

# Industry-based methodological approaches to the measurement of Creative Industries: a theoretical and empirical account

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## Abstract

The rising interest in the creative economy has encouraged several authors both in the political and academic spheres to focus on creative industries and cultural activities and assess their effects on regional and national development. The issue of measurement has, however, limited the analysis considerably. Despite progress at the theoretical and empirical levels, there is a generalized lack of clear definitions and estimations as to what represents cultural activities and creative industries. This paper critically reviews the growing corpus of literature on approaches to the measurement of creative industries. Moreover, it presents a detailed mapping of the creative sectors and estimates the relative weight of creative industries according to relevant industry-based methodologies, using a unique dataset (*Quadros de Pessoal*, Portugal), which includes over 3 million workers, and that permits an accurate comparative analysis of the different methodologies under study. The choice of approach when measuring creative industries is relevant in estimating the importance of such industries. Indeed, depending on the approach used, the importance of creative industries in Portugal differs, ranging from 2.5% (DCMS Model) to 4.6% (WIPO copyright model). In order to overcome the limitations of existing methodologies, we proposed a new industry-based approach focusing on *core creative industries*. According to the proposed methodology, core creative industries represent 3.5% of Portuguese employment, in which ‘Software publishing’ and ‘Computer/IT consultancy’ (1.0%), ‘Publishing’ (1.0%), and ‘Advertising and Marketing’ (0.4%) are the most relevant sub-segments.

*Keywords:* Creative Industries; Industry-based Methodology; Measurement

JEL codes: L80, R12, C80, C81.

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## 1. Introduction

The rising political interest in the creative economy has led several experts (e.g., Hall, 2000; Scott, 2002; Landry, 2003; Markusen, 2006; Thorsby, 2008a; Storper and Scott, 2009) to study the effects of creative industries and cultural activities on the development of a region/country.

The literature in the field of creative and cultural economics has followed two alternative paths of research (Markusen *et al.*, 2008): one centred on *places* (e.g., Landry, 2003; Scott, 2003, 2004, 2005) and the other on *industries* (e.g., UNESCO, 2003; UNCTAD, 2004, 2008; KEA, 2006; Work Foundation, 2007; Higgs *et al.*, 2008). Within the perspective of the *creative city*, academics and decision-makers have sustained the idea of creating cultural amenities for the regeneration of urban centres (Bianchini *et al.*, 1988; Landry *et al.*, 1996; Landry, 2003), assuming that environments characterized by diversity, tolerance and openness contribute to the generation and diffusion of new ideas and innovations. The industry-related perspective (e.g., Pratt, 1997, 2004b; Power, 2002; DCMS, 2007, 2010) departs from the premise that industries related to the creative and cultural sectors comprise privileged vehicles of local and global development.

New theoretical approaches based on the above-mentioned perspectives, and put forward by Florida (2002, 2005a, b) and Scott (1997, 2003), brought novel concepts to the creative class and the cultural economy of urban centres. In a complementary line of research, several approaches to measurement have also been developed (e.g., Higgs *et al.*, 2008; UNCTAD, 2008; DCMS, 2010), gathering data on creative occupations and creative industries (see Markusen *et al.*, 2008).

Despite all the novelties and progress, the ‘original sin’ intractably remains - the vagueness or even lack of clarification regarding the definitions and estimations of creative industries, creative class, cultural activities, creative city, or cultural labour force (Glaeser, 2005; Markusen *et al.*, 2008; Pratt *et al.*, 2009). Indeed, several authors frequently use the expressions ‘creative industries’ and ‘cultural activities’ synonymously, overlooking their conceptual idiosyncrasies and contributing to the spread of imprecision and ambiguity, both at theoretical and empirical level (Markusen *et al.*, 2008; UNCTAD, 2008). So far, the literature has barely come to agreement on what comprises the concepts of creative and cultural economics, as well as their precise boundaries and extent.

This paper intends to critically review the growing corpus of literature on approaches to the measurement of creative industries, namely in terms of existing definitions and taxonomies. Additionally, it discusses the most appropriate industry-based methodology by estimating the weight of Core Creative Industries based on a unique database for Portugal. Apart from serving as the basis to adequately compare the distinct methodologies to estimate creative industries, this exercise adds to the literature by providing empirical evidence on the weight of creative industries in a middle developed country (Portugal).

In the next section, we review the existing methodological approaches that aim to group and quantify the creative industries. In Section 3, we map the industry-based methodologies in terms of International Standard Industrial Codes (ISIC) and the Portuguese industrial classification. We then (Section 4) estimate the dimension of creative industries in Portugal for 2009 in terms of employment, using these different methodological approaches. To conclude, in Section 5, we discuss and present the main findings.

## **2. Approaches to the measurement of Cultural and Creative industries: a review**

### **2.1. On the concept of cultural and creative goods and industries**

Despite all the efforts to conceptualize the cultural economy, its boundaries remain rather imprecise and a matter of intense debate (Markusen *et al.*, 2008). For instance, the UNCTAD conceives the cultural economy as comprising “cultural and traditional heritage, artistic expression, music, literature, visual and performing arts” (UNCTAD, 2008: 10, 14). A broader group is considered by Hesmondhalgh (2002, in Markusen *et al.*, 2008: 27), to whom cultural industries include “television, radio, the cinema, newspapers, magazine and book publishing, music recording and publishing industries, advertising and the performing arts”, considering “cars, software, consumer electronics, cultural industry hardware, and sports” as “borderline cases”. In turn, Markusen *et al.* (2008: 27) do not take into account the “border arenas” of “religion, sports, recreation and entertainment, education, information, supplier sectors and distributors” in their conceptualization of cultural industries.

Worth mentioning here is the distinction (and sometimes confusion) between cultural and creative industries. According to several authors (e.g., Cunningham, 2002; Hesmondhalgh, 2002; Markusen *et al.*, 2008), the creative economy covers a broader set of industries including the production of analytic, technical or scientific knowledge, which are not considered as purely cultural activities, such as science, engineering, computing, and education.

The distinction between cultural and creative industries is also stressed by Galloway and Dunlop (2006), who relate cultural industries with the production of culture and meaning. Accordingly, the major goal of cultural industries is to generate and/or express *meaning* about human values or societal principles (social convictions, rules and conventions) (Galloway and Dunlop, 2006). Thus, other industries that employ the output of cultural activities and diffuse it, but do not produce culture are not included in the class of cultural industries, since culture is only employed as an input to their production process (e.g., advertising). There are other types of industries that, although producing goods which incorporate some level of cultural output, contain a percentage of non-cultural or functional output (e.g., architecture). These industries create joint/functional goods and thus, according to Galloway and Dunlop (2006), cannot be part of the cultural economy.

Regardless of the perspective, all the existing definitions place cultural industries within a broader class of industries - the creative industries - dedicated to the production and commercialization of creative goods (UNCTAD, 2008). Thus, creative industries are characterized by their final purpose, i.e., the creative goods they produce and/or distribute. In this line of reasoning, creative goods represent a broader class that comprises not only the category of cultural goods but also other types of goods such as technology-based productions (e.g., software, media, film and video), and symbolic conceptions such as design, fashion, publishing, broadcast production or advertising (Reuvid, 2006; Shorthose, 2006).

One of the earliest notions of cultural and creative spaces came from the UK, as a result of a socioeconomic study in 1994 (Lash and Urry, 1994) and achieved greater popularity after a study on creative industries set up by the UK's Department of Culture, Media and Sport (DCMS) in the late 1990s (Reuvid, 2006; Higgs and Cunningham, 2008; Pratt, 2008).

The formal DCMS definition of creative industries is "... those activities which have their origins in individual creativity, skill and talent and which have the potential for wealth and job creation through generation and exploitation of intellectual property", and includes "advertising, architecture, art and antiques market, broadcast production, crafts, design, designer fashion, film and video, interactive leisure software, music, the performing arts, publishing, software and computer services, and television and radio" (Reuvid, 2006: 175; Shorthose, 2006: 1). This definition provided the basis for several works developed by national governments worldwide (e.g., DCMS, 2001; Walton and Duncan, 2002; Heng *et al.*, 2003; Scottish Government Social Research, 2009).

The concept of creative industries as it was defined and applied since the DCMS formulation has, in fact, widened the extent of its boundaries to include not only the Arts envisaged merely as non-profit activities, but also all the economic activities that use *creativity* as input. In this context, worldwide organisations such as UNCTAD (2004) define creative industries at a broader level. Here, the creative sector comprises not only activities heavily reliant on aesthetic inputs - artworks in their literal sense - but also any market-driven industry or commercial activity generating symbolic knowledge and taking advantage of the commercial value from the intellectual rights of the original outputs and creations (UNCTAD, 2008).

One of the reasons suggested for this evolution is that such industries are primarily reliant on inputs such as creativity and intellectual property, and their outputs enjoy aesthetic or intangible characteristics as a distinctive factor in the market (Jones *et al.*, 2004). This formulation has been subject to wide criticism. Galloway and Dunlop (2006) stress that this broad definition conceives that, in some way, every business or activity based on or using creativity can be a creative industry. Several authors (e.g., Cunningham, 2002; Jayne, 2005; Higgs and Cunningham, 2008) point out major drawbacks, such as incoherency and arbitrariness in terms of what industries to include, measurable data and availability of compatible statistics, as well as the inaccuracy of this framework, more directed towards governmental goals rather than to a scientific conceptualization of the creative economy.

## **2.2. Proposals for delimiting the boundaries of the creative sector**

Despite the rich contributions already put forward to define creative industries, it is hard to find agreement on the appropriate boundaries of the creative sector and what kind of industries should or not be included in this category (Tepper, 2002; Jones *et al.*, 2004). Different proposals (see UNCTAD, 2006, 2008; Thorsby, 2008a) were developed in order to group and organize the different segments of the creative economy, and propose a classification according to the interpretation of the production process and the mission of each creative industry.

Four popular models, among others, are extensively presented and discussed in literature: the *DCMS framework*, the *Symbolic model*, the *Concentric Circles model* and the *WIPO copyright* approach, each one distinguishing between *core* and *peripheral* industries (cf. Tables 1 and 2). Besides these, renowned authors in cultural economics, most notably Scott (2000, 2004) and Heng *et al.* (2003), have defended a different approach, where creative industries are differentiated according to their branches of activity: *production functions* and

*distribution activities* in the creative sector (Scott, 2000). *Production activities* are characterized by dense networks of interactions and highly skilled human resources to take part in creative and innovation processes and to manage a range of enhanced digital technologies. Thus, these dynamics generate externalities through knowledge spillovers, the transmission of new ideas and the sharing of a common social capital (Rosenfeld, 2005). As for *distribution industries*, the main feature is the involvement of firms in global distribution networks, typically led by large multinational companies (Scott, 2004).

Similarly, UNCTAD (2004) organizes the creative sector in terms of “upstream activities”, cultural activities in their literal sense such as performing and visual arts, and “downstream” market-driven industries such as “advertising, publishing or media related activities”, where knowledge is more easily transferred to other sectors of the economy, and the pecuniary value of the outputs results from “low reproduction costs” (UNCTAD, 2008: 13). Under this approach, as mentioned earlier, cultural activities represent a segment of the entire universe of creative industries.

The latest perspectives, *Systemic approaches* on the conceptualization of creative industries, consider them as part of broader systems (the “creative system”), in the same line as innovation systems and evolutionary approaches (e.g., Potts, 2009), since they are present in all phases of the innovation process, within environments of intense interactions and complex social networks (Potts *et al.*, 2008: 171).

From all the frameworks and conceptualizations presented, it is possible to draw distinct approaches according to each template’s characteristics and rationale (see Table 1): i) *Economic/Industrial approach* (e.g., DCMS template; WIPO Copyright model), based on the fact that creative industries use creativity as an input and protect their output with copyright and intellectual property laws, earning profits therefrom; ii) *Cultural Content perspective* (e.g., Symbolic Model; Concentric Circles Model), stressing the intrinsic value of culture and popular arts as the major argument to group creative industries; and iii) *Upstream/Downstream branches of activity approach* (e.g., Heng *et al.*, 2003; Scott, 2004; UNCTAD, 2008), distinguishing between upstream and downstream industries in the creative economy.

It is clear from Table 1 that the extent of the creative sector is vast and diversified, comprising a range of industries that goes from purely aesthetic or cultural fields (e.g., Visual and Performing arts or Cultural Heritage) to highly knowledge-based segments (such as digital,

technological or service-based activities), most of them revealing strong interdependencies among each other (UNCTAD, 2008). Moreover, all the approaches seem quite arbitrary and subjective in their selection and listing of industries. Each model posits arbitrarily different valuations in terms of core and peripheral, included or excluded industries, according to their interpretation of creative industries.

Whether in the Cultural or in the Upstream/Downstream activities' approach, there is some consensus in distinguishing activities that produce culture (e.g., literature, music, design) from those which use creativity as an input and diffuse it through broadcast and distribution networks (e.g., advertising, publishing, film, video, TV, radio), in the WIPO Copyright perspective, the focus is instead on patents and property rights, i.e., the degree of innovation and creativity incorporated in goods is the main factor in distinguishing core from peripheral activities.

Each grouping template has distinctive characteristics which reveal advantages but also limitations (cf. Table 2).

Under the Industrial/Economic approach, creative industries are the set of “cultural and copyright industries” that use creativity in their production process and generate output protected by intellectual rights (DCMS, 1998). In this perspective, the *DCMS model* presents advantages such as its relevance as a supporting template for policy-making and governmental decision. However, as mentioned previously, the arbitrariness and lack of rigour of its “eclectic list” (Cunningham, 2002: 54), as well as its lack of compatibility with the available statistical information (Higgs and Cunningham, 2008), pose serious limitations to the measurement of the creative economy. The exclusion of certain activities from the listing, such as ‘Heritage’, ‘Museums’, ‘Library activities’, ‘Cultural activities from arts and professional societies’ or ‘Sports activities’, is another aspect that raises some questions as to the DCMS taxonomy, since these activities can be also considered creative, from the perspective of the DCMS rationale.

The *WIPO Copyright model* focuses on intellectual property as a representation of creativity incorporated in goods and services (World Intellectual Property Organization, WIPO, 2003). This involves industries directly or indirectly related with the “creation, manufacture, production, broadcast and distribution of copyrighted works”. An additional set of “partial copyright industries” includes activities where intellectual property does not play a major role in their production processes (UNCTAD 2008: 12).

**Table 1: Mapping creative industries – industry-based approaches and templates**

INDUSTRIES	Economic/Industrial approach		Cultural Content approach		Upstream/Downstream Branches of Activity approach			
	DCMS (UK)*	WIPO Copyright	Symbolic Model	Concentric Circles Model	Heng <i>et al.</i> (2003), Scott (2004)	UNCTAD (2004)		
Performing Arts		Core		Core	Production Activities	Arts		
Visual Arts/Graphic Arts								
Music		Interdependent		Core				
Musical Instruments								
Literature				Core				
Arts & Antiques Market								
Heritage				Wider cultural		Heritage		
Museums/Galleries				Other core				
Creative Arts			Peripheral		Production Activities (local dense networks)	Functional creations		
Architecture		Partial	Borderline	Related				
Fashion								
Design								
Crafts								
Clothing/Footwear		Partial						
Photography								
Film		Core	Core	Other core	Distribution Activities (global networks of distribution)	Media		
Video								
TV and Radio								Wider cultural
Publishing								Related
Advertising						New Media [functional creations]		
Internet								
Software/Digital Contents		Core	Borderline					
Computer Media			Core	Wider cultural				
Collecting Societies		Core						
Sport			Borderline					
Recording (sound)		Interdependent		Wider cultural				
Paper								
Photocopiers/Photographic Equipment								
Consumer Electronics			Borderline					
Household Goods								
Toys		Partial						

*Note:* The first four models were adapted from the UNCTAD 2008, *Creative Economy Report 2008*: 12-14. We used different shades of grey, ranging from the darkest, indicating the core cultural and creative activities, to the lightest, indicating more peripheral cultural and creative activities.

Source\*: Creative Industries Economic Estimates Technical Note of DCMS (2010) – Annex A, available at:

[http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/images/research/Creative\\_Industries\\_Economic\\_Estimates\\_2010\\_technical\\_note.pdf](http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/images/research/Creative_Industries_Economic_Estimates_2010_technical_note.pdf) [accessed online in March 2012].

Thus, it is assumed that creative industries are directly entailed in the intellectual property of their output. In this line of reasoning, not only are cultural activities reliant on copyright, but all the “industries that produce or deal in patent” would have to be included (e.g., “pharmaceuticals, electronics, engineering and chemicals”) (Hesmondhalg, 2008: 560). Moreover, the large segments of “trademark and design industries” would also be considered in the creative economy (Hesmondhalg, 2008: 561). The rationale for this inclusion is that creative industries generate novelties protected by patents or intellectual rights, thus these industries rely heavily on R&D and innovation processes. One advantage of this model is that it takes into account the linkages between the digital economy (namely, ICTs) and the generation and diffusion of cultural and creative outputs, which have strong effects on the creative economy. Major drawbacks stem from difficulties in assessing such impacts, which have proved to be hard to estimate or preview (Handke, 2006), and in quantifying the creative economy, given the wide-ranging extent of the sectors considered as creative industries, i.e., all the industries that are based on copyright (Thorsby, 2008a). Also, a major limitation of this approach resides in the assessment of the copyright factor<sup>1</sup> associated with each partial and interdependent copyright industry considered in the model (see WIPO, 2003: 57).

The Cultural Content approach includes both the *Symbolic model*, which envisages Arts (“serious and high” fine arts) at the core of political and cultural development, and the *Concentric Circles model*, stressing that creative goods as symbolic contents (sound, text and image) are generated at the centre (core creative arts) and then transmitted through a succession of levels (concentric circles). These movements involve a diminishing cultural potential/commercial value ratio as we move towards the outer circles (Thorsby, 2008a, b; UNCTAD 2008: 12), highlighting the role of cultural content that is incorporated in the output of a given industry. A major feature of these templates, which can be considered as an advantage, is that they are reliant on a more narrow and selective process of grouping the creative industries, restricted to those that produce culture in a strict sense (Thorsby, 2008b). One critique of this perspective is that cultural content, creativity and social meaning can be resources and outcomes not only of purely cultural (and mass media) activities, but also of the entire creative economy (Potts, 2009). Indeed, creative industries contribute to innovations and also help in the implementation of new techniques and technologies or in the distribution of contents (e.g., software, digital media, design, advertising) that play a part in the cultural

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<sup>1</sup> The copyright factor (or weighting) is “the percentage indicating the portion of a particular activity/industry that can be attributed to copyright-based activities” (WIPO, 2003: 85).

and creative production process. In this context, creative industries are considered as a broader arts economy (Potts, 2009).

The Branches of Activity approach categorizes the creative economy in terms of “upstream activities”, i.e., core cultural activities, and “downstream activities”, i.e., commercial and distribution industries, dedicated to the diffusion and commercialization of cultural contents (e.g., Heng *et al.*, 2003; Scott, 2004; UNCTAD 2008: 13). The strength of this perspective lies in the importance of tracing the linkages and interdependencies among all the industries that compose the value chain, differentiating the upstream segments from the downstream (Scott, 2004). However, this advantage becomes a drawback when it comes to quantitatively analysing the respective linkages and interactions, namely, difficulties in measuring interdependencies like dynamic spillovers and externalities and the flows that surpass national borders, as links are often established between transnational and local companies (Scott, 2004; Vang and Chaminade, 2007).

Finally, the Systemic/Evolutionary approach holds that creative industries are evolutionary systems characterized by processes mainly grounded in interactions (the “agents - networks - firms” triad) and social networks (Potts *et al.*, 2008: 170). Here, creative industries are defined and modelled as complex systems of activities, where agents and firms interact dynamically through value flows on the basis of a network structure. Supply and demand of creative goods is characterized as a process where “decisions both to produce and to consume are determined by the choice of others in the social network” (Potts *et al.*, 2008: 169-170).

Major innovations that can be considered as advantages of this approach derive from a novel definition of creative industries as social network markets and from the possibility of representing social interactive processes that characterize the creative economy by use of recent mathematic models, e.g., “complex social networks” or the “network and complexity theory”, which confers formalization in the modelling of linkages and interactions among agents and industries in the sector (Potts *et al.*, 2008: 169). Moreover, this framework goes beyond conventional methodologies by making use of statistical information both at occupational and industry level to analyze the nature of social network processes within the creative sector (see Potts *et al.*, 2008).

Major drawbacks are related to the high complexity and sophistication of this methodology, and to limitations of the mathematical and formal methods in modelling the density of flows and linkages that are characteristic of pure social processes. The weaknesses derive

particularly from the basic assumptions of mathematical models, the difficulties of formal methods in describing sociological mechanisms, and the lack of robustness of the network analysis due to the unavailability of qualitative information.

**Table 2: Grouping the Creative Industries – advantages and drawbacks of each approach**

Model/Approach	Characteristics	Advantages	Disadvantages
<b>DCMS Model</b> - United Kingdom government (DCMS, 1998, 2001, 2010)	Creative industries are the set of cultural and copyright industries that <b>use creativity in their production process</b> and generate <b>output protected by intellectual property rights</b> .	<ul style="list-style-type: none"> <li>- Simplicity.</li> <li>- Relevance as a supporting template for policy-making and governmental decision.</li> </ul>	<ul style="list-style-type: none"> <li>- Arbitrariness of its eclectic list.</li> <li>- Arbitrary exclusion of certain activities from the listing.</li> <li>- Lack of rigour as well as of compatibility with available statistical information.</li> </ul>
<b>WIPO copyright model</b> (World Intellectual Property Organization, 2003)	<b>Intellectual property (copyright) as a representation of the creativity</b> incorporated in goods and services.	<ul style="list-style-type: none"> <li>- Takes into account the linkages between the digital economy (namely, ICTs, software, digital media) and the creative industries.</li> </ul>	<ul style="list-style-type: none"> <li>- Definition is too broad. It includes a vast segment of distribution and commercialization (trademark, patent-based) industries and excludes others that should be considered (e.g., pharmaceuticals, heavily reliant on patents).</li> <li>- Difficulties in assessing the copyright factor in the case of interdependent and partial copyright industries.</li> </ul>
<b>Symbolic Texts model</b> (Hesmondhalgh, 2002)	This model envisages Arts (serious and high fine arts) at the core of political and cultural development. <b>Focus on the popular culture or society's culture.</b>	<ul style="list-style-type: none"> <li>- More narrow and selective process of grouping the creative industries.</li> </ul>	<ul style="list-style-type: none"> <li>- Cultural content and creativity can be resources and the outcomes not only of cultural activities, but also of the entire creative economy.</li> </ul>
<b>Concentric circles model</b> (e.g., European Commission - KEA European Affairs, 2006)	Focus on creative goods as symbolic contents (sound, text and image) which are <b>generated in the centre</b> (core creative arts) <b>and then transmitted through a succession of levels (concentric circles)</b> .		
<b>Upstream/Downstream branches of activity</b> (e.g., Scott 2000, 2004; Heng <i>et al.</i> , 2003; UNCTAD, 2008)	<ul style="list-style-type: none"> <li>- Creative sector segmented into <b>upstream activities</b> (cultural activities in their strict sense, such as performing arts or visual arts) and <b>downstream activities</b> (market-driven industries, such as advertising, publishing or media-related activities) (UNCTAD, 2004, 2008).</li> <li>- Classification according to their branches of activity: <b>production functions</b> and <b>distribution activities</b> in the creative sector.</li> </ul>	<ul style="list-style-type: none"> <li>- Development into distinguished segments of the creative economy.</li> <li>- Simplicity.</li> <li>- Supporting role for policy-making decisions.</li> <li>- It traces the linkages and interdependencies existing among all the industries that compose the value chain, differentiating upstream segments from downstream ones.</li> <li>- Novel definition of CIs.</li> <li>- Higher formalization in the modelling of agents' linkages and interactions in the network, and in the study of social interactive processes.</li> </ul>	<ul style="list-style-type: none"> <li>- Difficulties in quantitative analysis of linkages and interactions along the value chain.</li> <li>- Limitations in measuring interdependencies like dynamic spillovers and externalities.</li> <li>- Often, the flows of interactions go beyond national borders, as linkages are often established between transnational and local companies.</li> <li>- Complexity.</li> <li>- Limitations of mathematical methods in modelling a high density of flows and linkages that characterize pure social processes.</li> </ul>
<b>Systemic and Social Networks Approach</b> (e.g., Potts <i>et al.</i> , 2008; Potts, 2009)	Creative industries (CIs) are evolutionary systems characterized by processes based on interactions and dynamic social networks.		

Note: Four first models adapted from UNCTAD (2008), *Creative Economy Report 2008*: 12-14.

### 3. Mapping the Creative Industries (CI) according to main industry-based approaches. Methodological considerations

#### 3.1. General considerations

Besides the intense debate surrounding the definition and delimitation of Creative Industries (CI), estimations of their weight in the economy, usually in terms of employment, were often made using disparate and non-comparable databases, involving information about distinct countries or regions, even when the same approach is used.

In order to have a more precise idea of the differences between the existing measurement methodologies, it is necessary to depart from a unique dataset and map all the proposals according to their industry-based approach, using a comparable scheme of industry classifications.

For this purpose, we performed extensive mapping of the existing approaches in the literature – *DCMS model*; *WIPO template of copyright-based industries*; *Concentric Circles model*; *Upstream/Downstream activities model* – to measure and quantify the creative industries, as they were presented in Section 2, using codes from the International Standard Industrial Classification for all economic activities, ISIC codes (*Revision 3.1* and *Revision 4*)<sup>2</sup>, and the corresponding codes for the Portuguese economic activities, based in our most recent industrial nomenclature (*Classificação das Actividades Económicas - Revision 3*, or *CAE - Rev. 3*)<sup>3</sup>.<sup>4</sup>

In order to be as accurate as possible in this mapping and the respective estimation of all the approaches analyzed, we used detailed 5-digit industry codes, the maximum breakdown of the Portuguese economic activities classification. The use of *ISIC - Rev. 3.1* in all the industry-based approaches that were mapped is explained by the fact that the codes they used were compatible with *ISIC - Rev. 3.1*. The need to convert the *ISIC - Rev. 3.1* into *ISIC - Rev. 4* codes is related with the fact that the most recent Portuguese classification, *CAE - Rev. 3*, has a compatible correspondence with the structure of the latest international revision, *ISIC - Rev. 4*.

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<sup>2</sup> *ISIC - Rev. 3.1* and *ISIC Rev. 4* codes are available online at: <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=17> and <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27> [last accessed in March 2012]. Correspondence table between *ISIC - Rev. 3.1* and *ISIC - Rev. 4* is available online at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [last accessed in March 2012].

<sup>3</sup> *CAE - Rev. 3 (Classificação das Actividades Económicas)*, is available online at: [http://metaweb.ine.pt/SINE/UInterfaces/SineVers\\_Cat.aspx](http://metaweb.ine.pt/SINE/UInterfaces/SineVers_Cat.aspx) [last accessed in March 2012].

<sup>4</sup> A detailed mapping of the *industry-based* approaches is presented in the Appendix (Tables A1 to A4).

Then, estimations of the dimension of creative industries, using each previously mapped industry-based approach, were carried out. This empirical exercise illustrates the identified distinguishing features of each approach under analysis and allows for a set of accurate comparisons among them, departing from a unique database.

To estimate the weight of creative industries as a percentage of total employment, we used data for Portugal extracted from the *Matched Employer-Employee Database* of the DGEEP<sup>5</sup> under the Portuguese Ministry of Labour and Social Solidarity. The data used is the latest available, from 2009, and covers all the industries and establishments operating in the national territory – mainland Portugal and Autonomous Regions – except for Public Administration and Domestic services. According to this dataset, the total employed population in 2009, in all the activity sectors, was 3.128.126 workers. All the figures obtained for each 5-digit industrial code have been extracted code by code, undertaken by means of an intensive and rigorous programming task using the STATA11<sup>®</sup> statistical analysis software.<sup>6</sup>

The research work involved in mapping all the industry-based approaches revealed to be a complex and time-consuming task, since a large number of empirical studies do not disclose the methodological procedures followed, such as the taxonomy of creative industries and their concrete industrial codes.

Even when it was possible to analyze the studies' methodological appendixes, the information on the sectors included in the analysis of creative industries was often vague and fuzzy or did not present the industrial codes used. Furthermore, the frequent use of low breakdown codes (at a 3- or 4-digit level) in several methodologies reviewed in the literature, contributed to an imprecise characterization of each creative activity they included. The limitations in the availability of information forced us to undertake the intensive and time-consuming task of interpreting each industrial code in particular, converting it to an ISIC code, and then setting the respective correspondence with the Portuguese nomenclature, *CAE - Rev. 3*.

Despite the suitable compatibility between *ISIC - Rev. 4* and the Portuguese *CAE - Rev. 3*, the respective conversion was also a challenging task, since, in many cases, one ISIC code corresponded to several Portuguese 5-digit CAE codes. In this case, to prevent ambiguity, the thorough interpretation of each creative sector's context and knowledge on the details of each

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<sup>5</sup> Courtesy of the DGEEP - *Gabinete de Estratégia e Planeamento* of the Portuguese Ministry of Labour and Social Solidarity (*Ministério do Trabalho e da Solidariedade Social - MTSS*), October - December 2011. The DGEEP is not responsible for the results and their respective interpretation in this article. This is the full responsibility of the authors.

<sup>6</sup> Official information about the STATA 11 statistical software available online at: <http://www.stata.com/stata11/> [last accessed in March 2012].

ISIC and Portuguese CAE code revealed to be crucial. The Guides of Explanatory Notes<sup>7</sup> on each industrial code, both for the ISIC and the Portuguese classification, were extensively read and interpreted, in order to assess with precision the activities to be included or not in the mapping.

### 3.2. Mapping CI using the DCMS approach<sup>8</sup>

The first industrial approach to be mapped was the DCMS model. The methodology used was based on the most recent information, available in the Technical note of the DCMS (2010) report<sup>9</sup>. Its methodological details, from the selection of the creative sectors considered to the codes included, were in accordance with the ‘13 creative sectors’ taxonomy, inspired in the original DCMS (1998) report.

The latest versions of the DCMS reports on the analysis of creative industries (e.g., DCMS, 2011) have employed updated industry nomenclatures, such as the UK Standard Industrial Classification of Economic Activities (SIC) 2007, and also take into account a set of creative occupations using the Standard Occupational Classification (SOC) system, with a detailed digit level. This is in line with more recent studies on industry-based approaches that consider not only the workers operating within the creative sectors, but also all the ‘creative workers’ working outside the creative sectors (see Higgs *et al.*, 2008; DCMS, 2010, 2011). However, in this empirical exercise, our main interest is to obtain a comparison between purely industry-based approaches, as they have been developed in the literature, based on the use of industry codes.<sup>10</sup>

The mapping of the DCMS approach was carried out using the original nomenclature presented in the DCMS technical note (UK SIC 2003 codes), the corresponding *ISIC - Rev. 3* and *ISIC - Rev. 4* codes,<sup>11</sup> and then converted into the Portuguese industrial codes *CAE - Rev. 3* at 5 digits.

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<sup>7</sup> The Guide of Explanatory notes on *ISIC - Rev. 4* is available online at: <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27> and the Guide of Explanatory notes on the Portuguese *CAE - Rev. 3* is available online at: [http://www.ine.pt/ine\\_novidades/semin/cae/CAE\\_REV\\_3.pdf](http://www.ine.pt/ine_novidades/semin/cae/CAE_REV_3.pdf) [last accessed in March 2012].

<sup>8</sup> Table A1 in the Appendix details the mapping.

<sup>9</sup> DCMS (2010) “Creative Industries Economic Estimates Technical Note” - February 2010 – Annex A, available at: [http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference\\_library/publications/6622.aspx](http://webarchive.nationalarchives.gov.uk/+http://www.culture.gov.uk/reference_library/publications/6622.aspx) [last accessed in March 2012]. The latest report of DCMS (2011) is available at: <http://www.culture.gov.uk/publications/8682.aspx> [last accessed in March 2012].

<sup>10</sup> A detailed analysis of *occupational-based approaches* and *combined occupational and industry-based approaches*, using extensive mapping and the respective estimations of the most recent approaches developed in the empirical literature, is undertaken in Cruz and Teixeira (2012).

<sup>11</sup> Correspondence table between *ISIC - Rev. 3.1* and *ISIC - Rev. 4* that was used is available online at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [last accessed in March 2012].

In accordance with the DCMS (2010) technical note, a list of 13 creative sectors was considered: Advertising, Architecture, Arts and Antiques, Crafts, Design, Designer Fashion, Video, Film and Photography, Music and Visual & Performing Arts, Publishing, Software, Computer Games, Electronic Publishing, and TV and Radio.

Even though there was compatibility between the different industrial nomenclatures used, it was difficult to thoroughly extract the creative component of some of the codes included, particularly those related to all-inclusive and residual categories, such as “Other business activities not elsewhere classified”, “Other entertainment activities not elsewhere classified”, and “Other recreational activities n. e. c.”.

This same difficulty occurred when separating the creative from non-creative component in all these activities producing functional goods (e.g., “Architecture”), associated with reproduction services (e.g., “Reproduction of sound/computer media”, “Other publishing”), or within the vast heading of Textile manufacturing and Footwear industry (e.g., “Fashion Design”). In these cases, where the industry also comprehended activities outside the creative sector, only a portion of the industrial code was taken. The portions were applied according to the DCMS (2010) technical note.

Another tricky case was the Crafts sector. Here, according to DCMS (2010: 2), the “majority of businesses are too small to be picked up in business surveys”. In fact, crafts activities cannot be accurately captured by using industry classifications and also business surveys fail to extract information about these activities, since they are mainly developed in small and micro-sized economic units. Despite this, and given the interest of capturing some traditional manufacturing activities, we have considered the industrial codes which best represent crafts and traditional activities, such as ‘ceramic design and decoration’, ‘glass products manufacturing’, ‘production of wooden articles’ and ‘production of jewellery’, but as a small proportion of each code (5%). This did to a certain extent help to assess some of the potential importance that such activities could have in our analysis.

Despite the simplicity of using the DCMS approach, especially for policy and governmental purposes, the selection criteria used by this approach leads to a restrictive viewpoint when analysing the creative sectors. It considers a selective number of creative industries and the proportions that are applied to the industrial codes that also involve non-creative activities reveal some degree of arbitrariness. In truth, this drawback is present in all the industry-based approaches, since that the extraction of the creative component from an industrial code is a

rather difficult matter to assess, given the limitations of the industrial nomenclatures, even when codes are used at their most detailed level (see Table 3).

**Table 3: Mapping CI according to each industry-based approach and using ISIC and national industry classification codes - advantages and drawbacks in practice**

Model/Approach	Sectors considered/Characteristics	Advantages	Disadvantages
<b>DCMS Model</b> (DCMS, 1998, 2010)	Creative industries include 13 sectors: Advertising, Architecture, Arts and Antiques, Crafts, Design, Designer Fashion, Video, Film and Photography, Music and Visual & Performing Arts, Publishing, Software, Computer Games and Electronic Publishing and TV and Radio (DCMS, 2010).	- <u>Simple to use</u> and workable. - Based on a supporting template for <u>policy-making</u> and governmental decision.	- Selection of a <u>restrictive number of creative sectors</u> . - <u>Arbitrary exclusion of certain activities</u> from the listing (e.g., Heritage, Museum, and Sports activities). - <u>Difficulty in separating the creative from non-creative component</u> of industry codes related with activities that were not entirely 'creative'. - The <u>Crafts sector</u> cannot be captured by means of industrial classifications. - <u>Portions of codes taken</u> – some degree of arbitrariness.
<b>WIPO copyright model</b> (World Intellectual Property Organization, 2003)	Copyright-based industries are discriminated in terms of: - Core Copyright-based Industries; - Interdependent Copyright-based Industries; - Partial Copyright-based Industries (see WIPO, 2003: 32-3).	- <u>More objective methodology</u> on the selection of <u>copyright-based activities</u> , since criteria lie on copyright goods and intellectually protected contents.	- It includes a set of <u>broad and all-inclusive industry codes</u> involving the <u>wholesale, retail sale and rental activities</u> . Very hard to assess the creative or copyright-based part of each of the industry codes related with these activities. - <u>Difficulties in obtaining an appropriate copyright factor</u> in the case of Interdependent and Partial copyright-based industries.
<b>Cultural Concentric circles model</b> (KEA European Affairs, 2006)	Creative and symbolic contents are generated in the Core Cultural centre and then transmitted through a succession of levels (concentric circles). The four levels considered in this analysis were: i) <b>Core Cultural Centre</b> ii) <b>Layer 1:</b> Wider Core Cultural activities iii) <b>Layer 2:</b> Creative activities iv) <b>Layer 3:</b> Related Industries (ancillary services, equipment, supply services which facilitate the production and diffusion of cultural and creative contents) (KEA, 2006).	- <u>Emphasis on fine arts and on Cultural production</u> . - It highlights the importance of Arts and Culture as the epicentre of the creative economy. - Form of representation by means of concentric layers, which can be useful in many contexts of policy analysis.	- <u>Selection process reveals limitations:</u> there is no consensus on defining and delimiting the <i>cultural</i> and the <i>creative</i> industries, thus there is no precise way of deciding which activities should be considered in the Cultural economy and those that should be included in the Creative sector. - <u>Mapping and distinguishing cultural and arts activities is strongly limited to the industry classification system</u> , which only captures industrial manufacturing activities, and cannot be disaggregated into more detailed codes.
<b>Upstream/ Downstream activities approach</b> (Heng <i>et al.</i> , 2003)	This approach distinguishes between: i) <b>Creation activities</b> (Software production; Advertising production; TV and Radio; Publishing; Design; Architecture; Arts and Antiques Market; Performing and visual arts and Music; Museums; Film and Video; Photography); ii) <b>Distribution and Ancillary Activities</b> (Software distribution; TV and radio broadcasting; Publishing related services; Performing arts and Music distribution; Film and Video distribution; Photography related services).	- Simple approach to use. - Creative activities are distinguished between Creation or production activities and Distribution or broadcasting activities. - It facilitates the analysis of the interdependencies between creation and distribution activities, in the creative economy.	- Limitations of industry classification systems available in the mapping of exclusively creation and distribution industries. - <u>Difficulties in disaggregating the industry codes into purely creation and distribution or broadcasting activities</u> . Some codes at their maximum resolution include both creation and distribution activities and cannot be broken down into production and distribution activities, separately.

### 3.3. Mapping CI using the WIPO Copyright-based Industries approach<sup>12</sup>

The mapping of the WIPO model was directly drawn from the WIPO (2003: 75-9) methodological notes. This approach uses the most comprehensive and broadest taxonomy for the creative and cultural sectors from all the methodologies analyzed. This is due to the fact that the emphasis here is put on copyright-based industries. It thus classifies the *Core Copyright-based industries*, i.e., those industries “that are wholly engaged in creation, production and manufacturing, performance, broadcast, communication and exhibition, or distribution and sales of works and other protected subject matter” (WIPO, 2003: 85). Here, all the production and distribution activities related to goods protected by copyright are included. Empirically, the headings considered to be Core Copyright-based industries are as follows: i) Press and literature; ii) Music, theatrical productions, operas; iii) Motion picture and video; iv) Radio and television; v) Photography; vi) Software and Databases; vii) Visual and Graphic Arts; viii) Advertising services; and ix) Copyright Collecting Societies.

In turn, the *Interdependent Copyright-based industries* are all the activities “engaged in production, manufacture and sale of equipment whose function is wholly or primarily to facilitate the creation, production or use of works and other protected subject matter” (WIPO, 2003: 33). Here, all the upstream and downstream activities behind the conception and production of all goods and contents protected by copyright (e.g., “transportation, purchase of production factors, investment goods, machinery”), as well as those activities involved in the distribution, commercialization or the diffusion of copyright goods (e.g., wholesale and retail sale agents, firms, entities or establishments) are taken into account (WIPO, 2003: 32). In practice, the *Interdependent Copyright-based industries* heading comprises all the activities related with the “manufacture, wholesale and retail (sales and rental) of: i) TV sets, Radios, VCRs, CD Players, DVD Players, Cassette Players, Electronic Game equipment and other equipment; ii) Computers and Equipment; iii) Musical Instruments; iv) Photographic and Cinematographic equipment; v) Photocopiers; vi) Blank recording material; and vii) Paper” (WIPO, 2003: 33).

Finally, the *Partial Copyright-based industries* consist of all the “industries in which a portion of the activities is related to works and other protected subject matter and may involve creation, production and manufacturing, performance, broadcast, communication and exhibition or distribution and sales” (WIPO, 2003: 33). This includes all the headings related with industries where only a part of their activity is concerned with producing or distributing

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<sup>12</sup> Table A2 in Appendix details the mapping.

copyright-protected goods, which are: i) Apparel, Textiles and Footwear; ii) Jewellery and Coins; iii) Other Crafts; iv) Furniture; v) Household goods, China and Glass; vi) Wall coverings and Carpets; vii) Toys and Games; viii) Architecture, Engineering and Surveying; ix) Interior Design; and x) Museums.

Since the Interdependent and the Partial copyright-based industries only dedicate a part of their activity to copyright goods or services, only the proportion related with contents, goods and the activities protected by copyright should be taken into account (WIPO, 2003). The assessment of total employment in these industries is carried out by applying a weighting factor, called copyright factor, which is the “portion of a particular activity/industry that can be attributed to copyright-based activities” (WIPO, 2003: 85).

According to the WIPO (2003) guide, the copyright factor in the case of Core Copyright-based industries should be taken as 100%. In the cases of the Interdependent and Partial Copyright industries, the “copyright employment” is obtained by multiplying the total employment in each of those industries by the respective copyright factor (WIPO, 2003: 55). The copyright factor in these cases should be lower than 100%, and should be based on estimations and surveys conducted for each country/region, about the copyright component of the economic activities. We based our copyright factors on estimates already presented in the empirical literature.

Although the estimates used were related with other regions or countries, the use of copyright factors from the literature and their respective application to our estimations provided the basis to assess the potential relative weight of the Interdependent and Partial Copyright-based activities in the total Portuguese employment.

The relative importance of each of those industries in our estimations is, thus, dependent on the respective copyright factor that was applied. This could be considered a limitation, but since the estimates of copyright factors are reliant on surveys and parallel research work, which require a considerable amount of time and resources, and as this effort goes far beyond the purpose of our study, there was a need to find a workable solution. Nonetheless, we accomplished an extensive review of the studies on copyright-based industries and of the empirical literature related with copyright factors, in order to ground our analysis in as much evidence as possible.

The extensive mapping of the WIPO approach using international and national industry classifications, *ISIC - Rev. 3* and *Rev.4* and *CAE - Rev. 3*, revealed some major difficulties

particularly related with the codes of the activities involving the wholesale, retail sale and rental services, considered in the headings of the Interdependent and Partial Copyright-based industries. Even using the most detailed breakdown of the Portuguese nomenclature for economic activities, the codes for Wholesale activities, Retail sale and Rental services included a diversity of goods that, in many cases, covered not only the copyright goods under analysis but also other goods that were not relevant for the analysis. The difficulties arose when dealing with residual, wide-ranging categories at the 5-digit level, which could not be disaggregated into more detailed codes, and where the copyright goods were included (e.g., ‘Wholesale of other household goods’; ‘Retail sale of other household articles, in specialized stores’; ‘Wholesale of other intermediate products’; ‘Retail sale of other new products in specialized stores’; ‘Renting of office machinery and equipment’).

Despite the higher level of objectivity that the use of the WIPO approach may provide, there are difficulties deriving from limitations of the industrial classification systems, and from the assessment of an appropriate copyright factor to be applied to the Interdependent and Partial Copyright-based industries (see Table 3).

### **3.4. Mapping CI using the Cultural Concentric Circles approach<sup>13</sup>**

The mapping of the Cultural Concentric Circles approach was conducted on the basis of the procedures adopted by KEA European Affairs (2006).

This approach stresses that cultural goods/contents or ideas are generated in the creation processes of ‘sound, text and image’, at the *Core Cultural Centre*. This type of creativity is mainly associated with artistic creativity and with symbolic knowledge, rather than with analytical or technological creativity. This explains why fine arts, such as performing arts, artistic and literary creation, visual arts or handicraft works are at the heart of this cultural approach (Thorsby, 2008b).

In practice, this *Cultural Core* includes activities such as: i) Visual Arts (painting, sculpture, photography, artistic and literary creation, crafts); ii) Performing Arts (dance, theatre, circus); and iii) Heritage (museums and libraries; arts & antiques market) (KEA, 2006).

The sequential circles or layers through which those cultural contents are distributed and diffused make up the other components of the model.

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<sup>13</sup> Table A3 in the Appendix details the mapping.

This model involves, on a first level, *Layer 1 - the Wider Core Cultural activities*, dedicated to the industrial or mass reproduction of cultural contents/goods and “whose outputs are exclusively cultural” (KEA, 2006: 56). *Layer 1*, thus, includes activities such as: i) Film and Video; ii) Television and Radio; iii) Software Publishing including Games; iv) Music; and v) Literature and Press.

On a second level, *Layer 2* includes all the *Creative Activities* in a *strict sense*, that is, all those “activities whose outputs are functional but which incorporate elements from the two previous layers into the production process”, i.e.: i) Design, including Fashion; ii) Architecture; and iii) Advertising (KEA, 2006: 53).

*Layer 3*, comprising *Related Industries*, lies at the outermost concentric circle, dedicated to ancillary services, the supply of equipment or support activities that make the process of creation and diffusion of the cultural and creative goods possible. It is an all-comprising set of industries specialized in the “production, manufacture and sale of equipments whose function is wholly or primarily to facilitate the creation, production or use of works” from the industries present in the other layers (KEA, 2006: 54). They can be found among the activities of manufacturing, wholesale, retail sale and rental services in the following categories: i) Computers/ ICT and Software manufacturing and distribution; ii) TV sets, Radios, MP3/ 4 players, CD players, DVD players, Cassette players, Electronic Game Equipment, and other similar equipment; iii) Photographic and Cinematographic equipment and related services; iv) Photocopiers; and v) Blank Recording Material.

The brief description of what constitutes the Core and each concentric layer of the model helps to explain why the mapping of this cultural approach, using industrial classifications, revealed to be such a difficult task.

First, the activities that compose the *Cultural Core* are at best sketchily described and barely represented by means of an industrial classification scheme, such as the international ISIC or the national CAE codes that were used. This is the case of ‘Crafts’, ‘Artistic and literary creation’, and ‘Visual arts’, where industrial nomenclatures fail to fully capture these activities. When applying this approach, KEA (2006) also reported the same difficulty, stressing that the Crafts sector “ranges in most categories in manufacturing and retail [and] can only be captured in individual firms’ trade descriptions including ‘crafts’, ‘handmade products’, etc.” (KEA, 2006: 309).

In order to make the most of the information available, especially in these cases of exclusively cultural activities, our mapping was based on the thorough interpretation of each industrial category to be included, on the basis of its respective explanatory notes, so as to determine those that could be the most representative.

This meticulous task led us to include in the Crafts sector the manufacturing industries that were particularly related with most traditional sectors and craftworks, with an accumulated know-how deriving from a legacy of traditional production methods. Thus, industries most related with crafts, such as ‘Pottery’, ‘Ceramic design and decoration’, ‘Ornamental goods in china and porcelain’, ‘Wood articles and wooden craftworks’ or ‘Jewellery’ were taken into account, but in a small portion of the respective code, 5%.<sup>14</sup> This proportion was applied as an attempt to capture only the craft-based activities within manufacturing industries, since our main purpose was to obtain an indicative value for the potential importance of Crafts in our analysis.

Besides, a portion of the industrial code ‘Retail sale of other new products in specialized stores n.e.c.’, corresponding to craftworks and handicrafts, has also been included,<sup>15</sup> to suggest the importance of handicraft activities developed in artists’ ateliers which are often also their commercial establishment.

With regard to the activities of ‘Visual arts’ and ‘Artistic and literary creation’, the Portuguese industry code nomenclature (CAE 90030) used has revealed to be suitable and representative of all the artistic activities related to ‘painting, sculpture, music composing, literary creation’. However, the disaggregation of this code into more detailed ones was not possible, in order to differentiate visual arts from music composing, which should lie under the heading ‘Music and musical reproduction’ that is considered in the *Wider Core Cultural activities* (Layer 1).

Thus, the limitations of industry classifications - the international ISIC and the national CAE - used, namely their difficulty in entirely capturing the Arts and cultural activities, and in breaking down their codes into more detailed industry categories, in order to have an accurate

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<sup>14</sup> The portion of 5% is based on indicative values drawn from the literature analyzed. In this case, we opted for a value that was close to the average of copyright factors applied to these activities, which ranged from 0.5% to 8.3% in various studies using the WIPO approach, leading to an average of about 5% (see Table A3 in Appendix). Our intention was to only suggest an indicative value of the creative potential of these activities and this was the justification for using an assumed portion to be applied to the respective industrial code.

<sup>15</sup> Despite several difficulties in breaking down the Portuguese 5-digit industry code CAE 47784 - Retail sale of other new products in specialized stores n.e.c., which is a vast, residual category including a diversity of goods, in addition to craftworks and handicraft goods, which are also present in this category.

distinction between the different cultural arts, revealed to be a challenge to our research work on the mapping of these activities (see Table 3).

Apart from that, all the other industry codes used in the description of the remaining headings of the *Core Cultural Centre*, such as 'Photography', 'Performing Arts (theatre, dance)', and 'Heritage/Museums and libraries/Arts & Antiques Market', were suitable, representative and were considered in their full dimension (100%).

In *Layer 1*, the *Wider Core Cultural* activities, almost all the headings and categories were appropriately mapped using either the ISIC or the Portuguese CAE industry classifications. The majority of codes that were applied represented with accuracy the activity under analysis in each of the segments covering 'Film and motion picture', 'TV and Radio', 'Software publishing', 'Music' and 'Literature and Press'. Here, major difficulties were once more related with the disaggregation of the industry codes related with the wholesale, retail sale and rental services of cultural and creative goods. This was the case of the vast and all-comprising categories of 'Wholesale of household appliances, radio and TV sets' or 'Wholesale of electrical household appliances, radio and TV sets', from which we intended to capture only the goods related with recorded media (film, video, sound), such as CDs, DVDs, cassettes or recorded video tapes, those that were relevant for our analysis.

In *Layer 2 - Creative activities*, we included all the industrial category codes representing: i) Fashion Design as "a portion of companies whose main activities are classified as retail, wholesale and agencies of textiles and clothing and footwear, manufacture of textiles, apparel, and footwear manufacture"; ii) Design as "design of printing plates, design and design consultancy services" (KEA, 2006: 308); iii) Architectural and Engineering services; and iv) Advertising.

Under Fashion Design, a small portion of 0.5%<sup>16</sup> was applied to all the industry codes related with manufacture, wholesale and retail sale of apparel, textiles, and footwear, in an effort to only capture the activities of fashion design and conception which are developed within these large industrial sectors.

In turn, Design was mapped by using a unique Portuguese industry CAE code - 74100: Design activities - which comprises all the activities of graphic, fashion, interior, industrial, and product design, as well as design consultancy. This 5-digit code is the maximum

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<sup>16</sup> The portion of 0.5% is based on indicative values drawn from the literature analyzed. In this case, we opted for a value that was close to the average of copyright factors applied to these types of activities, in various studies using the WIPO approach. Our intention was to only suggest an indicative value of the creative potential of these activities and this was the justification for using an assumed portion to be applied to the respective industrial code.

breakdown, thus, it cannot be divided into the different Design categories: it was necessary to consider all of them aggregately (see the Appendix). Although our industry classification system, *CAE - Rev. 3*, is the most recent version, the lack of differentiation between the diverse categories of Design activities in terms of industry codes, such as Graphic, Web, Product, Interior, Industrial Design or Design consultancy, constituted a significant drawback. Also in Layer 2, under Architecture and Engineering services, ‘Architectural activities’ were fully included (100% of the code was considered), but only an assumed percentage of 10%<sup>17</sup> of the code for ‘Engineering and related technical consultancy’ was taken into account. This wide-ranging code comprises a broad set of technical activities, which often do not involve creative or copyright inputs nor incorporate any outputs from the activities in previous layers (see Appendix). In turn, ‘Advertising services’ were wholly taken into account (100% of the respective codes) in the analysis.

Finally, in *Layer 3 - Related and support industries*, all the industries supporting the production, distribution and diffusion of cultural and creative goods/contents, were mapped according to their respective industry code (Standard Industrial Classification - SIC). This includes the activities in the Information and Communication Technologies (ICT) sector – ‘Computers and Software manufacturing and distribution’; as well as the activities of all the industries dedicated to manufacturing, wholesale, retail sale and rental services of ‘TV and radio set appliances and similar equipment’; ‘Photographic and Cinematographic equipment’; ‘Photocopiers’; and ‘Blank recording material’ (e.g., unrecorded tapes and media supports, chemicals to be used in photographic activities). Here, the majority of the industry codes adequately described all the segments under study, since here, they are mainly related with industrial activities, which are usually well captured by any industrial classification system.

The mapping of the Cultural Concentric Circles approach demonstrated that, despite the interesting perspective of considering the role of Arts and Culture at the core of the creative economy, there are serious limitations deriving from the difficulty of applying the industrial classification (SIC) systems, in order to accurately describe and capture cultural and artistic activities, as well as to differentiate what are core cultural, wider core cultural and creative activities (see Table 3).

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<sup>17</sup> The portion of 10% is based on indicative values drawn from the literature analyzed. In this case, we opted for a value that was close to the copyright factor applied to ‘Engineering and surveying activities’, in various studies using the WIPO approach. Our intention was to only suggest an indicative value of the creative potential of these activities and this was the justification for using an assumed portion to be applied to the respective industrial code.

### 3.5. CI using the Upstream - Downstream activities approach<sup>18</sup>

The last industry-based approach in the literature to be mapped was the Upstream - Downstream model of creative activities. The methodology followed was mainly based on the procedures of Heng *et al.* (2003: 68-70), who clearly distinguish between Creation/Creative activities and Distribution/Broadcasting and ancillary activities, within all the segments of the creative economy.

The *Creation/Creative activities* include all the core creative sectors whose exclusive purpose is the conception and development of creative and cultural goods. Here, all the activities related with the economic sectors of: i) Software (including games) production; ii) Advertising; iii) TV and Radio; iv) Publishing; v) Design; vi) Architecture; vii) Arts and Antiques Market; viii) Performing Arts and Music; ix) Museums and other cultural activities; x) Motion Picture and Video; and xi) Photography, have been appropriately mapped according to their respective industry classification categories.

In turn, the *Distribution, Broadcasting and Ancillary activities*, as the name indicates, facilitate the distribution, reproduction, diffusion or commercialization of the creative and cultural outputs generated in the Creative/Creation activities. This includes particularly the industries of: i) Software distribution and related services; ii) TV and Media broadcasting related services; iii) Publishing related services (e.g., Printing services); iv) Performing Arts and Music related services; v) Motion Picture and Video distribution and projection; and vi) Photography related services, which were mapped by using the corresponding ISIC and Portuguese CAE industrial codes.

In the mapping of this approach, and given that we used industry categories at a 5-digit level, the maximum breakdown possible, both Creative and Distribution activities were mapped according to the straightforward correspondence to their respective industrial codes.

Despite the simplicity of putting this approach into practice, difficulties arose when there was a need to separate exclusively Creation activities from their associated Distribution/Broadcasting activities. Even using detailed 5-digit industrial codes, it was not possible to disaggregate, for instance, the CAE codes 60100 - Radio activities; 60200 - Television activities or 74200 - Photographic activities, in order to distinguish production activities from broadcasting, distribution or ancillary services related with these activities (see Table 3).

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<sup>18</sup> See Table A4 in the Appendix for details on the mapping procedures.

## 4. Estimating the weight of Portuguese creative industries

### 4.1. According to the main industry-based approaches

Estimations according to each of the mapped methodologies were accomplished using a unique database, so that all the information could be properly compared. The data used on Portugal was extracted from the employment datasets for 2009, and the results are presented in Table 4.

**Table 4: Estimating Creative Industries according to the existing industry-based approaches**

Industry-based Approaches	Employment share of Creative Industries (relative weight in total economy employment)	
	Portugal (2009)	Studies from other countries using each methodology
<b>DCMS Model</b>	<b>2.5%</b>	UK (2009): <b>4.99%</b> ; UK (2010): <b>5.14%</b> <sup>(a)</sup>
		Scotland (2007): <b>3.0%</b> <sup>(b)</sup>
<b>WIPO copyright model</b>	<b>Creative industries - Total Copyright-based Industries, where:</b>	<b>4.6%</b>
	▪ Core Copyright industries	<b>3.9%</b>
	▪ Partial Copyright industries	<b>0.4%</b>
	▪ Interdependent Copyright industries	<b>0.3%</b>
<b>Concentric circles model</b>	<b>Total Cultural and Creative Industries, where</b>	<b>3.7%</b>
	▪ <i>Cultural Industries</i> [Core Centre + Wider Core Cultural]	<b>1.8%</b>
	▪ <i>Cultural and Creative Industries</i> [Core Centre + Layer 1 + Layer 2]	<b>2.6%</b>
	▪ <i>Cultural Industries + Creative Industries + Supporting related Industries</i> [Core Centre + Layer 1 + Layer 2 + Layer 3]	<b>3.7%</b>
	Australia (2001): <b>3.6%</b> Canada (2001): <b>4.0%</b> New Zealand (2001): <b>4.1%</b> UK (2001): <b>7.5%</b> USA (2004): <b>3.8%</b> <sup>(d)</sup>	
<b>Upstream/ Downstream branches of activity</b>	<b>Creative industries, where:</b>	<b>4.1%</b>
	▪ Creation/ production activities	<b>2.3%</b>
	▪ Distribution/ broadcasting activities	<b>1.8%</b>

Notes: <sup>(a)</sup> DCMS (2011) does not take into account 'Software Consultancy' and 'Business and domestic software development': the estimates obtained reflect this fact; <sup>(b)</sup> Scottish Government Social Research (2009); <sup>(c)</sup> According to the figures presented in the WIPO reports (2005, 2007, 2008); <sup>(d)</sup> These figures were obtained using the Concentric Circles approach (Thorsby, 2008b: 155).

Using the DCMS industry-based approach, it is estimated that Portuguese employment in the creative sectors (reference year 2009) accounts for approximately 2.5% of the total national employment.<sup>19</sup>

<sup>19</sup> The dataset used covered all the firms and establishments in Portugal, excluding the Public Administration and Domestic services. The total population of our database (reference year 2009) is 3.128.126 workers.

As mentioned previously, this approach relies on a selective list of 13 creative sectors, inspired in the original DCMS methodology (1998). Furthermore, in cases where the sectors also comprised activities *outside* the creative economy, only a portion of the respective industrial code was considered, so as to capture only the creative activities. This perspective revealed to be restrictive both in the selecting process and when applying portions of the industry codes to extract only the creative component (see Table 3). When analysing our data using the DCMS approach, the estimations led to very modest results. The estimate of 2.5% suggested that the use of such a selective approach to creative sectors and the application of quite arbitrary portions of the industrial codes could be underestimating the effective size of creative industries in Portugal. We believe that this approach is more suited to the specific context of the creative sectors in the country where it was first implemented (UK). In fact, the experience of using the DCMS approach in the estimations undertaken with our database, and the weaknesses found, especially related with the selective and somewhat arbitrary criteria on the creative sectors, showed that this was not the most appropriate methodology to obtain a fair assessment of Portugal's creative industries.

The WIPO copyright approach lies at the other extreme end. This approach is developed by an international organization and the criteria applied are more objective than that of DCMS. The methodological issues can be easily adopted by any country with a set of developed rules on the protection of intellectual property and copyrights. The WIPO approach is reliant on a broader definition of creative industries which is based on copyright-based industries. When using the WIPO approach, our estimates led to a national employment share of 4.6% in Portuguese copyright-base industries – Core, Partial and Interdependent. The weight of Core Copyright-based industries<sup>20</sup> was 3.9% of the total employment. The relative weight of Interdependent Copyright-based industries<sup>21</sup> in the total employment was 0.3%; and the relative share of Partial Copyright-based industries<sup>22</sup> was 0.4% (see Table 4).

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<sup>20</sup> Core copyright industries cover all the production, broadcasting, distribution, wholesale, retail sale and rental activities in the economic segments of Press and Literature (including Publishing and Printing); Music, Theatrical Productions, Operas; Motion Picture and Video; Radio and Television; Photography; Software and Databases; Visual and Graphic Arts; Advertising; and Copyright Collecting Societies.

<sup>21</sup> The Interdependent copyright industries are engaged in the manufacture, wholesale, retail sale and rental services of equipment and source materials that are essential to the production and distribution of copyrighted goods - they are grouped into the following segments: TV and Radio sets; Computers and Equipments; Musical Instruments; Cinematographic and Photographic equipment; Photocopiers; Blank Recording material; and Paper.

<sup>22</sup> Partial copyright industries are those where only a part of their activity is concerned with producing, diffusing or distributing copyrighted goods, which are: Apparel, Textiles and Footwear; Jewellery and Coins; Other Crafts; Furniture; Household goods, China and Glass; Wall coverings and Carpets; Toys and Games; Architecture, Engineering and surveying; Interior Design; and Museums (see Section 3.3 and the Table A2 in Appendix).

One aspect stands out from the results obtained for the cases of the Interdependent and the Partial Copyright industries: their size in terms of relative weight in total employment appears confined to very modest values. These seemingly paradoxical results derive from the fact that although Portugal has a large number of workers in the apparel, textile and footwear industries, the proportion of those working in activities related with goods that are subject to copyright is very small. The copyright factors<sup>23</sup> that were applied to Partial and Interdependent copyright industries, according to the WIPO methodology and to the available empirical studies, are thus responsible for the results obtained for those industries. Despite the need for appropriate copyright factors to apply to the Interdependent and Partial Copyright-based industries in our country, when seeking to capture only those activities related with copyrighted goods (and which can only be obtained through extensive business surveys), the WIPO approach proved to be a more objective and understandable procedure to calculate the potential size of creative industries in Portugal.

Using the cultural approach from the Concentric Circles model, we obtained an estimate for the relative weight of Cultural and Creative industries in the total employment of 3.7%. According to the methodology followed (adopted from KEA, 2006), the Core Cultural centre – composed of the fine arts and cultural/artistic activities, such as ‘Visual arts’, ‘Performing arts’, ‘Photography’, ‘Heritage, museums and antique market’ activities – only represented 0.4% of total employment in Portugal. This is a modest result and should only be interpreted as indicative, since the industry nomenclature, the *CAE - Rev. 3*, even at its maximum breakdown of 5-digit codes, was not able to capture the majority of the activities involved in Culture and Fine Arts. In fact, this limitation is transversal to all the industry classification systems in general and a weakness of all the industry-based approaches analyzed in the literature: the extreme difficulty in capturing and discriminating cultural and artistic activities. This conclusion is wholly corroborated when we analyze the contribution of the Wider Core Cultural activities (Layer 1), i.e., ‘Film and video’, ‘TV and radio’, ‘Software and computer games publishing’, ‘Music’ and ‘Literature and press’, to total employment in Portugal, which amounted to only 1.5% of the national workforce in 2009. This means that the industrial classification system we used, *CAE - Rev. 3*, revealed a greater ability to capture the activities that were included in this first layer of activities, in contrast to the case of the Core cultural centre. Yet, similarly to the Core centre, difficulties in assessing Creative activities (Layer 2), including ‘Design and Fashion’, ‘Architecture and engineering’ and ‘Advertising’, occurred

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<sup>23</sup> The copyright factor is the “portion of a particular activity/industry that can be attributed to copyright-based activities” (WIPO, 2003: 85) (see Section 4.2 and the Appendix).

when we used the industrial codes and assumed portions that were needed to only capture the creative component of 'Fashion design' and of 'Engineering services'. The estimates obtained led to a relative weight of 0.9% in the total Portuguese employment. This result derives primarily from the industrial classification system that was used and from the need to make the most of the available data, given the limitations of the industry-based approaches in discriminating the creative from non-creative component in each industrial category, as mentioned previously. At last, the vast category of industries supporting cultural and creative industries (Layer 3), which ranges from ancillary services to the supply of equipment and resource materials,<sup>24</sup> including the ICT sector, represented 1.1% of total employment. Once more, the better estimates obtained in this segment arose from the fact that the sectors here included had more-detailed descriptions in the industrial nomenclature used.

Despite the relevance of the Concentric Circles Model in terms of a cultural approach to creative industries, the extreme difficulty of Portuguese industrial classification codes to describe and assess artistic and cultural activities suggests that this approach is not the most suitable methodology to measure the weight of creative industries in Portugal.

Finally, based on the Upstream-Downstream model of creative activities, the estimations suggest that all the industries involved both in Creation and Distribution activities contributed to 4.1% of the total Portuguese employment, with Creation Industries accounting for 2.3% of the total employment and Distribution and Ancillary activities for 1.8%. Despite the relative simplicity of putting this approach into practice, difficulties arose when it was necessary to separate exclusively Creation activities from their associated Distribution/Broadcasting activities, even when using detailed 5-digit industrial codes. For instance, it was not possible to disaggregate Radio and Television production activities from their respective broadcasting services or to distinguish Photographic production activities from their related services.

The methodologies detailed above to measure/estimate the weight of creative industries, although providing useful information on a diversity of practical procedures, failed to serve as an optimal measurement approach to assess the importance of creative industries in Portugal. The DCMS approach is too selective and is particularly designed to describe the creative economy of highly developed countries such as the UK. The WIPO approach reveals higher objectivity in the methodological criteria used, but its industrial categories related with commercialization, equipment or supporting services are too broad; moreover, the copyright

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<sup>24</sup> *Layer 3* includes activities related with 'Computers/ ICT and Software manufacturing and distribution', 'TV sets, Radios, MP3/4 players, CD players, DVD players, Cassette players, Electronic Game Equipment, and other similar equipment', 'Photographic and Cinematographic equipment and related services', 'Photocopiers' and 'Blank Recording Material'.

factors applied to Partial and Interdependent Copyright industries are difficult to assess and have a negligible impact on the results obtained. The Cultural Concentric Circles approach relies on cultural and artistic activities at the core of the creative economy, which are barely captured in the industrial codes. The Upstream - Downstream activities model differentiates between Creation and Distribution activities, a task that is not always possible, given the limitations of the industrial codes used. These arguments call for a more appropriate methodology to assess the weight of creative industries.

#### **4.2. Proposing an appropriate industry-based measurement approach to estimate the weight of core creative industries**

As Thorsby (2008b: 156) stated, “there is no “right” or “wrong” model” to analyze creative and cultural industries, but “simply a range of alternative constructions based on different sets of assumptions and employing different mechanisms for putting the parts together”. As already demonstrated, the results obtained are strongly dependent on the methodology followed. Thus, the choice of a definition and respective criteria to select the industries to be included and a suitable taxonomy, given the available information, constitute imperative factors in the search for an appropriate measurement approach. In such a task, we faced four major challenges: i) to provide a definition/concept of creative industries, with a primary interest in core creative industries; ii) to select and delimit creative industries based on our definition of core creative industries; iii) to take the most objective industry-based approach analyzed as a point of departure; iv) to make the most of our proposed approach, given the industry classification system available (*CAE - Rev. 3*) in describing the selected core creative industries.

First, our definition of *Core Creative industries* is based on the premise that core creative activities are all those whose main purpose is to create and produce *creative goods*, be they tangible or intangible. When mapping the existing industry-based approaches, we noticed that they shared some relevant features, i.e., basic elements generally accepted as characterizing core creative industries. Common to all core creative industries is that they are dedicated to the production of creative goods. These goods range from entertainment and information (such as advertising, software and digital media, music production, film and video production, printing and publishing, multimedia, performing arts, photography, museums and heritage) to goods that are used to express individual traits (such as design, artworks, crafts, fashion clothing or jewellery) (Scott, 2004). Indeed, the DCMS (1998, 2010) reports and other empirical studies on this topic (e.g., Work Foundation, 2007; UNCTAD, 2008) often

distinguish creative industries on the basis of their use of creativity as input; intellectual property is often involved in the contents produced; and a gradual merging of creative industries with other sectors, such as Services, Management or Information Technologies, as the information and knowledge society evolves. We had these aspects in mind when selecting the creative sectors to be included in our template to delimit the core creative industries in Portugal.

The extensive mapping exercise using industry codes, presented in Section 3, was also useful to delimit the boundaries of the core creative sectors. According to our definition, the key criterion to select core creative industries was to include all the activities whose primary purpose was to create/produce tangible or intangible creative goods. In addition to the activities directly involved in the creation process, we also considered all those dedicated to the diffusion, broadcasting and reproduction services which had a high correlation with the creative outputs, such as the printing sector, reproduction of media, or media broadcasting services. In fact, in some cases, creation and diffusion or broadcasting services appear intertwined and cannot be disaggregated in terms of their respective industry classification codes (e.g., ‘TV and Radio’, where production and broadcasting activities appear aggregated; ‘Photographic activities’; and ‘Advertising’, where creative outputs are simultaneously means of diffusion). In terms of taxonomy, we departed from an approach that revealed to be more objective than the others, during the mapping exercise with industry classification codes: the WIPO copyright model. This approach is based on copyrighted goods. Although our approach intends to analyze all the industries dedicated to creative goods as defined above, and not focus strictly on copyrighted goods, the relevance of using the WIPO approach is that the copyright criterion can be a more objective way of discriminating all the potentially creative goods, which is our main interest. Copyright is related with intellectual property rights and it generally covers “every production in the literary, scientific and artistic domain” (see WIPO, 2003: 14), as well as “ideas, processes, systems, operational methods, concepts, principles or discoveries”.<sup>25</sup> The Portuguese law<sup>26</sup> on “Copyright and related rights” establishes that *creative works* comprise all those “literary scientific and artistic works”, such as books, newspapers and magazines; “choreographic works and pantomimes”; “musical

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<sup>25</sup> According to Article 1 - *Portuguese Code of Copyright and Related Rights* (Approved by Decree-Law No. 63/85 of March 14, and amended by Laws paragraphs 45/85 of 17 September and 114/91 of 3 September and Decree-Law No. 332/97 and 334/97, both of November 27, Law No. 50/2004 of August 24, Law No. 24/2006 of 30 June and by Law No. 16/2008 of 1 April), available online at: [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=199767#LinkTarget\\_1198](http://www.wipo.int/wipolex/en/text.jsp?file_id=199767#LinkTarget_1198) [last accessed in March 2012].

<sup>26</sup> Article 1, 2 and 3 of the *Portuguese Code of Copyright and Related Rights*, available online at: [http://www.wipo.int/wipolex/en/text.jsp?file\\_id=199767#LinkTarget\\_1198](http://www.wipo.int/wipolex/en/text.jsp?file_id=199767#LinkTarget_1198) [last accessed in March 2012].

compositions”; “cinematographic, television, phonographic, video and radio” works; “works of drawing, tapestry, painting, sculpture, ceramics, tile, engraving, lithography and architecture”; “photographic works”; “works of applied art, industrial designs and works of design that constitute artistic creations, whether or not protected as industrial property”, such as jewelry and craftworks; “illustrations and geographical maps”; “plans, sketches and plastic works relating to architecture, urban planning, geography or other sciences”; “slogans or mottos, advertising matter even if they are presented for originality”; and “parodies and other literary or musical compositions”. Also, “computer programs and databases” are generally considered as creative works or services (see WIPO, 2003: 14). Thus, in essence, all the creations likely to be protected by intellectual property rights are creative goods and fall under our definition of creative outputs. Based on this argument, we were able to capture most of the activities producing creative goods, i.e., *core creative activities* according to our definition. Having discriminated these goods, we were able to discriminate what are the creative sectors to be included in our approach hereafter.

Since the intention of our proposal was to capture all the activities particularly related with the creation (involving in some cases, reproduction and broadcasting) of creative goods or contents, we excluded all the activities that did not fall into our definition of core creative industries, such as wholesale, retail sale, rental services and other support industries related with transportation, equipment supply and distribution services. Also, we considered *creativity in its broader sense*, which involves not only artistic and cultural creativity, but also scientific and analytical creativity in the form of literary, academic, and scientific works. Thus, the Research and Development (R&D) sector was included,<sup>27</sup> a sector dedicated to the production of scientific and technological creative contents, in addition to the traditional creative sectors. Indeed, as pointed out by ground-breaking authors on the topic (e.g., Florida, 2002), creative industries should cover a wide range of sectors that includes not only the cultural and artistic industries, but also those dedicated to the production of analytic, technical and scientific knowledge, such as the science sector (R&D) architecture and engineering activities, and computing services.

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<sup>27</sup> We argue that the R&D sector also produces outputs with high value added and incorporated creativity. Thus, we only included the sectors of intensive production of knowledge and research (CAE 72). We excluded the sectors of Education, Financial services, Real Estate, Other Consultancy (CAE 749), and Health and Legal activities, because they are vast and all-comprising fields which may or not lead to the production of creative goods or services. These sectors were also excluded because they could lead to a bias in our analysis. We wanted to restrict our focus to the Sectors that are, by excellence, core creative sectors (i.e., whose main purpose is to generate novel ideas or creativity whether tangible or intangible).

The vast sectors of Education, Business consultancy, Legal and Finance services or Health and personal services were excluded from our analysis, since our main purpose was to analyze creative activities in their strictest sense, and not knowledge-based activities. In the same line, the High-tech sector (ICT hardware, chips, and other electronic devices; telecommunications), Robotics, Optical and precision equipments, Pharmaceuticals and other sectors in this category, were not included, as the interest of our study lies on activities producing creative goods, and not on industries dedicated to high-technology goods. The sectors related with heritage and leisure, such as Museums, Recreation and Amusement activities were taken into account in our approach, since they often contribute to the development of creative entertainment services (e.g., the activities of museums, historical and archaeological sites, amusement parks). On the other hand, the vast segments of Sports and Tourism activities were excluded from our definition, since their main purpose is not to exclusively produce creative goods or services.

Summing up, the main segments selected as *core creative sectors* in our approach were: i) Advertising and Marketing; ii) Architecture and Engineering; iii) Design and Fashion Design; iv) Crafts (e.g., ‘pottery’, ‘ceramics decoration’, ‘jewellery’, ‘wooden craftworks’); v) Film, Video and Photography; vi) TV and Radio; vii) Music and the Performing Arts; viii) Publishing (including ‘literature’, ‘press’ and ‘library/archive activities’); ix) Software Publishing and Computer consultancy, and x) Research & Development.<sup>28</sup>

Even though we attempted to reduce as much as possible the cases in which only an assumed proportion of the industrial code had to be considered, there was a need for this procedure, given the limitations of the SIC system used. Indeed, although using codes at the maximum breakdown, there were cases where the creative activities were not clearly discriminated in the respective industry sector and there was no other source of information available on that area for Portugal.<sup>29</sup>

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<sup>28</sup> The mapping of all the economic activities in each segment by their respective industrial codes, using *ISIC - Rev. 4* and the Portuguese *CAE - Rev. 3* at their maximum breakdown or detail,<sup>28</sup> is presented in Table A5 in the Appendix.

<sup>29</sup> This was the case of ‘Architectural and Engineering services’, where we included 100% of the industrial code related with Architecture, but only an assumed proportion of 10% related with Engineering services, based on indicative values drawn from the literature analyzed. In ‘Fashion Design’ we considered an assumed proportion (0.5%) of all the manufacturing codes related with textiles, apparel and footwear, as an attempt to capture only the creative component of these activities. The portion of 0.5% is based on indicative values drawn from the empirical literature. The same proportion was applied to Crafts. In the case of ‘Software Publishing and IT consultancy’, we opted to include both the categories of ‘Software development’ and ‘Computer consultancy’, since these activities appear closely interrelated. Very often, the creation of new software (in particular, business software) derives from consultancy and post-sales activities, where the supplier adjusts the product in response to its customers’ needs. These activities, in our perspective, are directly connected with the creation of new

Again, the estimations were carried out based on data for 2009, from the *Linked Employer-Employee datasets* of the DGEEP<sup>30</sup> under the Portuguese Ministry of Labour and Social Solidarity, using STATA 11® software. The results are summarized in Table 5. The accuracy of the estimations on employment in the core creative industries has been assured by the use of 5-digit industrial codes and the most recent industry classification system, *CAE - Rev. 3*.

Using the proposed industry-based approach, the weight of creative industries represents 3.5% of Portugal's total workforce, that is, the core creative industries employed 109.343 works in Portugal in 2009.

The most relevant core creative sectors are (cf. Table 5): *Software publishing and Computer/IT consultancy*, with a relative contribution of 1.0% to the national workforce; *Publishing*, with a relative weight of 1.0% in total employment; and *Advertising and Marketing*, with 0.4%.

**Table 5: Estimating Core Creative Industries in Portugal, 2009**

<b>Core Creative Industries</b>	<b>ESTIMATIONS Portugal (2009) – Employment in Core Creative Industries, as a percentage of total employment</b>
ADVERTISING and MARKETING	0.4%
ARCHITECTURE and ENGINEERING	0.3%
DESIGN and FASHION DESIGN	0.08%
CRAFTS	0.04%
FILM, VIDEO and PHOTOGRAPHY	0.2%
TV and RADIO	0.2%
MUSIC and the PERFORMING ARTS	0.2%
PUBLISHING	1.0%
SOFTWARE PUBLISHING and COMPUTER CONSULTANCY	1.0 %
RESEARCH & DEVELOPMENT (R&D)	0.1%
<b>TOTAL Core Creative Sectors</b>	<b>3.5 %</b>

It is worth noting that in the Software sector, besides publishing activities, a large number of workers dedicated to software and computer consultancy services were included. In the Publishing sector, besides edition activities, a large number of employees involved in

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software or new derivations of the basic software provided. Thus, as broadcasting and reproduction activities were included as directly related with the creative goods, we also chose to include the category of 'Computing and IT consultancy services' in addition to 'Software development/publishing', in our core creative sectors.

<sup>30</sup> Courtesy of the DGEEP - *Gabinete de Estratégia e Planeamento* under the Portuguese Ministry of Labour and Social Solidarity (*Ministério do Trabalho e da Solidariedade Social - MTSS*), October - December 2011. The DGEEP is not responsible for the results and their respective interpretation in this article, which are the full responsibility of the authors.

printing, pre-printing and bookbinding activities were included in our approach, due to their close relationship with the creative activities in the sector.

Hence, these figures suggest that the most important creative industries in Portugal mainly correspond to those which incorporate a larger number of technicians or workers operating in supporting services to the creation/production activities. This fact reveals the importance of technical and assistance work in supporting the development of creation activities, within each creative sector.

## 5. Conclusion

Literature on the creative industries has barely come to a common agreement on what constitutes and delimits the creative and cultural activities, whether in terms of their conceptual definition or empirical methodologies.

Despite the intense debate that surrounds the definition and delimitation of creative industries, estimations of their weight in the economy, usually in terms of employment, were often made using disparate and non-comparable databases, involving information on distinct countries or regions.

This study intended to contribute to the systematization of a growing corpus of literature related with measurement approaches to the creative industries, namely in terms of existing concepts and methodologies. For this purpose, we accomplished a thorough review of the literature on the matter, which allowed us map some of the most important industry-based approaches to measure and quantify creative industries: DCMS taxonomy; WIPO methodology; Cultural Concentric Circles model; and the Upstream - Downstream activities model of creative industries. This extensive mapping was undertaken using the most recent International Standard Industrial Classification (ISIC) codes, at a 4-digit level, and the Portuguese industry codes (CAE) at a 5-digit level. This was the basis for the estimations performed on the creative industries, in terms of their respective employment in Portugal (data for 2009<sup>31</sup>), according to each different industry-based approach in the literature.

Although providing useful information on a diversity of practical procedures, the approaches analyzed revealed significant drawbacks. The DCMS approach was too selective and particularly designed to describe the creative economy of the UK, from where it originated.

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<sup>31</sup> The data used in the estimations of employment in Portuguese Creative Industries relates to 2009 and has been extracted from the official *Linked Employer-Employee Databases* (LEED) of the DGEEP under the Portuguese Ministry of Labour and Social Solidarity, using the STATA 11®. programming software

The WIPO approach revealed higher objectivity in terms of the methodological criteria used, but its industrial categories related with commercialization, equipment or support services were too vast, and the copyright factors applied to Partial and Interdependent Copyright industries are difficult to assess and have an impact on the results. The Cultural Concentric Circles approach relied on cultural and artistic activities at the core of the creative economy, which were barely captured when using industrial codes. The Upstream - Downstream activities model differentiated between Creation and Distribution activities, a task that is not always possible given the limitations of the industrial codes used. These arguments encouraged us to propose an industry-based methodology that could be better adapted to the empirical context of core creative industries in Portugal.

Using the proposed industry-based approach, our estimates revealed that 109.343 employees were operating in all the sectors considered as core creative sectors in Portugal, in 2009. This represented 3.5% of the total Portuguese employment. This estimate is higher than that obtained using the DCMS approach (2.5%), which, in our perspective, constitutes a narrower perspective of the creative sectors. In turn, when compared with the estimates obtained using the WIPO approach (4.6%) or the Upstream-Downstream Industries model (4.1%), we find that the proposed approach led to a lower result (3.5%). This is explained by the fact that it does not include the vast segments of Distribution, Commercialization and Equipment supply related with the creative goods. The proposed definition is not as broad and all-inclusive as the one associated with these approaches, which involve a vast range of wholesale and retail agents, as well as equipment suppliers and telecommunications services, that are not directly involved in the production/creation of creative goods, in our perspective. If we look into the detail of the WIPO Core Copyright-based industries and that of the proposed template on core creative sectors, it is easy to conclude that the differences in the estimates are explained by the fact that the WIPO approach includes the sectors of Wholesale, Retail sale, Rental services, and Telecommunications sectors in their Core Copyright-based industries, which we excluded from our analysis. In turn, the proposed approach includes the sectors of Crafts, Fashion Design, Architecture and Engineering and Museums activities in its core creative industries, which the WIPO approach does not consider as Core Copyright, but rather as Partial Copyright-based industries.

Notwithstanding the limitations, the methodological exercise pursued here will hopefully constitute a valuable contribution to the empirical research on the topic of creative industries.

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**Table A1: Mapping Creative Industries using ISIC and the correspondent Portuguese nomenclature of economic – DCMS (UK) Model\***

Economic Activity*	SIC codes (UK) Rev. 2003	Proportion of code taken*	ISIC code - Rev 3.1	ISIC code - Rev 4 **	Code (CAE - Rev 3) *** - Subclass - 5 digits	Description (CAE - Rev. 3)	
<b>1. Advertising</b>	Advertising agencies, buying services	74.40	100%	7430; 7413	7310; 7320	73110 73120 73200	73110 - Advertising agencies 73120 - Activities of representation (e.g., advertising space) in the media 73200 - Market research and public opinion polling
<b>2. Architecture</b>	Architectural and engineering activities and related technical consultancy	74.20	25%	7421; 7422	7110; 7120	71110 71120 71200	71110 - Architectural activities 71120 - Engineering activities and related technical consultancy services 71200 - Technical testing and analysis
<b>3. Arts and Antiques</b>	Other retail sale in specialized stores	52.48/ 9	5%	5239; 5259; 5240	4774; 4791	47790	47790 - Retail sale of second-hand goods in specialized stores
	Retail sale of second-hand goods in stores	52.50	5%				
<b>4. Crafts</b>	"Majority of businesses too small to be picked up in business surveys" (source: DCMS, 2010: 2)  Given the interest of our analysis in traditional manufacturing activities, we considered some codes representing traditional manufacturing and very related Crafts activities (ceramics design and decoration, glass, wooden articles and jewellery), but in a very small proportion of each code - 5%					23411 23412 23413 23414 23110 23120 23131 23132 23140 23190 16291 16292 32110 32121 32122 32123 32130	23411 - Pottery 23412 - Manufacture of household articles made of stone- or earthenware, porcelain and china 23413 - Manufacture of ornamental articles made of stone- or earthenware, porcelain and china 23414 - Activities of decoration of ceramic articles for domestic and ornamental purposes 23110 - Manufacture of flat glass 23120 - Transformation and processing of flat glass 23131 - Manufacture of glass containers 23132 - Glassware 23140 - Manufacture of fibre glass 23190 - Manufacture and processing of other glass (including technical glass) 16291 - Manufacture of other wood articles and wooden craftworks 16292 - Manufacture of articles of straw and plaiting material 32110 - Striking of coins 32121 - Manufacture of filigree 32122 - Manufacture of jewellery and related articles, n.e.c 32123 - Working of diamonds and of other precious or semi-precious stones for jewellery and industrial use 32130 - Manufacture of imitation jewellery
<b>5. Design</b>	"No codes match this sector" (source: DCMS, 2010: 2)					74100	74100 - Design activities (namely, Interior Design activities)
<b>6. Designer Fashion</b>	Manufacture of knitted and crocheted hosiery	17.71	0.5%	1810; 1820	1410	14110	14110 - Manufacture of leather clothes
	Manufacture of knitted and crocheted pullovers, cardigans and similar articles	17.72	0.5%			14120	14120 - Manufacture of workwear
	Manufacture of leather clothes	18.10	0.5%			14131	14131 - Manufacture of other ready-to-wear outerwear
	Manufacture of workwear	18.21	0.5%			14132	14132 - Manufacture of other made-to-measure outerwear
	Manufacture of other outerwear	18.22	0.5%			14133	14133 - Finishing activities of wearing apparel
	Manufacture of underwear	18.23	0.5%			14140	14140 - Manufacture of underwear
	Manufacture of other wearing apparel and accessories n.e.c.	18.24	0.5%			14190	14190 - Manufacture of other wearing apparel and accessories
	Dressing and dyeing of fur; manufacture of articles of fur	18.30	0.5%			14200	14200 - Manufacture of articles of fur
	Manufacture of footwear	19.30	0.5%			14300	14300 - Manufacture of knitted and crocheted hosiery 14390 - Manufacture of other knitted and crocheted apparel (e.g., pullovers, coats)
	Other business activities n.e.c.	74.87	2.5%			1920	15120 15201 15202
<b>7. Video, Film &amp; Photography</b>	Motion picture and video production and distribution	92.11 92.12	100%	9211	5911; 5912; 5913	59110 59120 59130	59110 - Production of motion picture, videos and television programs 59120 - Technical activities of post-production for motion picture, videos and television programs 59130 - Distribution of motion picture, videos and television programs
	Motion picture projection	92.13	100%	9212	5914	59140	59140 - Motion picture and video projection
	Reproduction of video recording	22.32	25%	2230	1820	18200	18200 - Reproduction of recorded media (namely, videocassettes, DVD)
	Photographic Activities	74.81	25%	7494	7420	74200	74200 - Photographic activities
<b>9&amp;10. Music and the Visual &amp; Performing Arts</b>	Publishing of sound recordings	22.14		2213; 2230	5920	59200	59200 - Activities of sound recording and music publishing
	Reproduction of sound recording	22.31	25%				
	Artistic and literary creation and interpretation	92.31	100%	9214	9000	90030	90030 - Artistic and literary creation
	Operations of arts facilities	92.32	100%	7499	7990	79900 90040	79900 - Booking/ ticketing services and related activities 90040 - Operations of arts facilities
	Other entertainment activities n. e. c.	92.34	100%	9219	9000	90010	90010 - Performing arts activities
	Other recreational activities n. e. c.	92.72	25%			9249	9321; 9329
<b>11. Publishing</b>	Publishing of books	22.11	100%	2211	5811	58110	58110 - Book publishing
	Publishing of newspapers	22.12	100%	2212	5813	58130	58130 - Newspapers publishing
	Publishing of journals and periodicals	22.13				58140	58140 - Publishing of magazine and other periodicals
	Other publishing	22.15	50%	2219	5819	58190	58190 - Other publishing
	News agency activities	92.40	100%	9220	6391; 6399	63910 63990	63910 - Activities of news agencies 63990 - Other information service activities n.e.c.
<b>8&amp;12. Software, Computer Games &amp; Electronic Publishing</b>	Reproduction of computer media	22.33	25%	2230	1820	18200	18200 - Reproduction of recorded media
	Publishing of software	72.21	100%	7221	5820	58210 58290	58210 - Videogame publishing 58290 - Other software publishing
	Other software consultancy and supply	72.22	100%	7229	6201 6202	62010 62020	62010 - Software programming activities 62020 - Software consultancy activities
<b>13. Radio &amp; TV</b>	Radio and Television activities	92.20	100%	9213	6010 6020	60100 60200	60100 - Radio activities 60200 - Television activities

Note: \* The selection of codes was based on DCMS (2010) "Creative Industries Economic Estimates - 10 February 2010" - Annex A , available online at: [http://www.culture.gov.uk/what\\_we\\_do/research\\_and\\_statistics/4848.aspx](http://www.culture.gov.uk/what_we_do/research_and_statistics/4848.aspx) [accessed March 2012]; \*\* Correspondence Tables between ISIC Rev 3.1 and ISIC Rev 4 available at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [accessed March 2012]; \*\*\* The Portuguese nomenclature CAE (*Classificação das Actividades Económicas*) has direct correspondence with ISIC Rev 4.

**Table A2: Mapping Creative Industries using ISIC and the correspondent Portuguese nomenclature of economic activities - WIPO Copyright Model \*\***

Economic Activity*	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****
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**CORE Copyright Industries**

<b>Press and Literature</b> (note: it includes <b>PUBLISHING</b> and <b>PRINTING</b> categories)	Authors, writers, translators	9214; 7499	9000; 7490	90030 74300	90030 - Artistic and literary creation 74300 - Translation and interpretation activities
	Newspapers	2212; 2221	5813 1811	58130 18110	58130 - Newspapers publishing 18110 - Newspapers printing
	News and feature agencies	9220	6391 6399	63910 63990	63910 - Activities of news agencies 63990 - Other activities of news agencies
	Magazines/periodicals	2212; 2221	5813 1811	58140 18120	58140 - Publishing of magazine and other periodicals 18120 - Other printing (e.g., periodicals)
	Book publishing	2211	5811 1811	58110 18120	58110 - Book publishing 18120 - Other printing (e.g., periodicals)
	Cards, maps, directories and other published material	2219; 2221	5812 1811	58190 58120 18120	58190 - Other publishing activities (e.g., catalogues, posters,...) 58120 - Publishing of lists for consultation 18120 - Other printing
	Pre-press, printing, and post-press of books, magazines, newspapers, advertising materials	2222	1812	18130 18140	18130 - Activities of preparation for printing and related media services 18140 - Bookbinding and related activities
	Wholesale and retail of press and literature (book stores, newsstands, etc.)	5139 5239	4649 4761	46492 47610 47620	46492 - Wholesale of books, magazines and newspapers 47610 - Retail sale of books in specialized stores 47620 - Retail sale of newspapers, magazines and stationery in specialized stores
	Libraries/ Archives	9231	9101	91011 91012	91011 - Library activities 91012 - Archive activities
	<b>Music, Theatrical Productions, Operas</b>	Composers, lyricists, arrangers, choreographers, writers, directors, performers and other personnel	9214; 9219; 9249	9000	90010 90020
Printing and publishing of music		2213	5920	59200	59200 - Activities of sound recording and music publishing
Production/manufacturing of recorded music		2230	1820	18200	18200 - Reproduction of recorded media
Wholesale and retail of recorded music (sale and rental)		5139 5233 7130	4649 4762 7722	46430 47630 77220	46430 - Wholesale of electrical household appliances, radio and TV sets 47630 - Retail sale of records, CDs, DVDs, cassettes and similar articles in specialized stores 77220 - Renting of video cassettes, CD, DVD and records
Artistic and literary creation and interpretation		9214	9000	90030	90030 - Artistic and literary creation
Agents and managers of actors (property rights, cachets,...)		7414	7490	74900	74900 - Other consulting, scientific and technical activities
Performances and allied agencies (bookings, ticket agencies, etc.)		9214	7990	79900 90040	79900 - Booking/ ticketing services and related activities 90040 - Operation of arts facilities
<b>Motion Picture and Video</b>	Writers, directors, actors	9214	5911	59110	59110 - Production of motion picture, videos and television programs
	Motion picture and video production and distribution	9211	5912 5913	59120 59130	59120 - Technical activities of post-production for motion picture, videos and television programs 59130 - Distribution of motion picture, videos and television programs
	Motion picture exhibition	9212	5914	59140	59140 - Motion picture and video projection
	Video rentals and sales, video on demand	7130; 9211	7722	77220	77220 - Renting of video cassettes, CD, DVD and records
	Allied services	2230	1820	18200	18200 - Reproduction of recorded media
<b>Radio and Television</b>	National radio and television broadcasting companies	9213	6010	60100	60100 - Radio activities
	Other radio and television broadcasters	9213	6020	60200	60200 - Television activities
	Independent producers (not related with the broadcasting)	7499	5911	59110	59110 - Production of motion picture, videos and television programs (namely, independent production)
	Cable Television (systems and channels)	6420	6110	61100	61100 - Wired telecommunication activities
	Satellite Television	6420	6130	61300	61300 - Satellite telecommunication activities
<b>Photography</b>	Photographic Activities (Studios and commercial photography)	7494	7420	74200	74200 - Photographic activities
	Photo Agencies and Libraries	2222 7499 9231	1812 9101	18130 74900 91011 91012	18130 - Activities of preparation for printing and related media services 74900 - Other consulting, scientific and technical activities 91011 - Library activities 91012 - Archive activities
	Programming, development and design, manufacturing	7221 7229	5820 6201 6202 6209	58210 58290 62010 62020 62030 62090	58210 - Videogame publishing 58290 - Other software publishing 62010 - Software programming activities 62020 - Software consultancy activities 62030 - Management and exploitation of software equipment 62090 - Other activities related to information technology and computing technologies
	Wholesale and retail prepackaged software (business programs, video games, educational programs, etc.)	5151; 5239	4651 4741	46510 47410	46510 - Wholesale of computers, peripheral equipment and software 47410 - Retail sale of computers, peripheral units and software in specialized stores
<b>Database processing and publishing</b>		7240 7230	6311 6312	63110 63120	63110 - Data processing, Web hosting and related activities 63120 - Web portals
<b>Visual and Graphic Arts</b>	Artists	9214	9000	90030	90030 - Artistic and literary creation
	Art galleries and other wholesale and retail	9214	4773	47784	47784 - Retail sale of other new products in specialized stores
	Picture framing and other allied services	7494	7420	74200	74200 - Photographic activities
	Graphic design	9214; 7499	7410	74100	74100 - Design activities
<b>Advertising</b>	Agencies, buying services	7430; 7413	7310	73110 73120 73200	73110 - Advertising agencies 73120 - Activities of representation (e.g., advertising space) in the media 73200 - Market research and public opinion polling
<b>Copyright Collecting Societies</b>	Activities of professional organizations	9112	9412	94120	94120 - Activities of professional organizations

(...)

(...)

INTERDEPENDENT Copyright Industries		ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits	Description (CAE - Rev. 3) ****	Copyright factors which we adopted in our study (see *****)	Copyright factors for Interdependent Copyright Industries, based on Singapore Report (2004) *****	Copyright factors for Interdependent Copyright Industries, based on Bulgaria Report (2007) *****
<b>TV sets, Radios, VCRs, CD players, DVD players, Cassette players, Electronic Game Equipment, and other similar equipment</b>	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods; Wholesale; Retail Sale; and Renting of personal and household appliances.	3230	2640	26400	26400 - Manufacture of radio and television receivers, and other consumer electronics	35%	35%	The authors do not specify the copyright factors by each of the Interdependent Copyright Industries, but they refer to copyright factors varying from 17% to 23%, in this group of industries.
		5139	4649	46430	46430 - Wholesale of household appliances, radio and television equipments			
		5233	4742	47430	47430 - Retail sale of audiovisual equipment in specialized stores			
		7130	7722	77220	77220 - Renting of videotapes, CDs, DVDs, records			
<b>Computers and Equipment</b>	Manufacture of office, accounting and computing machinery; Wholesale of computers, computer peripheral equipment and software; and Renting of office machinery and equipment (including computers).	3000	2620	26200	26200 - Manufacture of computers and peripheral equipment	35%	35%	
		5151	4651	46510	46510 - Wholesale of computers, peripheral equipment and computer programs			
		7123	7730	77330	77330 - Renting of office machinery and equipment (including computers)			
<b>Musical Instruments</b>	Manufacture of musical instruments; Wholesale; Retail Sale of household goods, articles and equipment.	3692	3220	32200	32200 - Manufacture of musical instruments	20%	20%	
		5139	4649	46494	46494 - Wholesale of other household goods			
		5233	4759	47593	47593 - Retail sale of other household articles, in specialized stores			
<b>Photographic and Cinematographic Equipment</b>	Manufacture of optical instruments and photographic equipment; Wholesale; Retail Sale and Renting of other machinery and equipment.	3320	2670	26702	26702 - Manufacture of photographic and cinematographic equipment	30%	30%	
		3150	2740	27400	27400 - Manufacture of electric and other lighting equipment			
		5139; 5239	4773	47782	47782 - Retail sale of optical, photographic, cinematographic equipment and of precision instruments in specialized stores			
		7129	7730	77390	77390 - Renting of other machinery and equipment n.e.c.			
<b>Photocopiers</b>	Manufacture of office, accounting and computing machinery; Wholesale; Retail Sale other machinery and equipment.	3000	2817	28230	28230 - Manufacture of office machinery and equipment, except computers and peripheral equipment	30%	30%	
			4659	46660	46660 - Wholesale of other machinery and office equipment			
		5159	7730	77330	47781 - Retail sale of other machinery and office equipment in specialized stores 77330 - Renting of office machinery and equipment (including computers)			
<b>Blank Recording Material</b>	Manufacture of other chemical products; Wholesale of electronic and telecommunications parts and equipment; Retail sale of household appliances, articles and equipment.	2429	2029	20594	20594 - Manufacture of other chemical products (e.g., chemicals for photographic activities)	25%	25%	
		5152	2680	26800	26800 - Manufacture of magnetic and optical information supports (non recorded) - e.g., videocassettes, optical disks, diskettes			
			4652	46520	46520 - Wholesale of electronic and telecommunications parts and equipment			
		5233	4762	47630	47630 - Retail sale of records, CDs, DVDs, cassettes and similar articles in specialized stores			
<b>Paper</b>	Manufacture of pulp, paper and paperboard; Wholesale of other intermediate products, waste and scrap; Other retail sale in specialized stores.	2101	1701	17110	17110 - Manufacture of pulp	25%	25%	
				17120	17120 - Manufacture of paper and paperboard (except corrugated)			
		2109	1709	17230	17230 - Manufacture of paper/ stationery paper and material			
		5149	4669	46762	46762 - Wholesale of other intermediate products (e.g., paperboard, pulp)			
		5239	4761	47620	47620 - Retail sale of newspapers, magazines and stationery in specialized stores			

Note: \* According to the WIPO "Guide on Surveying the Economic Contribution of the Copyright-Based Industries", Annex II (pages 75-80); \*\* Source: WIPO Intellectual Property Organization - "Guide on Surveying the Economic Contribution of the Copyright-Based Industries", available online at: [http://www.wipo.int/copyright/en/publications/pdf/copyright\\_pub\\_893.pdf](http://www.wipo.int/copyright/en/publications/pdf/copyright_pub_893.pdf) [last accessed March 2012]; \*\*\* Correspondence Tables between ISIC Rev 3.1 and ISIC Rev 4 available online at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [last accessed March 2012]; \*\*\*\* The Portuguese nomenclature CAE (Classificação das Actividades Económicas) has direct correspondence with ISIC Rev 4; \*\*\*\*\* Following the study of Singapore "The Economic Contribution of Copyright-Based Industries in Singapore - The 2004 Report", available at: [http://www.wipo.int/ip-development/en/creative\\_industry/pdf/ecostudy-singapore.pdf](http://www.wipo.int/ip-development/en/creative_industry/pdf/ecostudy-singapore.pdf), for the The Core Copyright Industries, "the economic contributions of (...) employment were taken at full value in estimating the core copyright industries. This meant that the copyright factors for apportioning the industries were 100% as recommended by the WIPO Guide" (see page 66); \*\*\*\*\* The copyright factors for the Interdependent and the Partial copyright industries have not been independently developed for the case of Portugal, at the best of our knowledge. Since the analysis of these factors involves industry surveys and questionnaires, which was clearly beyond the scope of our study, we have based on estimated proportions already put forward in studies such as the Singapore Copyright industries or the analysis of Copyright industries in Bulgaria. For further details, please see "The Economic Contribution of Copyright-Based Industries in Singapore - The 2004 Report", Table VIC.6: "Copyright Factors for Non-Core Copyright Industries, 1986-2001, for the relevant copyright factors on the non-core copyright industries", available at: [http://www.wipo.int/ip-development/en/creative\\_industry/pdf/ecostudy-singapore.pdf](http://www.wipo.int/ip-development/en/creative_industry/pdf/ecostudy-singapore.pdf), page 73 [accessed online March 2012]. See also the estimated factors used in the Report "The Economic Contribution of Copyright-Based Industries in Bulgaria - 2007", available at: [http://www.wipo.int/ip-development/en/creative\\_industry/pdf/1009E-4.pdf](http://www.wipo.int/ip-development/en/creative_industry/pdf/1009E-4.pdf), pages 32 and 139 [accessed online March 2012]. We also consulted the Report "The Economic Contribution of Copyright-Based Industries in Romania - 2008" (see pages 186 and 187), available at: [http://www.wipo.int/ip-development/en/creative\\_industry/pdf/ecostudy\\_romania.pdf](http://www.wipo.int/ip-development/en/creative_industry/pdf/ecostudy_romania.pdf) [accessed online March 2012]. We also consulted the Report "The Economic Contribution of Copyright-Based Industries in Hungary - the 2005 Report", available at: [http://www.wipo.int/ip-development/en/creative\\_industry/pdf/ecostudy-hungary.pdf](http://www.wipo.int/ip-development/en/creative_industry/pdf/ecostudy-hungary.pdf) [accessed online March 2012]; \*\*\*\*\* According to the study of Chow, K., Leo, K. (2005), "The economic contribution of copyright based industries in Singapore", Review of Economic Research on Copyright Issues, 2(2): 127-148 (See page 132); \*\*\*\*\* According to the study "The Economic Contribution of Copyright-Based Industries in Bulgaria - 2007": "Based on our own research and similar international comparisons, many important studies (such as those studies in the US, Hungary, etc.) also adopt value 1 for the interdependent industries" (see page 375).

PARTIAL Copyright Industries		ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits	Description (CAE - Rev. 3) ****	Copyright factors which we adopted in our study	Copyright factors for Interdependent Copyright Industries, based on Singapore Report (2004) ***** Chow and Leo (2005, 132) *****	Copyright factors for Interdependent Copyright Industries, based on Hungary Report (2007) *****	Copyright factors for Interdependent Copyright Industries, based on Bulgaria Report (2007) *****		
Apparel, textiles and footwear	Manufacture of wearing apparel; Manufacture of made-up textile articles; Manufacture of footwear; Wholesale of textiles, clothing and footwear; Retail sale of textiles, clothing, footwear and leather goods.	1810	1410	14110	14110 - Manufacture of leather clothes	0,5%	0,4%	0,5%	0,6%		
				14120	14120 - Manufacture of work wear						
				14131	14131 - Manufacture of other outer wear (mass/ series production)						
				14132	14132 - Manufacture of other outer wear (customized)						
				14133	14133 - Finishing activities of wearing apparel and wearing articles						
				14140	14140 - Manufacture of underwear						
				14190	14190 - Manufacture of other wearing apparel and accessories						
				14200	14200 - Manufacture of leather articles with fur						
				14300	14310 - Manufacture of knitted and crocheted stockings and socks						
				14390	14390 - Manufacture of other knitted and crocheted articles (e.g., pullovers, coats)						
				15120	15120 - Manufacture of travel articles, leather goods and saddlery						
				13910	13910 - Manufacture of natural fibres/ wool textiles by hand or by machine						
				13920	13920 - Manufacture of made-up textiles and fabrics, except clothing (namely, home textiles)						
				13961	13961 - Manufacture of trimmings and tow						
				13962	13962 - Manufacture of textiles for technical and industrial use n.e.c.						
				13991	13991 - Manufacture of embroidery ( <i>bordados</i> )						
				13992	13992 - Manufacture of lace ( <i>rendas</i> )						
				13993	13993 - Manufacture of diverse textiles n.e.c.						
				5131	4641					46410	46410 - Wholesale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)
				5232	4751					47510	47510 - Retail sale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)
1920	1520	15201	15201 - Manufacture of footwear								
	1512	15202	15202 - Manufacture of articles of footwear finishing								
5131	4641	46421	46421 - Wholesale of clothing and wear accessories								
		46422	46422 - Wholesale of footwear								
		47711	47711 - Retail sale of clothing for adults in specialized stores								
		47712	47712 - Retail sale of clothing for babies and children in specialized stores								
5232	4751; 4771	47721	47721 - Retail sale of footwear in specialized stores								
		47722	47722 - Retail sale of travel articles and leather goods in specialized stores								
Jewelry and coins	Manufacture of jewelry and related goods; Wholesale of other household goods; Other retail sale in specialized stores.	3691	3211	32110	32110 - Striking of coins	25% (approx. the average of the percentages of Chow and Leo (2005))	42%, for 'jewelry'	25,0%	20,0%		
				32121	32121 - Manufacture of filigree						
				32122	32122 - Manufacture of articles of jewelry						
				32130	32130 - Manufacture of imitation jewelry						
				46480	46480 - Wholesale of articles of jewelry and of goldsmiths						
				46494	46494 - Wholesale of other household goods (namely, of imitation jewelry)						
47770	47770 - Retail sale of articles of jewelry and of goldsmiths in specialized stores										
5239	4773	47784	47784 - Retail sale of other new products in specialized stores (namely, of imitation jewelry)								
Other Crafts	Activities of other membership organizations n.e.c.; Other retail sale in specialized stores.	9199	9499	94991	94991 - Activities of cultural and recreational associations	40%	42%	40%	40%		
				4773	47784					47784 - Retail sale of other new products in specialized stores (namely, handicraft)	
Furniture	Manufacture of furniture; Wholesale of other household goods; Retail sale; Renting of personal and household goods n.e.c.	3610	3100	31010	31010 - Manufacture of furniture for office and commerce activities	5% (average of the percentages of Chow and Leo (2005))	8,3%, for 'furniture & fittings'	5,0%	5,0%		
				31020	31020 - Manufacture of furniture for kitchen						
				31030	31030 - Manufacture of mattresses						
				31091	31091 - Manufacture of wooden furniture for other purposes						
				31092	31092 - Manufacture of metal furniture for other purposes						
				31093	31093 - Manufacture of furniture of other materials (e.g., plastics, rattan) for other purposes						
				31094	31094 - Furniture finishing activities						
				46470	46470 - Wholesale of furniture for domestic use, carpets, rugs and lighting equipment						
				46650	46650 - Wholesale of furniture for office and commerce activities						
				47591	47591 - Retail sale of furniture and lighting equipment in specialized stores						
Household goods, China and Glass	Manufacture of glass and glass products; Manufacture of knitted and crocheted fabrics and articles; Manufacture of other products of wood; Manufacture of other fabricated metal products n.e.c.; Wholesale of other household goods; Retail sale of household	2610	2310	23110	23110 - Manufacture of flat glass	0,5%	0,6%	0,5%	0,5%		
				23120	23120 - Transformation and processing of flat glass						
				23131	23131 - Manufacture of glass containers						
				23132	23132 - Glassware						
				23140	23140 - Manufacture of fibre glass						
				23190	23190 - Manufacture and processing of other glass (including technical glass)						
				13920	13920 - Manufacture of made-up textiles and fabrics, except clothing (namely, home textiles)						
				46410	46410 - Wholesale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)						
				47510	47510 - Retail sale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)						
				16291	16291 - Manufacture of other wood articles and wooden craftworks						
				16292	16292 - Manufacture of articles of straw and plaiting material						
				46494	46494 - Wholesale of other household goods (namely, of wooden articles)						
				47593	47593 - Retail sale of other household articles, in specialized stores (namely, of wooden articles)						
				23411	23411 - Pottery						
				23412	23412 - Manufacture of articles of faience, porcelain and fine earthenware, for domestic use						
				23413	23413 - Manufacture of ornamental articles of faience, porcelain and fine earthenware						
				23414	23414 - Activities of decoration of ceramic articles for domestic and ornamental purposes						
				46441	46441 - Wholesale of china and glassware						
				47592	47592 - Retail sale of crockery, cutlery and other similar articles for domestic use, in specialized stores						
				25710	25710 - Manufacture of cutlery						
25991	25991 - Manufacture of metal tableware and metal articles for domestic use										
2220	22292 - Manufacture of other plastic products (namely, those for domestic use)										
2640	27510 - Manufacture of household appliances										
46430	46430 - Wholesale of electrical household appliances, radio and TV sets										
47540	47540 - Retail sale of household appliances in specialized stores										
Wall coverings and Carpets	Manufacture of carpets and rugs; Manufacture of other articles of paper and paperboard; Other retail sale in specialized stores.	1722	1393	13930	13930 - Manufacture of carpets and rugs	2%	1,7%	2,0%	4,0%		
				17240	17240 - Manufacture of wallpaper						
				46470	46470 - Wholesale of furniture for domestic use, carpets, rugs and lighting equipment						
				4663	46732 - Wholesale of construction materials (except wood) and sanitary equipment (namely, wallpaper)						
5239	4753	47530	47530 - Retail sale of carpets, rugs, curtains, wall and floor coverings in specialized stores								
Toys and Games	Manufacture of games and toys; Wholesale of other household goods; Other retail sale in specialized stores.	3694	3240	32400	32400 - Manufacture of toys and games	40%	42%	50%	40%		
				46493	46493 - Wholesale of toys, games and sports articles in specialized stores						
				47650	47650 - Retail sale of toys and games in specialized stores						
Architecture, Engineering, Surveying	Architectural and engineering activities and related technical consultancy.	7421	7110	71110	71110 - Architectural activities	10%	8,3%	10,0%	10,0%		
				71120	71120 - Engineering activities and related technical consultancy services						
				71200	71200 - Technical testing and analysis						
7422	7120	71200	71200 - Technical testing and analysis								
Interior Design	Other business activities n.e.c.	7499	7410	74100	74100 - Design activities (namely, Interior Design activities)		8,3% for 'Interior Design'				
Museums	Museums activities and preservation of historical sites and buildings.	9232	9102	91020	91020 - Museums activities	50%		50%	50%		
				91030	91030 - Activities of preservation of historical sites and buildings						

**Table A3: Mapping Creative Industries using ISIC codes and the correspondent Portuguese nomenclature of economic activities - Concentric Circles Model \***

Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****		
<b>Centre - CORE Creative/ Cultural Arts</b>						
<b>Visual Arts (painting, sculpture, photography)</b>	<b>Crafts</b> - "ranges in most categories in manufacturing and retail. Can only be captured in individual firms' trade descriptions including "crafts", "hand made products", etc." (KEA, 2006: 309)  <b>Given the interest of our analysis in traditional manufacturing activities, we considered some codes representing traditional manufacturing and very related Crafts activities (ceramics design and decoration, glass, wooden articles and jewellery), but in a very small proportion of each code - 5%</b>	5239	4773	47784	47784 - Retail sale of other new products in specialized stores n.e.c. (namely, craftworks and handicraft)	
		2691	2393	23411	23411 - Pottery	
				23412	23412 - Manufacture of household articles made of stone- or earthenware, porcelain and china	
				23413	23413 - Manufacture of ornamental articles made of stone- or earthenware, porcelain and china	
				23414	23414 - Activities of decoration of ceramic articles for domestic and ornamental purposes	
		2610	2310	23110	23110 - Manufacture of flat glass	
				23120	23120 - Transformation and processing of flat glass	
				23131	23131 - Manufacture of glass containers	
				23132	23132 - Glassware	
				23140	23140 - Manufacture of fibre glass	
				23190	23190 - Manufacture and processing of other glass (including technical glass)	
		2029	1629	16291	16291 - Manufacture of other wood articles and wooden craftworks	
				16292	16292 - Manufacture of articles of straw and plaiting material	
		3691	3211	32110	32110 - Striking of coins	
				32121	32121 - Manufacture of filigree	
		32122	32122 - Manufacture of jewellery and related articles, n.e.c			
		32123	32123 - Working of diamonds and of other precious or semi-precious stones for jewellery and industrial use			
		32130	32130 - Manufacture of imitation jewellery			
<b>Paintings and Sculpture</b>	Artistic and literary creation and interpretation  Operation of arts facilities and museums  Other business activities n.e.c.  Other retail sale in non-specialized stores  Other retail sale in specialized stores		9000	90030	90030 - Artistic and literary creation	
		9214	9412	94120	94120 - Activities of professional organizations	
				90040	90040 - Operation of arts facilities	
				91020	91020 - Museums activities	
				91030	91030 - Activities of preservation of historical sites and buildings	
		7499; 7414	7490	74900	74900 - Other consulting, scientific and technical activities	
5219	4773	47784	47784 - Retail sale of other new products in specialized stores (namely, commercial art galleries)			
5239						
<b>Photography</b>	Photographic Activities	7494	7420	74200	74200 - Photographic activities	
		9220	6391	63910	63910 - Activities of news agencies	
			6399	63990	63990 - Other activities of news agencies	
<b>Performing Arts (including festivals)</b>	<b>Theatre</b>	Artistic and literary creation and interpretation	9214	9000	90010	90010 - Performing arts activities
					90020	90020 - Activities supporting the performing arts
	<b>Dance</b>	Artistic and literary creation and interpretation	9214	9000	90010	90010 - Performing arts activities
					90020	90020 - Activities supporting the performing arts
	<b>Circus</b>	Other entertainment activities n.e.c.	9219	9000	90010	90010 - Performing arts activities
					90020	90020 - Activities supporting the performing arts
<b>Heritage/ Museums and Libraries/ Arts &amp; Antiques Market</b>	Museums activities and preservation of historical sites and buildings	9232	9102	91020	91020 - Museums activities	
				91030	91030 - Activities of preservation of historical sites and buildings	
	Library and Archives activities	9231	9101	91030	91011 - Library activities	
			91030	91012 - Archive activities		
Arts and Antiques Market	5240	4774	47790	47790 - Retail sale of second-hand goods in specialized stores		

CENTRE - "The centre is constituted by non-industrial cultural products - "the arts field" and reveal a "high degree of expressive/ cultural value" (KEA, 2006: 53; The Work Foundation, 2007:103).

(...)

(...)

	Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****	
<b>Layer 1 - WIDER Core Cultural Industries</b>						
<b>Film and Video</b>	Production of films and videos (including the production of commercials, activities of studios)	9211	5911	59110	59110 - Production of motion picture, videos and television programs	
			5912	59120	59120 - Technical activities of post-production for motion picture, videos and television programs	
	Distribution of videos and DVDs		5913	59130	59130 - Distribution of motion picture, videos and television programs	
	Reproduction of recorded media	2230	1820	18200	18200 - Reproduction of recorded media (namely, tapes with motion pictures and other video recordings)	
	Exhibition/ Projection of movies	9212	5914	59140	59140 - Motion picture and video projection	
	Wholesale of video tapes and DVDs	5139	4649	46430	46430 - Wholesale of household appliances, radio and TV sets (namely, recorded video tapes and DVDs)	
	Retail sale of video tapes and DVDs	5233	4762	47630	47630 - Retail sale of CDs, video tapes and DVDs in specialized stores	
	Video Sale through rental of videos and DVDs	7130; 9211	7722	77220	77220 - Renting of video cassettes, CD, DVD and records	
<b>Television and Radio</b>	National radio and television broadcasting companies	9213	6010	60100	60100 - Radio activities	
	Other radio and television broadcasters	9213	6020	60200	60200 - Television activities	
	Independent producers (not related with the broadcasting)	7499	5911	59110	59110 - Production of motion picture, videos and television programs (namely, independent production)	
	Cable Television (systems and channels)	6420	6110	61100	61100 - Wired telecommunication activities	
	Satellite Television	6420	6130	61300	61300 - Satellite telecommunication activities	
<b>Software Publishing including Games</b>	Development, production, supply and documentation of ready-made (non-customized) software, including games	7221	5820	58210	58210 - Videogame publishing	
				58290	58290 - Other software publishing	
				62010	62010 - Software programming activities	
<b>Music</b>	Artistic and literary creation and interpretation	9214	9000	90030	90030 - Artistic and literary creation	
	Printing and publishing of music	2213	5920	59200	59200 - Activities of sound recording and music publishing	
	Production/manufacturing of recorded music	2230	1820	18200	18200 - Reproduction of recorded media	
	Wholesale and retail of recorded music (sale and rental)	5139	4649	46430	46430 - Wholesale of electrical household appliances, radio and TV sets	
		5233	4762	47630	47630 - Retail sale of records, CDs, DVDs, cassettes and similar articles in specialized stores	
	7130	7722	77220	77220 - Renting of video cassettes, CD, DVD and records		
<b>Literature and Press</b>	Book publishing	2211	5811	58110	58110 - Book publishing	
	Newspapers publishing	2212	5813	58130	58130 - Newspapers publishing	
				58140	58140 - Publishing of magazine and other periodicals	
	Magazines/periodicals					
	Wholesale and retail sale of press and literature (book stores, newsstands, etc.)	5139	4649	46492	46492 - Wholesale of books, magazines and newspapers	
		5239	4761	47610	47610 - Retail sale of books in specialized stores	
			47620	47620 - Retail sale of newspapers, magazines and stationery in specialized stores		
Retail sale via mail order houses/ Internet	5251; 7240	4791	47910	47910 - Retail sale by mail or via Internet		

LAYER 1 - Activities "whose outputs are exclusively cultural" and that "involve mass reproduction of expressive outputs. Outputs are based on copyright inputs"\*\*\* (KEA, 2006: 53; The Work Foundation, 2007:103).

(...)

Layer 2 - CREATIVE Industries	Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****	
<b>Design (including Fashion)</b>	<b>Fashion Design</b>	1810	1410	14110	14110 - Manufacture of leather clothes	
	Manufacture of wearing apparel (it was only assumed 0,5% of each code)			14120	14120 - Manufacture of work wear	
	KEA (2006: 308): "Fashion design, i.e. a portion of companies whose main activities are classified as retail, wholesale and agencies of textiles and clothing and footwear, manufacture of textiles, apparel, and footwear manufacture and design of printing plates, and design and design consultancy services".			14131	14131 - Manufacture of other outer wear (mass/ series production)	
				14132	14132 - Manufacture of other outer wear (customized)	
				14133	14133 - Finishing activities of wearing apparel and wearing articles	
				14140	14140 - Manufacture of underwear	
				14190	14190 - Manufacture of other wearing apparel and accessories	
				14200	14200 - Manufacture of leather articles with fur	
				14310	14310 - Manufacture of knitted and crocheted stockings and socks	
	1430			14390	14390 - Manufacture of other knitted and crocheted articles (e.g., pullovers, coats)	
				15120	15120 - Manufacture of travel articles, leather goods and saddlery	
				13910	13910 - Manufacture of natural fibre/ wool textiles by hand or by machine	
	Manufacture of textiles (home textiles) (it was only assumed 0,5% of each code)			1721	13920	13920 - Manufacture of made-up textiles and fabrics, except clothing (namely, home textiles)
				1392	13961	13961 - Manufacture of trimmings and tow
					13962	13962 - Manufacture of textiles for technical and industrial use n.e.c.
		13991	13991 - Manufacture of embroidery ( <i>bordados</i> )			
		5131	13992	13992 - Manufacture of lace ( <i>rendas</i> )		
			13993	13993 - Manufacture of diverse textiles n.e.c.		
			46410	46410 - Wholesale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)		
		5232	47510	47510 - Retail sale of textiles (e.g., fabrics) and made-up textiles (namely, home textiles)		
		Manufacture of footwear (it was only assumed 0,5% of each code)	1920	15201	15201 - Manufacture of footwear	
			1512	15202	15202 - Manufacture of articles of footwear finishing	
	46421			46421 - Wholesale of clothing and wear accessories		
	5131		46422	46422 - Wholesale of footwear		
			46160	46160 - Wholesale agents for textile, apparel, footwear and leather goods		
	5232		47711	47711 - Retail sale of clothings for adults in specialized stores		
			47712	47712 - Retail sale of clothings for babies and children in specialized stores		
47721			47721 - Retail sale of footwear in specialized stores			
47722			47722 - Retail sale of travel articles and leather goods in specialized stores			
<b>Graphic Design</b>	Printing		2221	18110	18110 - Newspapers printing	
		18120	18120 - Other printing (e.g., periodicals)			
	Ancillary activities related to printing	2222	18130	18130 - Activities of preparation for printing and related media services		
		18140	18140 - Bookbinding and related activities			
	Architectural and engineering activities and related technical consultancy	7421	71110	71110 - Architectural activities		
		71120	71120 - Engineering activities and related technical consultancy services			
	Agencies, buying services	7430	73110	73110 - Advertising agencies		
		73120	73120 - Activities of representation (e.g., advertising space) in the media			
	Other business activities (namely, Graphic Design)	7499	74100	74100 - Design activities (namely, Interior Design activities) - This code cannot be disaggregated - 5 digit code is the maximum resolution		
	Artistic and literary creation and interpretation	9214	90030	90030 - Artistic and literary creation		
<b>Interior Design</b>	Other business activities (namely, Interior Design)	7499	74100	74100 - Design activities (namely, Interior Design activities)		
		74100	74100 - Design activities (namely, Interior Design activities)			
<b>Product Design</b>	Printing	2221	18110	18110 - Newspapers printing		
		18120	18120 - Other printing (e.g., periodicals)			
	Ancillary activities related to printing	2222	18130	18130 - Activities of preparation for printing and related media services		
		18140	18140 - Bookbinding and related activities			
	Architectural and engineering activities and related technical consultancy	7421	71110	71110 - Architectural activities		
		71120	71120 - Engineering activities and related technical consultancy services			
	Artistic and literary creation and interpretation	9214	90030	90030 - Artistic and literary creation		
		7499	74100	74100 - Design activities (namely, Product Design)		
	<b>Architecture</b>	Architectural and engineering activities and related technical consultancy	7421	71110	71110 - Architectural activities	
			71120	71120 - Engineering activities and related technical consultancy services (only 10% of this code is taken)		
<b>Advertising</b>	Agencies, buying services	7430	73110	73110 - Advertising agencies		
		73120	73120 - Activities of representation (e.g., advertising space) in the media			
		73200	73200 - Market research and public opinion polling			

LAYER 2 - "Activities whose outputs are functional but which incorporate elements from the two previous layers into the production process" (KEA, 2006: 53).

(...)

(...)

Layer 3 - RELATED Industries (e.g., equipment, source materials, ancillary services)	Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****
<b>Computers/ ICT and Software manufacturing and distribution</b>	Manufacture of office, accounting and computing machinery; Wholesale of computers, computer peripheral equipment and software; and Renting of office machinery and equipment (including computers).	3000	2620	26200	26200 - Manufacture of computers and peripheral equipment
		5151	4651	46510	46510 - Wholesale of computers, peripheral equipment and computer programs
			4741	47410	47410 - Retail sale of computers, peripheral equipment and computer programs in specialized stores
		7123	7730	77330	77330 - Renting of office machinery and equipment (including computers)
<b>TV sets, Radios, MP3/4 players, CD players, DVD players, Cassette players, Electronic Game Equipment, and other similar equipment</b>	Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and associated goods; Wholesale; Retail Sale; and Renting of personal and household appliances.	3230	2640	26400	26400 - Manufacture of radio and television receivers, and other consumer electronics
		5139	4649	46430	46430 - Wholesale of household appliances, radio and television equipments
		5233	4742	47430	47430 - Retail sale of audiovisual equipment in specialized stores
		7130	7722	77220	77220 - Renting of videotapes, DVDs
<b>Photographic and Cinematographic equipment and related services (wholesale, specialized retail sale of photographic, cinematographic and optic equipment; chemicals specific to film processing, etc.)</b>	Manufacture of optical instruments and photographic equipment; Wholesale; Retail Sale and Renting of other machinery and equipment.	3320	2670	26702	26702 - Manufacture of photographic and cinematographic equipment
		3150	2740	27400	27400 - Manufacture of electric and other lighting equipment
		5139; 5239	4773	47782	47782 - Retail sale of optical, photographic, cinematographic equipment and of precision instruments in specialized stores
		7129	7730	77390	77390 - Renting of other machinery and equipment n.e.c.
<b>Photocopiers</b>	Manufacture of office, accounting and computing machinery; Wholesale; Retail Sale other machinery and equipment.	3000	2817	28230	28230 - Manufacture of office machinery and equipment, except computers and peripheral equipment
		5159	4659	46660	46660 - Wholesale of other machinery and office equipment
				47781	47781 - Retail sale of other machinery and office equipment in specialized stores
			7730	77330	77330 - Renting of office machinery and equipment (including computers)
<b>Blank Recording Material</b>	Manufacture of other chemical products; Wholesale of electronic and telecommunications parts and equipment; Retail sale of household appliances, articles and equipment.	2429	2029	20594	20594 - Manufacture of other chemical products (e.g., chemicals for photographic activities)
		5152	2680	26800	26800 - Manufacture of magnetic and optical information supports (non recorded) - e.g., videocassettes, optical disks, diskettes
		5233	4652	46520	46520 - Wholesale of electronic and telecommunications parts and equipment
		4762	47630	47630 - Retail sale of records, CDs, DVDs, cassettes and similar articles in specialized stores	

LAYER 3 - VERY LOOSE category (it also includes the ICT sectors). Sectors that exploit the expressive outputs generated by the creative industries" and are specialized in the "production, manufacture and sale of equipments whose function is wholly or primarily to facilitate the creation, production or use of works" from the industries present in the other layers (KEA, 2006: 54).

Source: \*KEA European Affairs (2006), "The economy of culture in Europe", Brussels: European Commission, Director-General for Education and Culture, available at: [http://ec.europa.eu/culture/key-documents/doc873\\_en.htm](http://ec.europa.eu/culture/key-documents/doc873_en.htm) and [http://ec.europa.eu/culture/pdf/doc893\\_en.pdf](http://ec.europa.eu/culture/pdf/doc893_en.pdf) (pages 309-311) [accessed online March 2012]; \*\*: The Work Foundation (2007: 103), "Staying ahead: the economic performance of the UK's creative industries", available at: [http://www.theworkfoundation.com/assets/docs/publications/176\\_stayingahead.pdf](http://www.theworkfoundation.com/assets/docs/publications/176_stayingahead.pdf) [accessed online March 2012]; \*\*\* Correspondence Tables between ISIC Rev 3.1 and ISIC Rev 4 available at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [accessed March 2012]; \*\*\*\* The Portuguese nomenclature CAE (Classificação das Actividades Económicas) has direct correspondence with ISIC Rev 4.

**Table A4: Mapping Creative Industries using ISIC codes and the correspondent Portuguese nomenclature of economic activities - Upstream/ Downstream Activites Model \***

Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****
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**CREATION/ CREATIVE Activities\***

<b>IT and Software (including games) production</b>	Development, production, supply and documentation of software, including games	7221	5820	58210	58210 - Videogame publishing
			6201; 6202	58290	58290 - Other software publishing
		7229		62010	62010 - Software programming activities
				62020	62020 - Software consultancy activities
	Database processing and publishing	7240	6311	63110	63110 - Data processing, Web hosting and related activities
<b>Advertising</b>				73110	73110 - Advertising agencies
	Agencies, buying services	7430	7310	73120	73120 - Activities of representation (e.g., advertising space) in the media
				73200	73200 - Market research and public opinion polling
<b>TV and Radio</b>	National radio and television broadcasting companies	9213	6010	60100	60100 - Radio activities (production activities) - the code can not be more disaggregated
	Other radio and television broadcasters	9213	6020	60200	60200 - Television activities (production activities) - the code can not be more disaggregated
<b>Publishing</b>	Publishing of newspapers	2212	5813	58130	58130 - Newspapers publishing
	Publishing of periodicals/ magazines			58140	58140 - Publishing of magazine and other periodicals
	Publishing of books	2211	5811	58110	58110 - Book publishing
	Other publishing (e.g., photos, posters, postcards)	2219	5812	58120	58120 - Publishing of lists for consultation
			5819	58190	58190 - Other publishing activities (e.g., catalogues, posters,...)
	News agencies activities	9220	6391	63910	63910 - Activities of news agencies
			6399	63990	63990 - Other activities of news agencies
<b>Design (Interior, Graphics, Industrial and Fashion)</b>	Other business activities n.e.c.	7499	7410	74100	74100 - Design activities (Interior, Graphic, Industrial, Fashion/ Textile)
<b>Architectural Services</b>				71110	71110 - Architectural activities
	Architectural and engineering activities and related technical consultancy.	7421	7110	71120	71120 - Engineering activities and related technical consultancy services
				71200	71200 - Technical testing and analysis
<b>Arts and Antiques Market/ Crafts</b>	Other retail sale in specialized stores	5239; 5259;	4774; 4791	47790	47790 - Retail sale of second-hand goods in specialized stores
	Retail sale of second-hand goods in stores	5240		47784	47784 - Retail sale of other new products in specialized stores n.e.c. (namely, craftworks and handicraft)
<b>Performing Arts and Music</b>	Composers, lyricists, arrangers, choreographers, writers, directors, performers and other personnel	9214; 9219; 9249	9000	90010	90010 - Performing arts activities
				90020	90020 - Activities supporting the performing arts
	Printing and publishing of music	2213	5920	59200	59200 - Activities of sound recording and music publishing
	Artistic and literary creation and interpretation	9214	9000	90030	90030 - Artistic and literary creation
<b>Museums/ other cultural activities</b>	Museums activities and preservation of historical sites and buildings.	9232	9102	91020	91020 - Museums activities
				91030	91030 - Activities of preservation of historical sites and buildings
<b>Motion Picture and Video</b>			5911	59110	59110 - Production of motion picture, videos and television programs
	Motion picture and video production	9211	5912	59120	59120 - Technical activities of post-production for motion picture, videos and television programs
<b>Photography</b>	Photographic Activities (Studios and commercial photography)	7494	7420	74200	74200 - Photographic activities (namely, photographic film processing) - the code can not be more disaggregated

CREATION/  
PRODUCTION  
ACTIVITIES

(...)

(...)

DISTRIBUTION and ANCILLARY Activities**	Economic Activity	ISIC code - Rev 3.1	ISIC code - Rev 4 ***	Code (CAE - Rev 3) - Subclass - 5 digits ****	Description (CAE - Rev. 3) ****
<b>IT and Software (including games) distribution and related services</b>	Internet services	7230	6312	63120	63120 - Web portals
	Management and exploitation of software equipment	7229	6202; 6209	62030 62090	62030 - Management and exploitation of software equipment 62090 - Other activities related to information technology and computing technologies
	Reproduction of recorded media (namely, software, games)	2230	1820	18200	18200 - Reproduction of recorded media (namely, software, games)
	Wholesale and retail prepackaged software (business programs, video games, educational programs, etc.)	5151; 5239	4651	46510	46510 - Wholesale of computers, peripheral equipment and software
			4741	47410	47410 - Retail sale of computers, peripheral units and software in specialized stores
<b>Broadcasting Media related services (Television, Radio)</b>	Independent producers (not related with the broadcasting)	7499	5911	59110	59110 - Production of motion picture, videos and television programs (namely, independent production)
	Cable Television (systems and channels)	6420	6110	61100	61100 - Wired telecommunication activities
	Satellite Television	6420	6130	61300	61300 - Satellite telecommunication activities
		9213	6010; 6020	60100	60100 - Radio activities (broadcasting activities) - the code can not be more disaggregated
			60200	60200 - Television activities (broadcasting activities) - the code can not be more disaggregated	
<b>Publishing related services</b>	Printing of newspapers	2221	1811	18110	18110 - Newspapers printing
	Books/ Magazines/periodicals	2221		18120	18120 - Other printing (e.g., periodicals)
	Pre-press, printing, and post-press services of books, magazines, newspapers, etc.	2222	1812	18130 18140	18130 - Activities of preparation for printing and related media services 18140 - Bookbinding and related activities
	Database activities and online distribution of electronic content	7240	6311	63110	63110 - Data processing, Web hosting and related activities
	Manufacture of stationery paper/ computer printout paper/ printing and writing paper	2109	1709	17230	17230 - Manufacture of paper/ stationery paper and material
	Wholesale of bulk paper	5149	4669	46762	46762 - Wholesale of other intermediate products (namely, bulk paper)
	Wholesale and retail of press and literature (book stores, newsstands, etc.)	5139	4649	46492	46492 - Wholesale of books, magazines and newspapers
		5239	4761	47610 47620	47610 - Retail sale of books in specialized stores 47620 - Retail sale of newspapers, magazines and stationery in specialized stores
	9231	9101	91011 91012	91011 - Library activities 91012 - Archive activities	
<b>Performing Arts associated services</b>	Performances and allied agencies (bookings, ticket agencies, etc.)/ Operation of concert and theatre halls and other arts facilities	9214	7990	79900 90040	79900 - Booking/ ticketing services and related activities 90040 - Operation of arts facilities
	Art Galleries	5239	4773	47784	47784 - Retail sale of other new products in specialized stores (namely, Art Galleries)
<b>Music associated services</b>	Production/manufacturing of recorded music	2230	1820	18200	18200 - Reproduction of recorded media
	Wholesale and retail of recorded music (sale and rental)	5139	4649	46430	46430 - Wholesale of electrical household appliances, radio and TV sets
		5233	4762	47630	47630 - Retail sale of records, CDs, DVDs, cassettes and similar articles in specialized stores
	7130	7722	77220	77220 - Renting of video cassettes, CD, DVD and records	
<b>Motion Picture and Video related services</b>	Motion picture and video distribution	9211	5913	59130	59130 - Distribution of motion picture, videos and television programs
	Motion picture exhibition	9212	5914	59140	59140 - Motion picture and video projection
	Video rentals and sales, video on demand	7130; 9211	7722	77220	77220 - Renting of video cassettes, CD, DVD and records
	Reproduction of recorded videos	2230	1820	18200	18200 - Reproduction of recorded media
<b>Photography related services</b>	Photographic film processing	7494	7420	74200	74200 - Photographic activities (namely, photographic film processing) - the code can not be more disaggregated
	Photographic equipment wholesale/ retail sale/ renting	5139 5239	4773	47782	47782 - Retail sale of optical, photographic, cinematographic equipment and of precision instruments in specialized stores
		7129	7730	77390	77390 - Renting of other machinery and equipment n.e.c.
		2222	1812	18130	18130 - Activities of preparation for printing and related media services
	Photo Agencies and Libraries	7499	7490	74900	74900 - Other consulting, scientific and technical activities
	9231	9101	91011 91012	91011 - Library activities 91012 - Archive activities	

DISTRIBUTION and ANCILLARY ACTIVITIES

Note: \* Heng et al., 2003: 68-70; \*\*: Heng et al., 2003: 68-70; \*\*\* Correspondence Tables between ISIC Rev 3.1 and ISIC Rev 4 available at: <http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60> [accessed March 2012]; \*\*\*\* The Portuguese nomenclature CAE (Classificação das Actividades Económicas) has direct correspondence with ISIC Rev 4.

Table A5: Proposed INDUSTRY-based (SIC) approach on CORE CREATIVE INDUSTRIES in Portugal

Selected CORE CREATIVE SEGMENTS	ISIC (Rev 4) codes at 4 digits	Portuguese Codes (CAE - Rev 3) at 5 digits	Description of Economic Activity (CAE - Rev. 3) *	
<b>ADVERTISING and MARKETING</b>	7310	731	<b>Advertising</b>	
		73110	73110 - Advertising agencies	
	7320	732	<b>Market research and public opinion polling</b>	
		73200	73200 - Market research and public opinion polling	
<b>ARCHITECTURE and Engineering</b>	7110	711	<b>Architectural, engineering and related technical consultancy</b>	
		71110	71110 - Architectural activities	
	7120	71120	71120 - Engineering activities and related technical consultancy services (assumed 10% of the code)*	
		71200	71200 - Technical testing and analysis (assumed 10% of the code)*	
<b>DESIGN and FASHION DESIGN</b> (assumed only 0,5% of each respective industrial code)**	7410	7410	<b>Specialised design activities</b>	
		74100	74100 - Specialised design activities	
	1410	14110	14110 - Manufacture of leather clothes	
		14120	14120 - Manufacture of work wear	
		14131	14131 - Manufacture of other outer wear (mass/ series production)	
		14132	14132 - Manufacture of other outer wear (customized)	
		14133	14133 - Finishing activities of wearing apparel and wearing articles	
		14140	14140 - Manufacture of underwear	
		14190	14190 - Manufacture of other wearing apparel and accessories	
		1420	14200	14200 - Manufacture of leather articles with fur
		1430	14310	14310 - Manufacture of knitted and crocheted stockings and socks
			14390	14390 - Manufacture of other knitted and crocheted articles (e.g., pullovers, coats)
		1512	15120	15120 - Manufacture of travel articles, leather goods and saddlery
			13910	13910 - Manufacture of natural fibre/ wool textiles by hand or by machine
			13920	13920 - Manufacture of made-up textiles and fabrics, except clothing (namely, home textiles)
	1520	13961	13961 - Manufacture of trimmings and tow	
		13962	13962 - Manufacture of textiles for technical and industrial use n.e.c.	
		13991	13991 - Manufacture of embroidery ( <i>bordados</i> )	
		13992	13992 - Manufacture of lace ( <i>rendas</i> )	
		13993	13993 - Manufacture of diverse textiles n.e.c.	
15201		15201 - Manufacture of footwear		
15202		15202 - Manufacture of articles of footwear finishing		
<b>CRAFTS</b> (assumed only 5% of each respective industrial No CAE codes are able to fully capture this sector. Majority of ISIC and Portuguese Industrial codes refer to <i>Manufacturing activities</i> and are not appropriate to measure craftwork and handcraft activities, but even so we tried to capture some of the most relevant activities of this sector. We included only a portion of 5% of each industrial code.	2393	23411	23411 - Pottery	
		23412	23412 - Manufacture of household articles made of stone- or earthenware, porcelain and china	
	2310	23413	23413 - Manufacture of ornamental articles made of stone- or earthenware, porcelain and china	
		23414	23414 - Activities of decoration of ceramic articles for domestic and ornamental purposes	
		23110	23110 - Manufacture of flat glass	
		23120	23120 - Transformation and processing of flat glass	
		23131	23131 - Manufacture of glass containers	
		23132	23132 - Glassware	
		23140	23140 - Manufacture of fibre glass	
	1629	23190	23190 - Manufacture and processing of other glass (including technical glass)	
		16291	16291 - Manufacture of other wood articles and wooden craftworks	
		16292	16292 - Manufacture of articles of straw and plaiting material	
	3211	32110	32110 - Striking of coins	
		32121	32121 - Manufacture of filigree	
32122		32122 - Manufacture of jewellery and related articles, n.c.e		
32123		32123 - Manufacture of jewellery and related articles, n.c.e industrial use		
3212	32130	32130 - Manufacture of imitation jewellery		
<b>FILM, VIDEO and PHOTOGRAPHY</b>	5911	591	<b>591 - Motion picture, video and television programme activities</b>	
		59110	59110 - Motion picture, video and television programme production activities	
		59120	59120 - Motion picture, video and television programme post-production activities	
		59130	59130 - Motion picture, video and television programme distribution activities	
		59140	59140 - Motion picture projection activities	
	7420	742	<b>Photographic activities</b>	
	74200	74200 - Photographic activities		
<b>TV and RADIO</b>	6010	60	<b>60 - Radio and television activities</b>	
		60100	60100 - Radio activities	
	6020	60200	60200 - Television activities	

(...)

(...)

Selected CORE CREATIVE SEGMENTS	ISIC (Rev 4) codes at 4 digits	Portuguese Codes (CAE - Rev 3) at 5 digits	Description of Economic Activity (CAE - Rev. 3) *
<b>MUSIC and PERFORMING ARTS</b>	5920 1820 9000 9321 9329	592 59200 182 18200 90 900 90010 90020 90030 90040 932 9321 93210 9329 93291 93292 93293 93294	<b>592 - Sound recording and music publishing activities</b> 59200 - Sound recording and music publishing activities <b>Reproduction of recorded media</b> 18200 - Reproduction of recorded media <b>Creative, arts, artistic and literary activities</b> <b>Creative, arts, artistic and literary activities</b> 90010 - Performing arts 90020 - Support activities to performing arts 90030 - Artistic and literary creation 90040 - Operation of arts facilities <b>Amusement and recreation activities</b> <b>Activities of amusement parks and theme parks</b> 93210 - Activities of amusement parks and theme parks <b>Other amusement and recreation activities</b> 93291 - Bullfighting activities 93292 - Recreational harbours (marinas) activities 93293 - Organization of tourist animation activities 93294 - Other amusement and recreational activities n.e.c.
<b>PUBLISHING</b>	5811 5812 5813 5814 5819 7490 9101 9102 9103 6391 6399 1811 1812	581 58110 58120 58130 58140 58190 743 74300 91 910 9101 91011 91012 9102 91020 9103 91030 9104 91041 91042 639 63910 63990 181 18110 18120 18130 18140	<b>581 - Publishing of books, periodicals and other publishing activities</b> 58110 - Book publishing 58120 - Publishing of directories and mailing lists 58130 - Publishing of newspapers 58140 - Publishing of journals and periodicals 58190 - Other publishing activities <b>Translation and interpretation activities</b> 74300 - Translation and interpretation activities <b>Libraries, archives, museums and other cultural activities</b> <b>Libraries, archives, museums and other cultural activities</b> <b>Library and archives activities</b> 91011 - Library activities 91012 - Archives activities <b>Museums activities</b> 91020 - Museums activities <b>Historical sites, buildings and similar visitor attractions activities</b> 91030 - Historical sites, buildings and similar visitor attractions activities <b>Botanical and zoological gardens, aquaria, parks and nature reserves activities</b> 91041 - Botanical and zoological gardens and aquaria activities 91042 - Parks and nature reserves activities <b>639 - Other information service activities</b> 63910 - News agency activities 63990 - Other information service activities n.e.c. <b>Printing and service activities related to printing</b> 18110 - Printing of newspapers 18120 - Other printing 18130 - Pre-press and pre-media services 18140 - Bookbinding and related services
<b>SOFTWARE, ELECTRONIC PUBLISHING and COMPUTING/ IT CONSULTANCY</b>	5820 6201 6202 6209 6311 6312	582 58210 58290 62 62010 62020 62030 62090 631 63110 63120	<b>582 - Software publishing</b> 58210 - Publishing of computer games 58290 - Other software publishing (business and other applications) <b>62 - Computer programming, consultancy and related activities</b> 62010 - Computer programming activities 62020 - Computer consultancy activities 62030 - Computer facilities management activities 62090 - Other information technology and computer service activities <b>631 - Data processing, hosting and related activities; web portals</b> 63110 - Data processing, hosting and related activities 63120 - Web portals
<b>RESEARCH &amp; DEVELOPMENT (R&amp;D)</b>	7210 7220	72 721 72110 72190 722 72200	<b>Scientific research and development</b> <b>Research and experimental development on natural sciences and engineering</b> 72110 - Research and experimental development on biotechnology 72190 - Other research and experimental development on natural sciences and engineering <b>Research and experimental development on social sciences and humanities</b> 72200 - Research and experimental development on social sciences and humanities

Note: \* We included 100% of the industrial code related with Architecture, but only an assumed proportion of 10% related with Engineering services, based on indicative values drawing from the literature available that was analysed. In this case, we opted to use a value to the average of copyright factors applied to these types of activities, in various studies following the WIPO approach; \*\* The portion of 0.5% is based on indicative values drawing from the empirical literature. In this case, we chose to use a value that was proximate to the average of copyright factors applied to these activities, in various studies using the WIPO approach; \*\*\* This portion was based on indicative values drawing from empirical evidence analysed in studies using the WIPO approach; Here, we used, as well, a value that was proximate to the average of copyright factors applied to these activities using the WIPO approach which ranged from 0.5 to 8.3%, leading to an average of 5%, and which we considered appropriate to use.