Physicists, chemists, and related professionals (211)
	Mathematicians, statisticians, and related professionals (212)
	Computing professionals (213)
	Architects, engineers, and related professionals (214)
	Life science professionals (221)
	Health professionals (except nursing) (222)
	College, university, and higher education teaching professionals (231)
	Secondary education teaching professionals (232)
	Primary and preprimary education teaching professionals (233)
	Special-education teaching professionals (234)
	Other teaching professionals (235)
	Archivists, librarians, and related information professionals (243)
	Social sciences and related professionals (244)
	Public service administrative professionals (247)
	Creative professionals
Nursing and midwifery professionals (223)	
Business professionals (241)	
Legal professionals (242)	
Physical and engineering science associate professionals (31)	
Life science and health associate professionals (32)	
Finance and sales associate professionals (341)	
Business services agents and trade brokers (342)	
Administrative associate professionals (343)	
Police inspectors and detectives (345)	
Social work associate professionals (346)	
Bohemians	Writers and creative or performing artists (245)
	Photographers and image and sound recording equipment operators (3131) Artistic, entertainment, and sports associate professionals (347)

Source: Boshma and Fritsch (2009, p. 6)

Because of the special character of bohemian occupations, Boshma and Fritsch (2009) depart from Florida's approach which includes Bohemians in the Creative Core and, instead, create a separate category specifically for this purpose by using two different definitions of the Creative Class: Creative Class A, as the sum of the Creative

Core and the Creative Professionals; Creative Class B, which contains the Creative Class A, plus the Bohemians.

The use of Florida's indexes by Boshma and Fritsch (2009) is useful to analyze and compare regions in the Human Capital and Economic Environment Dimensions. However, it does not give us any information about the dimensions Geography and Physical Environment, and Social Environment, and as we have seen before, all the four dimensions are important to promote the success of Creative Cities. So, and to better represent the analysis in all the dimensions that we consider fundamental, we decided to create our own composite index. Therefore, we propose a new index that includes all four dimensions, and that we will call "Composite Index of Creativity".

3.2 Composite Index of Creativity: Methodology

The methodology of the "Composite Index of Creativity" is based on the literature previously referred and on the methodology inherent to the "Regional Development Composite Index" (INE, 2009).

The "Regional Development Composite Index" is a composite indicator that summarizes the regional development in its various forms, helping the analysis of public policies with different impacts on the territory. It consists in three sub-indices, which express the concept of sustainable development based on three dimensions: economic, social and environmental. Each of these sub-indices is obtained by analyzing a set of factors that express the various dimensions of development.

In Table 4, we present the variables and associated proxies used to calculate the Composite Index of Creativity. We choose, upon the existent statistical data and the variables identified by the literature, eleven variables, each one represented by a proxy and computed in relative terms.

The Human Capital Dimension is represented by two variables: Level of Qualification and Population Youth. The first one is measured by the "share of persons 25 or older with a bachelor's degree or above", and the second by the "share of young adults" (aged 25-34).

The Geography and Physical Environment Dimension is measured by four variables. Geographic location is measured by the “share of Census localities with more

Table 4 – Composite Index of Creativity

	Variable	Proxies	Unit	Sign of correlation	Description
Human Capital	Level of qualification	Share of persons 25 or older with a bachelor’s degree or above	N.º	+	Ratio between persons 25 or older with a bachelor’s degree or above and resident population employed*
	Population youth	Share of young adults	N.º	+	Ratio between persons 25-34 and total resident population*
Geography and Physical Environment	Geographic location	Share of Census localities - more than 10 000 inhabitants.	N.º	+	Ratio between Census localities with more than 10 000 inhabitants and total of Census localities**
	Housing prices and rents	Average monthly amount paid for renting a conventional dwelling over PIB	€	-	Ratio between average monthly amount paid for renting a conventional dwellings* and PIB current prices***
	Infrastructures and facilities	Share of high education institutions	N.º	+	Ratio between high degree schools and total of schools**
	Local investments in Culture	Local administration expenditures on cultural and sports activities by municipality <i>per capita</i>	€	+	Ratio between local administration expenditures on cultural and sports activities** and total resident population*
Social Environment	Tolerance	Share of unmarried union	N.º	+	Ratio between marriages with registration and total marriages*
	Safety and security	Number of crimes recorded by the police forces <i>per capita</i>	N.º	-	Ratio between the number of crimes** and total resident population*
	Ethnic/cultural diversity	Number of residents from different countries <i>per capita</i>	N.º	+	Ratio between foreign population and total resident population*
Economic Environment	Creative Class	Number of professionals in creative jobs <i>per total employees</i>	N.º	+	Ratio between professionals in creative jobs and resident population employed*
	Technology Index	Number of employees in high-technology industries <i>per total employees</i>	N.º	+	Ratio between employees in high-technology industries and resident population employed*

Source: Own elaboration; data from *INE (2002b), **INE (2002a), and *** INE (2001).

than 10 000 inhabitants”. We have seen before that the presence and proximity to urban centers is very important, and so, upon the existent statistical data, we consider that agglomerations with 10 000 inhabitants or more represent an urban center. The Housing prices and rents are represented by the “average monthly amount paid for renting conventional dwellings over PIB”. To measure the Infrastructures and facilities we use the “share of educational institutions by municipality according to the level of education provided and nature of institution.” The variable Local investment in Culture is measured by “local administration expenditures on cultural and sports activities by municipality *per capita*.”

The Social Environment Dimension is represented by three variables. Tolerance is measured by the “share of unmarried unions”. Florida (2002, 2003, 2005; Florida *et al.*, 2008) argues that Tolerance can be measured by the Gay Index. However, in Portugal we do not have data to calculate it. On the other hand, the legal recognition of unmarried union is recent in Portugal and the importance of religious marriage has decreased (Leite, 2003). Hence, this new kind of relationship can represent more tolerance in society. Safety and security is measured by the “number of crimes recorded by the police forces *per capita*”. Ethnic/cultural diversity is measured by the “number of residents from different countries *per capita*”.

The Economic Environment dimension is represented by two variables: Creative Class, measured as the “share of professionals in creative jobs *per total employees*”, and Technology Index, represented by the “share of employees in high-technology industries *per total employees*”.

As mentioned above, in order to compute the “Composite Index of Creativity”, we adopt the same methodology suggested by INE (2010) for computing the “Regional Development Composite Index”: first, and because we have several kinds of data we use the z-score method as a normalization procedure, and second, we reschedule using the minmax method, in order to avoid the analytical difficulties resulting from inevitable negative values of the z-score.¹

¹ The selection of indicators as also taken into account the need for indicators to be defined in relative terms, since the absolute values reflect the size of regions. The standardization of indicators aimed at purging the differences in values between indicators that result from differences in measurement units and scales. Among the various methods of normalization, we select the two most common methods according

After the normalization procedure, we calculate the relative importance of each dimension by using the average of its allocated variables, obtaining the “Composite Index of Creativity”.

The main goal of this composite index is to evaluate the creativity potential of cities, but it can also be employed to other geographic units.

to the literature (OECD, 2003; European Commissions, 2005) - z-scores (standardization statistics) and minmax, which consist, in terms of formulation,

$$Sx_{rj} = \frac{x_{rj} - \bar{x}_j}{dp(x_j)}$$

or when the index j is associated with the opposite direction to the degree of development:

$$Sx_{rj} = \frac{\bar{x}_j - x_{rj}}{dp(x_j)}$$

4. Creative Cities in Portugal

Creativity, especially conceived as Creative Industries, is seen in Portugal as in many other countries, as a privileged way to promote urban regeneration, and its importance is referred in various strategic documents, such as the “Plano Tecnológico 2020” and the “Programa Operacional Factores de Competitividade (COMPETE)” (QREN, 2007). Hence, the need to evaluate the potential of regions is fundamental to define priorities of regional intervention. In this context, the “Composite Index of Creativity” can work as an important tool because it allows us not only to make a current assessment, but also to help in defining future strategies.

In Portugal, cities are not administrative units; therefore, it is difficult to find data to evaluate them.² Additionally, there are many municipalities that have more than one city, and so, to evaluate cities it is necessary to make an extra effort to gather suitable data. At the same time, urban strategies could be embraced at NUTS 2, NUTS 3 or municipality levels. Moreover, it is also important to develop our analysis such that it may be comparable with other studies.

Boshma and Fritsch (2009) use NUTS 3 as geographic units, and because of our data limitations, we decided to use the same unit. Also, since this study about Creative Class in European countries is rather interesting, before employing our “Composite Index of Creativity” to Portuguese NUTS 3, we compare Portugal to the countries analyzed in Boshma and Fritsch (2009), using the same methodology. Finally, we analyse the special case of *Área Metropolitana do Porto*.

4.1 Creative Class in Portugal, following Boshma and Fritsch (2009) approach

Boshma and Fritsch (2009) refers that Florida did not expect that the Creative Class was evenly distributed among cities and regions, and to prove this idea they

²The available statistical data is published at the NUTS, municipalities and parishes' levels.

describe the spatial pattern of the creative class in the regions of seven EU countries (Denmark, England and Wales, Finland, Germany, The Netherlands, Norway and Sweden) at the NUTS 3 level. Using Boshma and Fritsch (2009) methodology, we implement the same analysis to Portugal and compare our results with Boshma and Fritschs (2009) (see Table 5).

The descriptive statistics (mean, median, minimum, maximum and standard deviation) show the regional share of the Creative Class and indicate that the Creative Class is, indeed, very unevenly distributed in the European countries. Norway is always the country with smallest values, and Portugal is the second one. The Netherlands has the highest mean in Creative Core, Creative Professionals, Creative Class A and B, and England and Wales has the highest mean in Bohemians. The highest standard deviation is registered in England and Wales (Creative Core, Creative Professionals and Creative Class A and B) and in Denmark (Bohemians).

Boshma and Fritsch (2009) find that, in each country, the highest share is observed for the Creative Professionals, followed by the relative importance of the Creative Core. The median values for the share of Bohemians are much lower and constitute considerably less than 1 percent of the population.

In addition, Boshma and Fritsch (2009) calculate Gini coefficients³ for the spatial concentration of population and for the different categories of employment. We also add Portugal to Boshma and Fritsch (2009)'s analysis (Table 6).

Boshma and Fritsch (2009) use the concepts of Creative Class already mentioned, and also the variables Population, Employment, Employees with bachelor's or master's degrees and Employees in high-technology industries. To gather data on employees in high-technology industries, we use the same NACE categories that Boshma and Fritsch (2009) use.

³ In this context, the Gini coefficient is a measure of the degree of spatial concentration, taking values between 0, even distribution across regions, and 1, extreme concentration in one region (Boshma and Fritsch, 2009, p. 11).

Table 5 - Descriptive statistics for the distribution of the Creative Class occupations across European regions in 2002, as a percentage of total population⁴

	Mean	Median	Minimum	Maximum	Standard Deviation
Creative core					
Denmark	4,303	4,239	2,998	6,422	0,817
England and Wales	4,140	3,999	2,074	8,692	1,060
Finland	3,643	3,231	1,871	7,793	1,160
Germany	2,674	2,502	1,461	5,971	0,839
The Netherlands	4,981	4,826	2,569	7,722	1,324
Norway	1,200	0,984	0,217	5,279	0,968
Sweden	3,845	3,447	2,624	8,682	1,156
Portugal	2,745	2,680	1,303	5,274	0,920
Creative professionals					
Denmark	8,462	8,406	5,952	13,479	1,699
England and Wales	11,305	10,916	6,850	20,581	2,525
Finland	6,764	6,551	4,248	13,966	1,891
Germany	7,869	7,657	5,753	13,073	1,283
The Netherlands	15,494	15,568	12,316	19,088	1,632
Norway	4,575	4,125	2,590	12,616	1,647
Sweden	8,687	8,541	5,853	14,354	1,534
Portugal	5,853	5,417	3,397	10,732	1,696
Creative Class A					
Denmark	12,765	12,567	8,951	19,001	2,261
England and Wales	15,445	15,000	9,155	29,273	3,465
Finland	10,407	9,774	6,401	21,759	2,962
Germany	10,543	10,189	7,214	19,044	2,010
The Netherlands	20,475	20,302	15,107	25,575	2,605
Norway	5,775	5,112	2,843	17,895	2,516
Sweden	12,532	11,968	8,573	21,270	2,525
Portugal	8,597	8,259	4,723	15,760	2,404
Bohemians					
Denmark	0,438	0,343	0,221	2,235	0,532
England and Wales	0,771	0,705	0,298	4,090	0,493
Finland	0,313	0,268	0,125	1,139	0,164
Germany	0,337	0,290	0,121	1,240	0,196
The Netherlands	0,689	0,588	0,188	2,078	0,385
Norway	0,103	0,062	0,000	0,556	0,085
Sweden	0,296	0,264	0,117	1,059	0,138
Portugal	0,181	0,136	0,080	0,585	0,110
Creative Class B					
Denmark	13,203	13,015	9,347	19,895	2,332
England and Wales	16,216	15,570	9,589	33,364	3,827
Finland	10,720	9,992	6,586	22,898	3,108
Germany	10,880	10,479	7,356	20,284	2,178
The Netherlands	21,164	21,089	15,456	26,852	2,857
Norway	5,878	5,151	2,851	18,452	2,589
Sweden	12,828	12,208	8,788	22,329	2,670
Portugal	8,778	8,478	4,808	16,346	2,497

Source: Boshma and Fritsch (2009), adapted to include Portugal.

⁴In order to obtain comparable results with Boshma and Fritsch (2009)' work, we use the share of creative occupations in the total population as an indicator for regional creativity.

Table 6 - Gini coefficients for the Regional concentration of various employment categories

	DK	EN	FI	DE	NL	NO	SE	PT
Creative core	0.748	0.438	0.712	0.471	0.447	0.837	0.645	0,585
Creative professionals	0.747	0.444	0.695	0.421	0.385	0.769	0.610	0,591
Creative Class A	0.747	0.442	0.701	0.432	0.399	0.785	0.620	0,701
Bohemians	0.806	0.563	0.780	0.580	0.527	0.853	0.738	0,586
Creative Class B	0.749	0.448	0.704	0.437	0.403	0.787	0.624	0,589
Population	0.689	0.384	0.560	0.352	0.381	0.624	0.518	0,471
Employment	0.704	0.415	0.624	0.394	0.437	0.663	0.554	0,508
Employees with bachelor's and masters degree	0.762	0.518	0.738	0.534	0.417	0.734	0.674	0,626
Employees in high-technology industries⁵	0.837	0.495	0.815	0.537	0.563	0.851	0.744	0,680

Note: DK: Denmark, EN: England and Wales, FI: Finland, DE: Germany, NL: The Netherlands, NO: Norway, SE: Sweden (Source: Boshma and Fritsch, 2009), and PT: Portugal

Source: Boshma and Fritsch (2009), adapted to include Portugal.

The Gini coefficients allow Boshma and Fritsch (2009) to identify two groups: one group composed by Germany, the Netherlands, and England and Wales, and the other corresponding to the Scandinavian countries, which show much higher Gini coefficients than those of the first group. Portugal has an intermediate position, standing between these two groups. Only in Creative Class A, Portugal stands out as the 3rd country with higher values. The difference between Creative Class A and B is the importance of the Bohemians, which in Portugal has the 4th smallest value.

4.2 Using the Composite Index of Creativity in Portugal

We use the Composite Index of Creativity applied to the NUTS 3 level of Portugal mainland, computed for 2001 because the most recent information for the majority of the variables in analysis is only available for that year. The results are presented in Table 7.

⁵ Using the same methodology as Boshma and Fritsch (2009), we consider as high-technology industries the NACE categories 244, 300, 321–23, 331–35, 341–43, 353, 642, 721–26, 731, 732, 742, and 743.

Table 7 - Composite Index of Creativity in Portuguese NUTS 3 (2001) (Portugal mainland = 100)

NUTS 3		Human Capital	Physical Geography and Environment	Social Environment	Economic Environment	Composite Index of Creativity
111	Minho-Lima	91	81	74	89	84
112	Cávado	147	91	66	122	108
113	Ave	119	91	82	60	90
114	Grande Porto	169	183	54	196	150
115	Tâmega	113	75	78	15	74
116	Entre Douro e Vouga	117	71	81	87	91
117	Douro	90	80	87	62	80
118	Alto Trás-os-Montes	71	90	95	59	79
161	Baixo Vouga	130	83	87	152	113
162	Baixo Mondego	159	125	83	164	134
163	Pinhal Litoral	111	91	88	86	95
164	Pinhal Interior Norte	62	65	99	40	67
165	Dão-Lafões	88	77	93	134	97
166	Pinhal Interior Sul	13	18	95	5	32
167	Serra da Estrela	53	35	94	53	59
168	Beira Interior Norte	73	94	96	82	85
169	Beira Interior Sul	84	139	82	92	98
16A	Cova da Beira	45	72	99	65	69
16C	Médio Tejo	98	106	96	100	100
16B	Oeste	100	86	115	82	96
171	Grande Lisboa	198	180	148	283	200
172	Península de Setúbal	148	170	144	237	172
181	Alentejo Litoral	54	82	184	51	91
182	Alto Alentejo	70	155	92	87	99
183	Alentejo Central	99	111	110	137	113
184	Baixo Alentejo	82	119	116	46	91
185	Lezíria do Tejo	100	106	100	129	108
150	Algarve	117	123	162	85	122

Portugal mainland Index stands out as reference value (100%) and the remaining indices are presented in comparison to this value. We can see that the Composite Index

of Creativity is higher in NUTS *Grande Lisboa*, *Península de Setúbal* and *Grande Porto*, and it is lower in *Pinhal Interior Sul* (Figure 1).

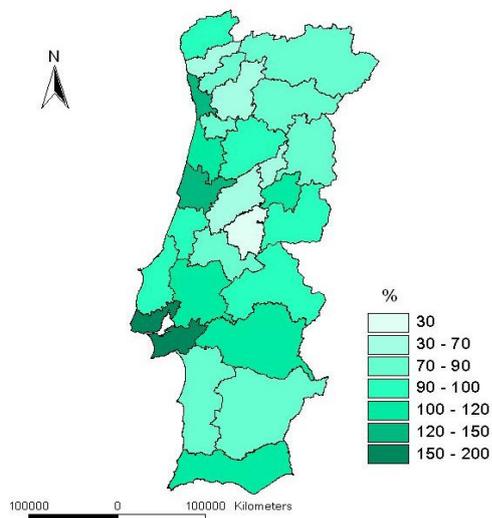
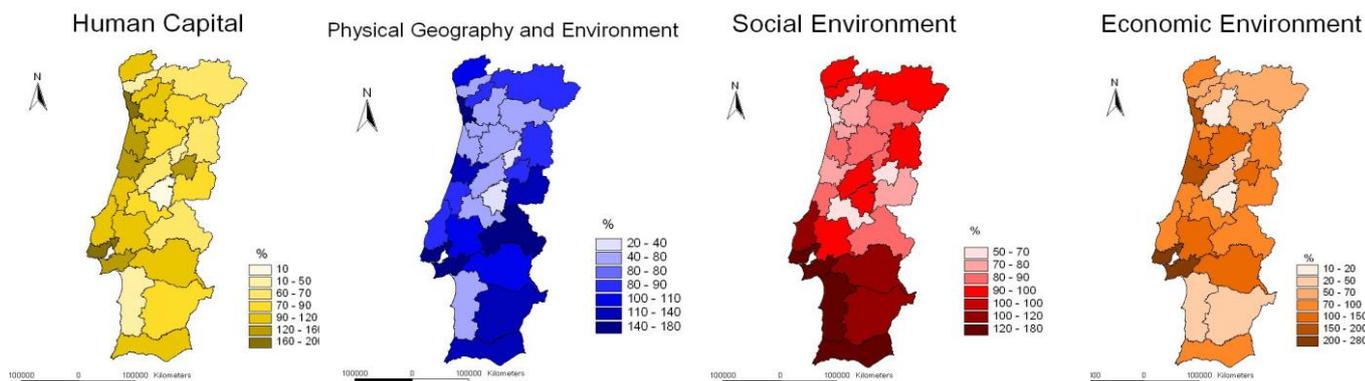


Figure 1 - Composite Index of Creativity in Portuguese NUTS 3 (2001)

When we decompose the Index in its dimensions, we see that the positions are essentially the same in each of them (Figure 2 to 5). Nevertheless, in the dimension Human Capital *Baixo Mondego* is the 3rd highest and *Península de Setúbal* is the 4th. Moreover, in the Social Environment Dimension, we find *Alentejo Litoral* with the highest value, followed by *Grande Lisboa* and *Península de Setúbal*. The smallest value is registered in *Grande Porto*. This last result seems to be due especially to the importance of marriage in *Grande Porto*, where the variable Unmarried Union has small values, whereas it observes high values in *Alentejo Litoral*, and also because big cities like *Porto* and *Lisboa* register more crimes⁶. Only three NUTS 3 units have higher values than Portugal mainland in all four dimensions: *Grande Lisboa*, *Península de Setúbal* and *Lezíria do Tejo*, with all of them closely located. Moreover, *Lezíria do Tejo* also observes a higher index value comparing to Portugal mainland (Appendix I).

⁶ Proxies values are available in Appendix I.



Figures 2 to 5 – Dimensions of Composite Index of Creativity in Portuguese NUTS 3 (2001)

4.3 The Potential of Creativity in Área Metropolitana do Porto

The TOP 5 ranking of the Composite Index of Creativity in NUTS 3 are *Grande Lisboa*, *Península de Setúbal*, *Grande Porto*, *Baixo Mondego* and *Algarve*. These regions match with the largest cities in Portugal, featured by highest population density, number of firms and infrastructures. However, within these units we can find very different realities since they cover a variable number of municipalities. This is the main reason why we decided to calculate the Composite Index of Creativity also for *Área Metropolitana do Porto* (AMP)⁷ (Table 8), composed by the following municipalities: Arouca, Espinho, Gondomar, Maia, Matosinhos, Oliveira de Azeméis, Porto, Povoia de Varzim, Santa Maria da Feira, Santo Tirso, São João Madeira, Trofa, Vale de Cambra, Valongo, Vila do Conde and Vila Nova de Gaia.

Nowadays, *Área Metropolitana do Porto* includes two NUTS 3: *Grande Porto* (3rd place in the Composite Index of Creativity ranking) and *Entre Douro e Vouga* (18th place in the ranking), but in 2001, before the legal formation of *metropolitan areas*, the municipalities of *Santo Tirso* and *Trofa* were included in NUTS 3 of Ave (19th place in

⁷ Metropolitan areas (*Áreas Metropolitanas*) in Portugal have been created by Law No. 10/2003 of May 13, which establishes the scheme of their creation, their framework responsibilities and skills. This law was amended on August 27, 2008, by Law No. 46/2008, which establishes the new legal regime of the metropolitan areas of Lisbon and Porto and their new constitution.

the ranking). So, in order to evaluate the Composite Index of Creativity of *Área Metropolitana do Porto* in 2001 we need to use data from three different NUTS 3.

In Table 8 and Figure 6 we can see the Composite Index of Creativity in *Área Metropolitana do Porto* in all municipalities. Only seven municipalities (*Porto, Maia, Vila Nova de Gaia, S. João da Madeira, Matosinhos, Valongo* and *Espinho*) have higher values than AMP (Figures 7 to 10). But, only two (*Porto* and *Maia*) have higher values in all the Index dimensions. *Porto* has the highest values in three dimensions: Physical Geography and Environment, Social Environment and Economic Environment. The top of Human Capital dimension is occupied by *Vila Nova de Gaia*, which in 2001 was the third Portuguese municipality with higher population (INE, 2001). On the other hand, *Arouca* and *Santo Tirso* are the municipalities with smallest values for the Composite Index of Creativity, also in all dimensions.

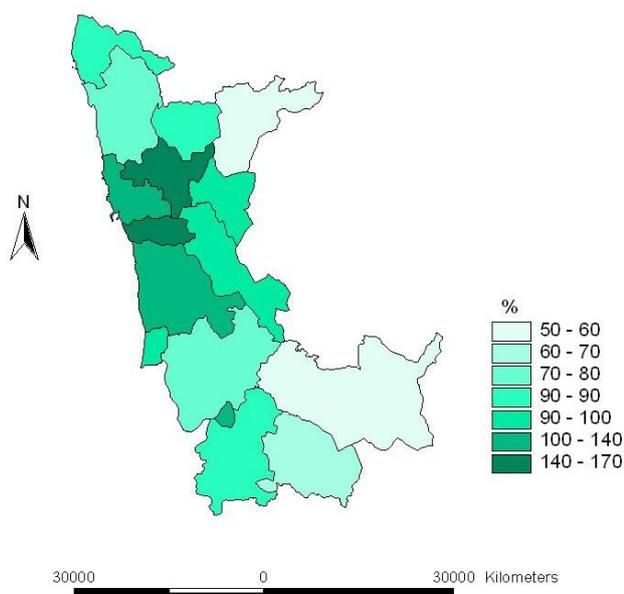


Figure 6 - Composite Index of Creativity in *Área Metropolitana do Porto* (2001)

Analyzing the Human Capital dimension (Appendix II), we see that *Oliveira de Azeméis, Trofa* and *Arouca* are the municipalities that register the lowest Level of Qualification, as opposed to *Porto, Matosinhos* and *Maia*, which present the highest values. Regarding the Population Youth, however, *Porto* is the municipality that registers a higher aging, and *Maia* registers a younger population.

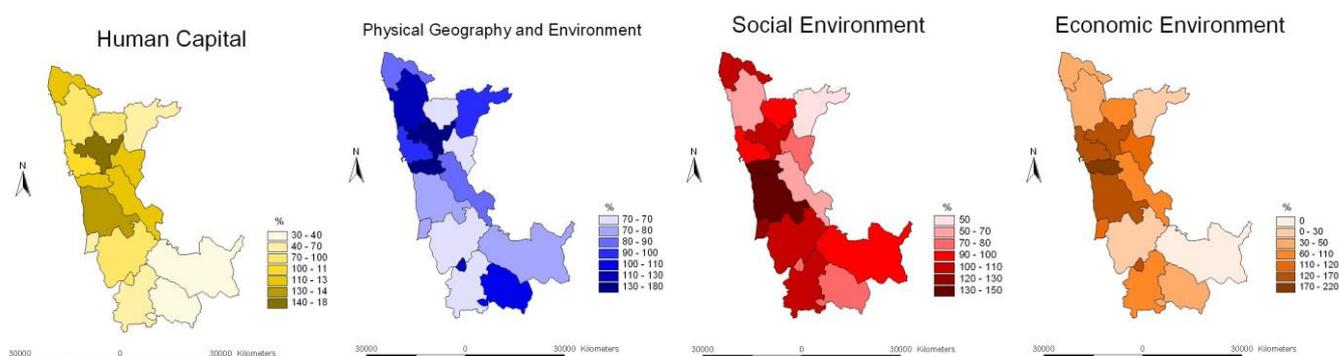
Table 8 - Composite Index of Creativity in *Área Metropolitana do Porto* (2001) (AMP = 100)

	Human Capital	Physical Geography and Environment ⁸	Social Environment	Economic Environment	Composite Index of Creativity
1131314 Santo Tirso	61	99	52	20	55
1131318 Trofa	96	70	103	87	90
1140107 Espinho	73	79	127	116	101
1141304 Gondomar	130	88	73	105	99
1141306 Maia	177	160	114	159	151
1141308 Matosinhos	108	101	96	156	116
1141312 Porto	127	184	148	223	171
1141313 Póvoa de Varzim	120	89	113	44	91
1141315 Valongo	134	65	84	116	101
1141316 Vila do Conde	93	129	72	54	84
1141317 Vila Nova de Gaia	139	80	146	168	137
1160104 Arouca	35	77	91	0	50
1160109 Santa Maria da Feira	101	70	107	33	78
1160113 Oliveira de Azeméis	70	65	108	103	89
1160116 São João da Madeira	103	132	83	163	120
1160119 Vale de Cambra	33	112	82	52	68

In the Physical Geography and Environment dimension (Appendix II), we find that in terms of Geographic Location, the municipalities that have lower values are in general those who are furthest from the center of the AMP and the city of *Porto*. These municipalities have less urban characteristics and register less and smaller urban centers. We emphasize the fact that *S. João da Madeira* has a very high value in Geographic location, because to it has a single parish, which coincides with the area of the city and municipality. The municipalities that have better Housing prices and rents are *Arouca*, *Vale de Cambra* and *Santo Tirso*, in opposition to *Porto*, which is the most expensive. This municipality holds in itself most education institutions, and observes

⁸ There is no available data for GDP at the municipalities' level in 2001. Hence, instead of using the variable *Housing prices and rents*, calculated as the ratio between average monthly amount paid for renting a conventional dwellings and GDP current prices, we use the variable *Purchasing power per capita*, (PPPC) which is an index that intends to capture the purchasing power in each municipality and it is built by means of a factorial analysis and recurring to a set of 20 variables that were selected according to an expenditure criteria upon a larger group of 70 variables (INE, 2007). This variable is available for the years 2000 and 2002, and we use its average as a proxy for PPPC for 2001.

the highest value in Infrastructures and facilities. Regarding the Local Investments in Culture, *Gondomar* registers the highest value and *Arouca* and *Trofa* the lowest.



Figures 7 to 10 – Dimensions of Composite Index of Creativity in *Área Metropolitana do Porto* (2001)

Regarding the Social Environment dimension (Appendix II), the variable Tolerance has highest values in *Porto*, and lowest in *Santo Tirso*, *Arouca*, *Vale de Cambra*, and *Trofa*. This variable represents the weight that unmarried couples have in the total of marriages. The lowest values could be explained by a greater weight of religious marriage and a greater weight of tradition in these areas that, as already mentioned, have more rural characteristics. The Safety and security variable register lowest value in *Porto* and highest in *Trofa*. In the variable Ethnic / cultural diversity, we see once again that *Porto* has the highest values and *Santo Tirso* and *Gondomar* have the lowest.

The Economic Environment dimension (Appendix II) has the highest figures in *Porto* and the lowest in *Arouca*. This municipality has the lowest values in Creative Class and in Creative Technology Index. Regarding the Creative Class, *Porto* is distinguished by the primacy, but the values of the Technology Index are highest in *Gaia*, followed by *Porto* and *S. João da Madeira*.

In general, we find that the municipalities of NUTS *Entre Douro e Vouga* have the lower values of the Composite Index of Creativity in AMP (with the exception of *S. João da Madeira*, which is 4th highest), as well as the two municipalities of NUTS of *Ave*. In NUTS 3 of *Grande Porto*, the municipality with smallest index is *Vila do Conde*.

The differences we find between the municipalities of AMP are related to the characteristics of each of them, both in terms of population, economy, or even geography. Municipalities that have lower values are in general those located furthest from the center of the AMP and the city of *Porto*. These rural counties have more features than the others, including the weight of the population employed in primary sector and secondary activities, as *Arouca*, which is the most rural municipality of AMP, and *Santo Tirso*, that has a strong tradition in the textile industry. These characteristics decrease the value of the Composite Index of Creativity in these places, but do not decrease the importance that this index can have in stimulating the creative potential they have, identifying the variables that need to be worked.

5. Conclusions

Creative Cities emerge today as the territorial representation of the Knowledge Economy. Cities are urban agglomerations that fit this field of the economy, and given the problems that economy faces today, Creativity emerges as a form of urban renewal; a result of a symbiotic relationship between cities and creativity.

Despite the multiplicity of authors who have been writing about Knowledge Economy and Creativity in cities, there is some consensus on the definition of these concepts: the Creative Economy is a field of the economy where the focus is on developing something new, capable of promoting the creation of more activities around it, generating jobs and money; and this creativity can be brought by culture, innovation, new activities or products. The Creative Economy manifests itself in the existence and importance of Creative Industries and Creative Individuals. Moreover, cities have always been the cradle of industries, and places where people want to be in. Hence, the Creative City is a city that is attractive to, and populated by, a creative class who works in the New Economy.

Creative Cities are characterized by the existence of several features, such as human and cultural diversity, creative individuals, urban spaces and facilities, networks, social mutation, tolerance and high tech and innovation activities.

One of the aims proposed for this work was to identify the success factors for the development of a creative city in Portugal. To achieve this, we started by identifying the variables that affect the success of a Creative City, having under consideration the literature review. Then, we joined those factors in four dimensions: Human Capital, Geography and Physical Environment, Social Environment and Economic Environment.

Based on these factors, our second aim was to create an index for assessing the potential for creativity that exists in the Portuguese cities. Based on authors such as Boshma and Florida (Boshma and Fritsch, 2009; Florida, 2002, 2003, 2005) that use composite indexes, and since we had already identified four different dimensions and variables that affect the success of a Creative City, we followed a similar method. We used a structure analogous to the “Regional Development Composite Index” used by

INE, a composite indicator that summarizes the regional development in its various forms.

The “Composite Index of Creativity” is composed by four Dimensions and eleven variables, which pretend to illustrate the dimensions, namely: Human Capital - Level of qualification and Population youth; Geography and Physical Environment - Geographic location, Housing prices and rents, Infrastructures and facilities and Local investments in Culture; Social Environment – Tolerance, Safety and security and Ethnic/cultural diversity; Economic Environment - Creative Class and Technology Index. These variables seem to be the more consensually recognized by different authors, and to calculate each of them we selected some proxies, between the available data. In fact, several authors, most of them inspired in Florida (2002; 2005), consider variables such as Level of Qualification, the presence of a Creative Class, the Cultural and ethnic diversity, and the presence of High-tech industries as the heart of Creative Cities.

Before computing the “Composite Index of Creativity” to Portugal, and in order to compare Portugal to other European countries, we employed the procedure by Boshma and Fritsch (2009), which aimed to describe the spatial pattern of the creative class in the regions of seven EU countries, to Portugal using data at NUTS 3 level. We concluded that the Creative Class is, indeed, very unevenly distributed in the European countries. In all countries observed, the highest share is for the Creative Professionals, followed by Creative Core, and the share of Bohemians are much lower and constitute considerably less than 1 percent of the population. Portugal occupies an intermediate place in the ranking values of the analyzed countries, and its behavior is similar to the other countries in what concerns the distribution of creative individuals.

Moreover, based on Gini coefficients as in Boshma and Fritsch (2009), we concluded that Portugal has an intermediate position in what concerns the spatial concentration of the population and of different categories of employment, and in what concerns Creative Class and Creative Activities, when compared to other European countries.

Given the important investment that some regions predict to have in Portugal in developing creative activities and Creative Industries (Fundação de Serralves, 2008; QREN, 2007), our third aim in this work was to evaluate the potential success that each

of these regions can have as Creative Cities, or Creative Municipalities. Although we intended to evaluate the Creativity of Cities, there was not available data for this geographic unit, and so we decided to use data from NUTS 3, as in Boshma and Fritsch (2009). Hence, we applied our “Composite Index of Creativity” to Portuguese mainland NUTS 3 and to AMP municipalities, due to the importance that creative activities have in some of AMP municipalities. Since most of data was only available in Census, we calculated the index for the last available year, which was 2001.

Applying the “Composite Index of Creativity” to Portuguese NUTS 3 we concluded that the TOP 5 ranking is composed by: *Grande Lisboa*, *Península de Setúbal*, *Grande Porto*, *Baixo Mondego* and *Algarve*. These regions match with the largest cities in Portugal, featured by highest population density, number of firms and infrastructures. Although, and despite the north region concentrates more people and many cities, it is in the center and south NUTS 3 that “Composite Index of Creativity” highlights.

To embrace an analysis more close to Cities in Portugal, we apply the “Composite Index of Creativity” to *Área Metropolitana do Porto* (AMP) municipalities. This metropolitan area was chosen because it is a region where several investments in Creative Industries are provided and, and because it comprises one of the NUTS 3 with higher “Composite Index of Creativity” (*Grande Porto*), and so, we expect to find municipalities with higher “Composite Index of Creativity” in this geographic unit.

In AMP, municipalities with higher “Composite Index of Creativity” are *Porto*, *Maia*, *Vila Nova de Gaia*, and *Matosinhos*. The municipality of *Porto* highlights in the Index and in three dimensions: Physical Geography and Environment, Social Environment and Economic Environment. The top of Human Capital dimension is occupied by *Vila Nova de Gaia*, which is one of the most populous municipalities in the country. *Arouca* and *Santo Tirso* are the municipalities with smallest values for the “Composite Index of Creativity”, also in all dimensions. It was not a surprise the emergence of *Porto* as the municipality with higher index, because it is the center of AMP, where we expect to find more Creative Individuals, Creative Industries, High-tech, and more Cultural Diversity. However, the high values of the neighbor municipalities illustrates that most of the AMP has a good potential to embrace Creative Cities. The differences we found between the municipalities of AMP are connected to

population density, and to economic characteristics of them; municipalities who have lower values are in general those who are furthest from the center of the AMP and the city of *Porto*, and have more rural characteristics.

Despite the fact that the analysis we made for Portugal did not reveal unexpected results since it shows that the larger urban centers are also the most important creative centers, it allows us to understand some important features that influences this outcome. Moreover, our work proposes an important planning tool that can be used in several and different geographic contexts. The “Composite Index of Creativity” reveals itself as an important tool to adjust investments in the cities, so that they can grow as creative places. Nevertheless, we recognize that the work that we developed has some limitations. First, we were limited by the available data, in what concerns its disaggregation both by geographic unit and time. The index would be more useful if we could easily update it, but most of the data results from the census and therefore only exists every ten years. We were also limited by data availability by geographic units, and despite our aim was to evaluate cities, there was not statistical information at that scale. Moreover, we think that is would be important to include a dimension that represents the demand and purchasing power for "creative products," because we recognize that for the Creative Economy it is necessary that the population has a standard of living in which the price is not the most important criteria in the purchase of goods and services.

The limitations associated with our work allow us to define new goals to future research. We expect to actualize our data base as soon as data from Census 2011 is available, and compare it with the present results, so we can understand how municipalities and NUTS 3 developed in the last ten years. We also consider important to apply our index to other European countries, so we can see the differences between locations and do some benchmarking to the best practices. Namely, we would like to apply the “Composite Index of Creativity” to Spanish NUTS 3, especially in Galiza and Asturias, which are very close to us, geographically and culturally speaking. Additionally, we would like to evaluate all North Region and Galiza and Asturias under a common “Composite Index of Creativity”, so we can make a ranking of Creative Cities in this large region. Finally, we intend to add a dimension to the “Composite Index of Creativity” that represents the demand for creativity in the cities.

Although the limitations of this work, we hope that it can contribute to the success of Creative Cities in Portugal, giving some guidelines to policy makers that ought to be implemented in areas to be worked on. We also hope that this research inspire similar works and contribute to a better urban and regional planning in the context of the Knowledge Economy.

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Appendices

	Human Capital		Physical Geography and Environment				Social Environment			Economic Environment	
	Level of Qualification	Population youth	Geographic location	Housing prices and rents	Infrastructures and facilities	Local investments in Culture	Tolerance	Safety and security	Ethnic/cultural diversity	Creative Class	Technology Index
183 Alentejo Central	41,69	50,36	8,53	88,16	11,32	55,63	38,92	75,90	10,00	34,55	59,03
181 Alentejo Litoral	23,95	25,67	9,74	81,07	0,00	30,45	100,00	79,28	28,89	26,57	8,50
150 Algarve	41,63	66,46	15,70	92,61	38,12	36,17	83,60	0,00	100,00	42,35	15,63
182 Alto Alentejo	34,52	29,94	17,83	84,66	27,46	100,00	24,02	75,60	4,98	25,00	34,30
118 Alto Trás-os-Montes	47,38	18,33	5,95	80,37	24,81	22,47	15,61	82,63	9,24	37,35	2,95
113 Ave	13,17	97,45	5,86	94,94	12,44	21,19	2,22	87,39	3,44	20,40	20,80
184 Baixo Alentejo	38,78	37,13	7,14	82,19	37,94	49,16	48,40	74,47	8,44	22,55	9,29
162 Baixo Mondego	84,37	63,07	4,69	92,05	59,49	29,36	17,66	64,75	11,21	77,02	35,58
161 Baixo Vouga	40,86	79,55	8,32	92,15	13,04	9,96	23,87	55,00	19,61	48,91	55,33
168 Beira Interior Norte	42,93	24,30	3,89	65,60	17,62	52,73	8,95	90,86	8,72	32,34	23,68
169 Beira Interior Sul	49,30	28,31	9,69	64,85	100,00	31,70	13,82	73,90	5,03	43,75	19,52
112 Cávado	36,71	99,35	12,08	91,48	16,26	15,56	5,93	58,16	10,87	38,37	44,92
16A Cova da Beira	0,00	41,48	2,00	68,19	17,30	19,60	12,64	95,63	4,30	33,96	10,83
165 Dão-Lafões	38,91	42,64	1,46	85,52	21,16	5,59	8,35	86,94	9,92	36,58	55,22
117 Douro	41,43	41,65	1,88	84,77	9,03	22,54	10,38	84,11	3,69	30,54	11,78
116 Entre Douro e Vouga	16,45	92,02	7,45	90,07	7,67	0,00	8,43	72,18	10,83	25,92	33,82
171 Grande Lisboa	100,00	83,80	66,85	100,00	89,99	9,15	70,80	13,02	83,64	100,00	93,86
114 Grande Porto	65,98	90,86	70,47	99,22	76,68	24,82	25,64	24,53	10,39	76,37	58,11
185 Lezíria do Tejo	33,81	58,65	8,15	90,39	28,58	30,36	39,87	60,11	13,40	33,89	54,35
16C Médio Tejo	40,52	50,54	8,74	90,12	17,11	40,55	19,70	79,21	9,70	40,18	28,20
111 Minho-Lima	32,74	51,50	0,81	82,21	20,43	16,23	7,59	67,74	8,53	29,58	31,60
16B Oeste	26,46	66,27	5,74	91,37	17,09	13,26	41,99	68,92	19,25	31,66	24,50
172 Península de Setúbal	55,16	81,76	100,00	97,42	34,65	20,18	73,23	32,57	57,37	62,57	100,00
164 Pinhal Interior Norte	15,99	41,58	0,00	69,55	0,00	26,44	15,52	86,89	9,43	14,99	12,66
166 Pinhal Interior Sul	11,62	0,00	0,00	0,00	0,00	26,73	5,51	100,00	2,02	3,32	0,00
163 Pinhal Litoral	29,82	73,30	4,98	88,48	25,61	15,83	26,94	56,12	16,63	41,81	16,81
167 Serra da Estrela	31,90	17,62	0,00	21,84	11,09	18,52	2,88	98,06	5,35	25,01	11,45
115 Tâmega	4,54	100,00	1,93	93,36	6,91	8,30	0,00	88,00	0,00	0,00	10,24

Appendix I – Proxies of the Composite Index of Creativity in NUTS 3 of Portugal mainland (2001)

	Human Capital		Physical Geography and Environment				Social Environment			Economic Environment	
	Level of Qualification	Population youth	Geographic location	Housing prices and rents	Infrastructures and facilities	Local investments in Culture	Tolerance	Safety and security	Ethnic/cultural diversity	Creative Class	Technology Index
1160104 Arouca	0,91	26,37	0,00	100,00	0,00	2,42	3,27	88,13	32,01	0,00	0,00
1140107 Espinho	34,05	23,31	9,09	63,07	0,00	32,09	50,02	37,04	84,24	39,87	60,98
1141304 Gondomar	19,01	83,18	8,11	77,23	0,00	31,86	40,76	58,60	0,00	34,10	57,46
1141306 Maia	39,13	100,00	45,45	57,87	9,29	100,00	50,26	62,31	41,81	64,47	73,86
1141308 Matosinhos	41,10	43,33	9,76	50,49	20,77	52,48	64,06	43,16	23,16	60,13	75,58
1160113 Oliveira de Azeméis	0,00	54,83	0,42	84,61	0,00	1,78	20,53	79,74	46,04	15,85	73,62
1141312 Porto	100,00	0,00	100,00	0,00	100,00	43,99	100,00	0,00	100,00	100,00	94,47
1141313 Póvoa de Varzim	17,60	76,61	0,81	77,94	14,31	25,59	28,54	72,42	51,77	27,97	10,74
1160109 Santa Maria da Feira	3,99	74,96	0,48	83,94	9,05	0,00	19,42	65,90	59,56	14,74	14,44
1131314 Santo Tirso	3,22	44,50	0,56	88,07	0,00	42,19	0,00	62,28	8,18	15,44	1,92
1160116 São João da Madeira	22,49	58,46	100,00	42,54	0,00	32,34	53,27	7,58	51,02	47,28	94,96
1131318 Trofa	0,84	74,39	2,17	85,54	0,00	5,42	3,95	100,00	34,99	23,86	52,14
1160119 Vale de Cambra	6,81	19,09	0,00	90,53	0,00	58,47	0,15	83,66	27,65	31,14	14,20
1141315 Valongo	15,69	89,56	2,06	69,48	0,00	14,69	38,93	63,48	11,55	31,71	69,70
1141316 Vila do Conde	11,93	60,94	0,52	82,23	8,83	79,44	19,99	45,88	30,83	22,23	24,66
1141317 Vila Nova de Gaia	30,70	77,98	2,63	65,56	16,55	21,96	73,68	66,15	57,42	46,43	100,00

Appendix II – Proxies of the Composite Index of Creativity in AMP municipalities (2001)