



The development potential index of creative economy for Brazilian federal state capitals

João Luiz de Figueiredo, Diego Santos Vieira de Jesus, Diogo Tavares Robaina & Cristina Lohmann Couri

To cite this article: João Luiz de Figueiredo, Diego Santos Vieira de Jesus, Diogo Tavares Robaina & Cristina Lohmann Couri (2019) The development potential index of creative economy for Brazilian federal state capitals, Creative Industries Journal, 12:2, 185-203, DOI: [10.1080/17510694.2019.1610344](https://doi.org/10.1080/17510694.2019.1610344)

To link to this article: <https://doi.org/10.1080/17510694.2019.1610344>



Published online: 24 May 2019.



Submit your article to this journal [↗](#)



View Crossmark data [↗](#)

ARTICLE



The development potential index of creative economy for Brazilian federal state capitals

João Luiz de Figueiredo^a , Diego Santos Vieira de Jesus^a , Diogo Tavares Robaina^a and Cristina Lohmann Couri^b

^aCreative Economy Management, Superior School of Advertising and Marketing, Rio de Janeiro, Brazil; ^bInstituto Brasileiro de Geografia e Estatística (IBGE), Escola Nacional de Ciências Estatísticas, Rio de Janeiro, Brasil

ABSTRACT

The article deals with the measurement of the potential dynamism of creative economy in the 26 capitals of Brazilian states and the Federal District. The central aim is to estimate the potential of creative economy in the selected cities through the creation and application of the Development Potential Index of Creative Economy, which is an index composed of secondary data. The methodological procedures consisted of three steps, the first one dedicated to the theoretical revision of some indexes previously constructed and applied to the understanding of the dynamism of the creative economy in several countries. In the second step, we selected the indicators for the analysis of Brazilian reality, which were aggregated into three dimensions: talent; attractiveness and connectivity; cultural environment and creative entrepreneurship. In the third step, we calculated the DPICE based on two techniques: one that assigned equal weights to the three dimensions and the other one that established different weights, using endogenous weights. The results confirm the regional inequality in Brazil, for the state capitals with greater development potential are located in the southeastern and southern regions of Brazil, and show ways for public policies to strengthen the development of creative economy in those cities.

ARTICLE HISTORY

Received 20 December 2018
Accepted 18 April 2019

KEYWORDS

Creative economy; development potential index of creative economy; Brazilian federal state capitals; regional inequality; development

Introduction

Creative economy has been widely debated in academic and public policy spheres due to the growing relevance of the creative sectors in the economy and its relation to development. In the wake of these debates, the lack of data and indicators is acknowledged as one of the main bottlenecks for the better understanding of the relevance of creative economy as well as for the development of public policies that consolidate the creative activities and contribute to development.

Hence, the present article addresses the measurement of the potential dynamism of the creative economy in 26 federal state capitals and the Federal District. The

choice of Brazilian state capitals is justified by two complementary factors: the size of Brazil and its heterogeneousness, which requires an analysis on the scale of the cities, and the acknowledgement that the cities occupying the highest positions in urban hierarchy tend to concentrate the dynamism of creative economy. Therefore, we believe that when dealing with Brazilian state capitals, we will have a suitable depiction of the dynamics of creative economy in the country, enabling the identification of its main centers of potential development. However, we suppose that all cities, as well as the rural areas in Brazil, have the potential to develop creative economy.

Thus, the results of this research are presented in this article. It aims to measure the development potential of creative economy in 26 federal state capitals and the Federal District, through the creation and application of the Development Potential Index of Creative Economy (DPICE, English acronym for Índice de Desenvolvimento do Potencial da Economia Criativa, IDPEC, in Portuguese), which is an index composed of secondary data. In view of the challenge to quantify the potential of creative economy and not just its current situation, we have included several data that extrapolate the analysis of productive activities of creative economy itself, so we have incorporated variables recognized as fundamental for the strengthening of creative economy. In this respect, we do not aim to identify the Brazilian state capitals with greater economic weight of creative activities. We highlight, therefore, that the index will reveal the cities with greater development potential of creative economy, considering their particularities.

The methodology used to reach the proposed objective consisted of three steps, the first one dedicated to the theoretical revision of some indexes previously constructed and applied to the understanding of the dynamism of the creative economy in several countries. In the second step, we selected the indicators for the analysis of Brazilian reality, which were aggregated into three dimensions: talent; attractiveness and connectivity; cultural environment and creative entrepreneurship. In the third step, after collecting all the data, we used the data normalization so that we could compare them. Then, we calculated the DPICE based on two techniques: one that assigned equal weights to the three dimensions and the other one that established different weights, using endogenous weights proposed by Bowen, Moesen, and Sleuwagen (2008), which will be explained throughout the text.

The results confirm the regional inequality in Brazil, for the state capitals with greater development potential are located in the southeastern and southern regions of Brazil, and show ways for public policies to strengthen the development of creative economy in those cities.

In addition to the introduction and final considerations, the article has three other sections, in the first, we recognize the relevance of creative economy in the current phase of capitalism and the problem of the lack of data and indicators capable of helping propose policies to strengthen creative economy in Brazil, so we analyzed studies on indicators constructed for other countries and Brazil as well, which served as reference and inspiration. In the second section of the article, we present our selected database and the methodology to calculate the DPICE. Finally, in the third section, we discuss the results.

The need to construct indicators for creative economy

The relationships among culture, creativity, economy and development have been increasingly studied in several academic fields, which have progressively adopted an interdisciplinary approach in order to understand these relationships. In Economics, these relations account for the institutionalization of a specific field of study defined as cultural economics and, more recently, with the recognition of the relevance of culture and creativity in activities other than cultural ones, the debate on creative economy, so that 'cultural goods and services can be seen as a sub-set of a broader category of goods that can be called creative goods and services. The later are simply products that require some reasonably significant level of creativity in their manufacture, without necessarily satisfying other criteria that would enable them to be labelled 'cultural' (Throsby 2010: 16–17).

Although the Creative Nation project, developed by the Australian government in 1994, heralded the creative work as a key element for the country's economic development, it was from the effort undertaken by the United Kingdom in 1997 to identify its most competitive sectors in the global economy that the concept of creative industries has spread throughout the world. Hence, it was defined, by the Department for Culture, Media and Sport (DCMS), that creative industries are 'those that are based on individual creativity, skill and talent. They also have the potential to create wealth and jobs through developing and exploiting intellectual property.'

Based on this definition by the DCMS, several studies and/or consultancies were carried out in the UK. Thus, Howkins (2001) presented a list of fifteen creative industries, which according to the author occupy the core of creative economy: advertising, architecture, arts, crafts, design, fashion, film, music, performing arts, publishing, research and development, software, toys and games, TV and radio and computer games. Hartley (2005), however, stresses that the emergence of creative industries as the object of research and public policy arises from changes in technology and the world economy since the 1990s, as well as changes in the behavior of consumers and citizens, demanding an evolution of previous concepts such as 'creative arts' and 'cultural industries'. Therefore, to the aforementioned author, 'the idea of the creative industries seeks to describe the conceptual and practical convergence of the creative arts (individual talent) with cultural industries (mass scale), in the context of new media technologies (ICTs) within a new knowledge economy, for the use of newly interactive citizen-consumers' (Hartley 2005: 5).

Consequently, several countries, inspired by the UK experience and the flourishing of the debate, began to reflect on their creative sectors, so the terms 'creative city' (Landry 2008) and 'creative class' (Florida 2002) were added to creative industries and creative economy, all of which related to the growing relevance of creative competencies in the economic and social development trajectory, as well as in the productive restructuring process of cities. This has led to the proposition that we are now living a new phase of capitalism identified as 'informational capitalism' (Castells 1996), 'creative capitalism' (Florida 2005), 'cognitive capitalism' (Boutang 2007), 'cultural-cognitive capitalism' (Scott 2008), amongst other definitions.

Despite the various titles, it is generally recognized that this new phase of capitalism is characterized more by the logic of innovation in a regime of invention than by

the logic of reproduction in a previously hegemonic regime of repetition, thus culture and creativity are fundamental resources to generate economic value and differentiation in an increasingly globalized world.

Brazil was no exception and, since the 2000s, there has been an increase in studies and debates on the relationship between the creative economy and development. Nonetheless, Furtado (1978), in his book entitled 'Creativity and dependence on industrial civilization', discussed how the process of industrialization implemented in periphery countries had reinforced their dependence on central states, owing to the control imposed on local creative capacities in favor of the implementation of foreign technological packages of modernization, after all, according to him, development would result less from accumulation of wealth than from a process of invention of values, behaviors, lifestyles, in short, creativity. Years later, in 1986, when he was chosen to be Brazilian Culture Minister, the same economist argued that cultural policies should liberate the creative forces of society and the diversity of Brazilian culture ("what we are") should be productively organized as a central axis of a new model of Brazil's own development, so that culture would be recognized as an end and the economy as a means (Furtado 2012).

Furtado's importance to the Brazilian economic thinking undoubtedly contributed to the fact that development had a central place in the debates at first on cultural economics and then on creative economy, which, as previously mentioned, grew in Brazil only in the 2000s. In this regard, we can highlight the work of Prestes Filho and Cavalcanti (2002), which identified the strength of cultural industries for the development of Rio de Janeiro, as well as the work of Reis (2007), which stressed the actual possibility of culture playing a role in proposing new development models for Brazil. Many other academic efforts joined these initial ones, and research groups were created, developing works of great importance (Barbalho et al. 2011; Figueiredo and de Jesus 2017; Machado and Leitão 2016; Valiati and Moller, 2016), among many others.

Of the many interests and challenges in the field of creative economy studies in Brazil, we can highlight the construction of indexes capable of estimating its importance in the development of cities, federal states, and Brazil itself. The most consistent effort until this moment is the follow-up carried out by the Federation of Industries of the State of Rio de Janeiro (FIRJAN) entitled 'Mapping of the Creative Industry in Brazil', firstly edited in 2008, and then updated in 2012 and 2016 (FIRJAN, 2008, 2012, 2016). Its main contribution is the systematization of official information on employment and participation of the creative industries in the Gross Domestic Product (GDP).

Nevertheless, in 2011, there was a hope for the national planning to strengthen the creative economy with the creation of a National Secretariat of Creative Economy, under the Ministry of Culture, which, in its plan of action (Brasil 2011), showed that, in Brazil, the creative economy should contribute to the generation of cultural and economic wealth through four guiding principles - cultural diversity; sustainability; innovation and social inclusion - and that of the five challenges to be faced the first would be the collection of information and data on the creative economy in Brazil (the others four challenges pointed in the plan are the articulation and stimulus to the promotion of creative enterprises; the education for creative competencies; the infrastructure of creation, production, distribution and consumption of creative goods and

services; and the creation/adaptation of a legal framework for creative industries). Regrettably, following the long-standing tradition of discontinuity of cultural policies in Brazil (Calabre 2009), now extended to policies to encourage the creative economy, the Secretariat was abolished in 2015 and the plan shelved.

Therefore, the research, whose results are presented in this article, is of great significance for the identification of the development potential of the creative economy in Brazilian federal state capitals and the Federal District, in order to help overcome one of the bottlenecks to strengthen the creative economy in Brazil, which is the scarcity of data and indexes that provide inputs to policy makers as well as to productive agents to better identify the actions to be taken to strengthen Brazilian creative economy.

While in Brazil the development of indexes for the creative economy is still modest, the same cannot be said concerning the countries identified as developed states, for 'given the increasing importance attributed by researchers and policy makers to the concept of creativity and creative economy, it is not surprising the increasing interest of researchers in defining and estimating indexes of creativity' (Correia and Costa 2014: 9). After all, according to Castro-Higueiras and De Aguilera (2016), indexes allow an estimation of a complex and multidimensional phenomenon that cannot be directly measured, constituting a powerful quantitative tool for the definition of public policies regardless of the inaccuracies inherent in any system that seeks to capture reality. In other words, 'these indexes provide analytical tools to assess the economic impact of the creative economy and are useful to measure the effectiveness of political decisions' (Correia and Costa 2014: 9).

With respect to the concern to create indexes for the creative economy, one of the pioneering works was the Creativity Cities Index (Florida 2002), stressing the importance of talent, technology and tolerance. Subsequently, Florida, together with the Italian researcher and policymaker Irene Tinagli, made some adaptations to investigate the European reality; however they kept the scope of the 3T model (Florida and Tinagli 2004). The Global Creativity Index, recently created under the influence of the author's work, incorporated other elements such as competitiveness, entrepreneurship, human development and urbanization into the 3Ts (Martin Prosperity Institute 2015).

Bowen, Moesen, and Sleuwagen (2008) proposed the Composite Index of the Creative Economy to measure the creative capacity of the member regions of Flanders District of Creativity, through three dimensions defined as innovation, entrepreneurship and openness. A great contribution of this study is the methodology used to define the weights that each variable has on the final index, which vary from region to region in order to determine the best performances of each one in a given variable. In addition, we can also highlight the European Creativity Index (ECI), developed by KEA European Affairs (2009) for the European Commission, and the study of creativity measurement in Member States of the European Union, developed by Correia and Costa (2014), which compares several different indicators of creative economy and brings a quite comprehensive proposal that summarizes points from all the above studies in 9 dimensions (talent; openness; cultural environment and tourism; technology and innovation; industry; regulation and incentives; entrepreneurship; accessibility; and livability). Furthermore, Correia and Costa (2014) also follow the endogenous weight method applied by Bowen, Moesen, and Sleuwagen (2008). Castro-Higueiras

and De Aguilera (2016), on the other hand, present the Cultural and Creative Industry Potential Index, organized in three dimensions (cultural policy, cultural and creative industries, and creative basis) with 14 subdimensions and 56 indicators. The application of the Delphi method for the validation of the indicators presents itself as a methodological differential of the index, as well as its aim to evaluate the potential of the economic development of the cultural and creative sectors in a specific territory.

In Asia and Oceania, studies were also undertaken in order to measure the creative economy, highlighting two indexes. The first, entitled the Hong Kong Creativity Index (HKCI) and developed by the Center for Cultural Policy Research in Hong Kong (University of Hong Kong 2007), analyzed 88 indicators grouped in 5 dimensions (creativity outcomes; structural/institutional capital; human capital; social capital; cultural capital). The other index, Creative City Index (CCI-CCI), developed by the ARC Centre of Excellence for Creative Industries and Innovation (Hartley et al. 2012), analyzed 72 indicators grouped in 8 dimensions (creativity industries; scale and scope, micro-productivity, attractions and economy of attention; participation and expenditure; public support; human capital; global integration; and openness, tolerance and diversity) and has already been applied in cities in Australia, Germany and the United Kingdom, even though initially it was also expected to be applied in cities in Brazil and Indonesia.

As previously mentioned, in Brazil the construction of indexes for creative economy is still at an early stage, however some initiatives can be highlighted besides the quantification of the sector, which is carried out periodically by FIRJAN. Valiati and Cauzzi (2016) propose an analysis of four dimensions considered relevant for the establishment of good environment and resources for the development of the creative economy (socioeconomic development, business environment, market and cultural resources) and apply this approach when comparing emerging countries (Brazil, China, Colombia and India) to developed states (Canada, Spain, the United States and the United Kingdom). Machado, Simões, and Diniz (2013), whose work is also outstanding, use the clustering method to propose a typology for the Brazilian municipalities regarding their cultural characteristics and identify 6 types of clusters, being São Paulo and Rio de Janeiro the ones that stand out from the others. Based on this last work, Vaz de Melo and Paiva (2016) investigate the development and potential of creative clusters for Brazilian medium size cities, analyzing 17 variables, without grouping them into dimensions. Six types of creative clusters are identified in Brazilian medium size cities, and those classified as 'creative agglomerations' and 'very creative agglomerations' are located primarily in the southeastern and southern regions of Brazil, chiefly in the federal states of São Paulo and Rio de Janeiro.

Therefore, we consider relevant to construct a Development Potential Index of Creative Economy (DPICE) for Brazilian cities due to three reasons. First, given the inequality of the Brazilian reality, it is necessary to construct an index that allows the internal comparison of Brazilian reality rather than the comparison of Brazil with the world or the identification of a national average. Second, even though the international experiences of constructing indexes are of great significance, we do need to construct an index suitable to the availability of data and information on Brazilian cities. Third, in order to provide subsidies for the development of public policies aimed

at strengthening creative economy rather than just measuring the size of creative economy in cities, we believe it is imperative to recognize the creative potential of the creative economy in these places.

Database and methodology

The DPICE aims to estimate the development potential of creative economy in Brazilian cities. Currently, however, the analysis is restricted only to the federal state capitals and the Federal District. As it involves the construction of a composite index that collects data from several bases, we agree with Bowen, Moesen, and Sleuwagen (2008) on the need to answer three sets of questions about the scope (selection of primitive data); normalization (definition of a common scale); and aggregation (definition of the weights).

In order to enable comparisons with the quantification made by FIRJAN (2016), we will adopt the definition proposed in its studies on the productive activities that comprise creative economy, organized in three broad categories: core (formed by those activities that use ideas as main input in generating value); related activities (formed by those activities that directly provide goods and services to core activities), and support (formed by those activities that indirectly provide goods and services to core activities). Nevertheless, unlike the analysis carried out by FIRJAN organized by the states, our interest lies in the dynamics of the cities, thus we will need to use the information regarding this scale of analysis. In this article, we recognize the core activities of creative economy organized in 4 groups according to the Table 1.

As we chose to estimate the development potential of creative economy in each federal state capital and the Federal District, our data base cannot be restricted to the absolute quantification of the size of creative economy, thus it is cardinal to incorporate the data related to the development basis of creative economy, respecting the differentiated size of the federal state capitals. Therefore, we considered the sizes of the

Table 1. Activities at the core of the creative economy.

Consumption	Advertising	Advertising activities, marketing, market survey and event management.
	Architecture	Building, landscape and environment design. Planning and conservation.
	Design	Graphic, multimedia and furniture design.
Culture	Fashion	Clothing, accessory, shoe and accessory design; dressmakers.
	Cultural expressions	Handicraft, folklore, gastronomy.
	Heritage and Arts	Cultural services, museology, cultural production, historical heritage.
	Music	Sound recording, sound editing and sound mixing, musical production and performance.
Media	Performing arts	Acting, theater and dance performance production and direction.
	Publishing	Book, newspaper, magazine and digital content publishing.
	Audiovisual	Content development, distribution, programming and broadcasting
Technology	R&D	Experimental development and overall research, except for biology.
	Biotechnology	Bioengineering, biology research, laboratory practices.
	ICT	Software and system design, IT and robotics consulting.

Elaborated by the authors based on Firjan (2016).

Table 2. Dimensions and variables of the DPICE.

Dimension	Variables	Description	Source
D1 – Talent	T1 - Human capital	Proportion of people with university degree	2010 IBGE census (IBGE 2011)
	T2 – Creative employment	Proportion of creative employment	CEMPRE – Enterprises Central Register (IBGE 2016)
	T3 - Basic education quality	Average performance of students in basic education	INEP – National Institute for Educational Studies and Research Anísio Teixeira (INEP 2015)
D2 – Attractiveness and connectivity	A1 – National attractiveness	Proportion of non-locals among residents	2010 IBGE census (IBGE 2011)
	A2 – International attractiveness	Proportion of non-nationals among residents	2010 IBGE census (IBGE 2011)
	A3 – Human Development Index (HDI)	Municipal Human Development Index	2010 IBGE census (IBGE 2011)
	A4 – Urban mobility	Proportion of urbanized roads	2010 IBGE census (IBGE 2011)
	A5 – Airport traffic	Number of airport passengers per capita	SNAC – Civil Aviation National Secretariat (SNAC 2016)
D3 – Cultural environment and creative entrepreneurship	C1 - Creative industries	Proportion of creative enterprises	CEMPRE – Enterprises Central Register (IBGE 2016)
	C2 – Creative salary	Proportion of creative salary	CEMPRE – Enterprises Central Register (IBGE 2016)
	C3 - Patents	Number of patents per capita	INPI – National Institute of Industrial Property (INPI 2016)
	C4 - Cultural supply	Number of museums per capita	IBRAM – Institute of Brazilian Museums (IBRAM 2018)
	C5 - Public incentive on culture	Direct public expenditure on culture per capita	STN – National Treasury Secretariat (STN 2017)

Elaborated by the authors.

state capital to identify the development potential of creative economy in each one and we were inspired by the indexes presented in the previous section to select the primary data organized in three dimensions: talent; attractiveness and connections; cultural environment and creative entrepreneurship.

Regarding talent, we considered three variables (human capital, creative employment, quality of basic education); for attractiveness and connectivity, we included five variables (national attractiveness, international attractiveness, human development, urban mobility, airport traffic); lastly, for cultural environment and creative entrepreneurship, we considered three variables (creative industries, creative salaries, patents, cultural offer, public incentive to culture), summarized in [Table 2](#).

The data selection applied in the construction of the DPICE was based on the literature that recognizes some favorable conditions for the development of the creative economy.

In the talent dimension, through the selected variables, ‘human capital’, ‘creative employment’ and ‘quality of basic education’, we identified that the presence of skilled workers in the creative economy is a key condition for their development (Florida 2002; Landry 2008).

In addition, in the attractiveness and connectivity dimension, through the variables ‘national attractiveness’ and ‘international attractiveness’, we acknowledge that the development of creative economy depends on the social and cultural diversity of the

territories (Cerisola 2018; Scott 2008; Vivant 2009); we also recognize that quality of life is a significant condition for cities that want to encourage their cultural and creative activities, with the inclusion of the variable ‘human development’; and lastly, we included ‘urban mobility’ and ‘airport traffic’ as variables because we recognize the relevance of inner city connection and its linkage with national and international urban networks as fundamental elements to strengthen creative economy.

Regarding cultural environment and creative entrepreneurship, we considered that the inclusion of variables directly related to creative industries, such as ‘creative industries’, ‘creative salary’ and ‘patents’, is relevant once cultural and creative activities tend to benefit from the agglomeration effects (Cerisola 2018; Lazeretti, Boix, and Capone 2013; Machado, Simões, and Diniz 2013; Scott 2008), placing their future development; the variables ‘cultural offer’ and ‘public incentive to culture’, however, recognize the centrality of cultural activities for the development of creative economy by contributing to the expansion of creative capacities of the population, but also by providing sources of urban amenities that contribute to local development (Cerisola 2018; Falck et al. 2018; Machado, Simões, and Diniz 2013; Throsby 2010; Tubadji, Osoba, and Nijkamp 2015).

After defining the scope of the primitive data, the challenges are the normalization of data and the definition of weights. Regarding data normalization, we chose the Min-Max standardization method (Nardo et al. 2008). This process transforms data from its original units to a value between 0 and 1. Given the value V_{ij} on variable j for capital i the normalized data value N_{ij} was computed as:

$$N_{ij} = \frac{V_{ij} - \text{MIN}_i(V_{ij})}{\text{MAX}_i(V_{ij}) - \text{MIN}_i(V_{ij})} \quad (1)$$

In this expression, $\text{MIN}_i(V_{ij})$ is the minimum value of variable j across the 27 federal state capitals and $\text{MAX}_i(V_{ij})$ is the maximum value of variable j across the 27 state capitals. Table 3 shows the normalized values N_{ij} between 0 and 1, so that 0 indicates the capital with the worst performance and 1 indicates the capital with best performance in a given variable.

The definition of the weights assigned to each dimension is a central issue in the construction of composite indicators, since the final result varies according to this definition. Thus, there are three recurring options: assign equal weights to all dimensions; assign different weights based on experts’ opinion, and assign different weights based on endogenous weights.

The attribution of equal weights is the most simple and common form, however this implies that all variables and dimensions are equally important, which is not necessarily true. Experts believe that differentiated weights are an alternative to such problem, but this choice depends on some level of subjectivity and divergence of opinion. The third option identified as endogenous weights is a ‘technique that requires less information but nonetheless reveals preferences, in that the data speak for themselves relative to those sub-dimensions that will carry a relatively higher or lower weight’ (Bowen, Moesen, and Sleuwagen 2008: 378). The differentiated weights for each dimension are determined endogenously and reveal the best performances

Table 3. Normalized values of the DPICE variables for the Brazilian state capitals and the Federal District.

Regions	Capitals	D1			D2					D3				
		T1	T2	T3	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5
North	Rio Branco (AC)	0,07	0,00	0,79	0,12	0,13	0,05	0,22	0,01	0,00	0,06	0,01	0,48	0,17
	Macapá (AP)	0,08	0,02	0,95	0,23	0,10	0,10	0,06	0,05	0,03	0,00	0,00	0,09	0,00
	Manaus (AM)	0,00	0,16	0,53	0,13	0,18	0,13	0,30	0,06	0,06	0,14	0,07	0,18	0,26
	Belém (PA)	0,17	0,33	0,16	0,05	0,12	0,20	0,43	0,16	0,26	0,14	0,03	0,13	0,06
	Porto Velho (RO)	0,06	0,25	0,37	0,43	0,10	0,12	0,23	0,11	0,03	0,21	0,02	0,14	0,10
	Boa Vista (RR)	0,05	0,07	0,42	0,29	0,46	0,25	0,00	0,00	0,08	0,04	0,02	0,03	0,38
Northeast	Palmas (TO)	0,35	0,11	0,89	1,00	0,08	0,53	0,36	0,20	0,33	0,03	0,15	0,24	0,62
	Maceió (AL)	0,16	0,25	0,00	0,10	0,03	0,00	0,38	0,14	0,18	0,15	0,12	0,23	0,08
	Salvador (BA)	0,22	0,41	0,05	0,04	0,15	0,30	0,41	0,22	0,30	0,27	0,15	0,26	0,06
	Fortaleza (CE)	0,14	0,46	0,63	0,05	0,11	0,26	0,12	0,16	0,17	0,30	0,22	0,13	0,27
	São Luís (MA)	0,14	0,27	0,53	0,17	0,05	0,37	0,10	0,06	0,15	0,12	0,05	0,18	0,34
	João Pessoa (PB)	0,37	0,27	0,37	0,23	0,13	0,33	0,28	0,11	0,21	0,15	0,16	0,48	0,09
	Recife (PE)	0,41	0,52	0,47	0,07	0,15	0,40	0,61	0,42	0,33	0,43	0,27	0,31	1,00
	Teresina (PI)	0,16	0,27	0,84	0,14	0,00	0,24	0,02	0,04	0,11	0,15	0,05	0,00	0,04
	Natal (RN)	0,21	0,36	0,11	0,17	0,13	0,33	0,16	0,23	0,26	0,17	0,15	0,34	0,29
	Aracaju (SE)	0,39	0,39	0,05	0,25	0,05	0,39	0,69	0,14	0,39	0,28	0,09	0,28	0,10
Central-West	Brasília (DF)	0,57	0,56	0,53	0,25	0,24	0,82	0,71	0,72	0,42	0,34	0,34	0,29	0,95
	Goiânia (GO)	0,49	0,48	1,00	0,35	0,18	0,62	0,60	0,15	0,24	0,31	0,49	0,13	0,08
	Cuiabá (MT)	0,42	0,41	0,68	0,16	0,10	0,51	0,40	0,50	0,27	0,16	0,31	0,35	0,40
	Campo Grande (MS)	0,32	0,48	0,95	0,27	0,35	0,50	0,39	0,10	0,38	0,19	0,23	0,28	0,17
Southeast	Vitória (ES)	1,00	0,78	0,58	0,36	0,33	0,98	1,00	1,00	0,55	0,43	0,57	0,54	0,37
	Belo Horizonte (MG)	0,61	0,63	0,74	0,12	0,24	0,71	0,54	0,37	0,64	0,40	0,57	0,28	0,29
	São Paulo (SP)	0,51	1,00	0,68	0,05	1,00	0,67	0,62	0,49	1,00	0,91	0,64	0,07	0,80
South	Rio de Janeiro (RJ)	0,54	0,91	0,74	0,00	0,81	0,62	1,00	0,36	0,92	1,00	0,42	0,19	0,43
	Curitiba (PR)	0,74	0,57	0,84	0,21	0,55	0,81	0,74	0,32	0,50	0,33	0,73	0,43	0,39
	Florianópolis (SC)	1,00	0,96	0,84	0,63	0,81	1,00	0,67	0,87	0,74	0,64	1,00	1,00	0,30
	Porto Alegre (RS)	0,76	0,79	0,32	0,14	0,46	0,67	0,88	0,53	0,74	0,51	0,55	0,63	0,28

Elaborated by the authors. Definitions of the dimensions and variables informed in the [Table 2](#).

of the Brazilian federal state capitals and the Federal District in each evaluated dimension.

Thus, we agree that when Bowen, Moesen, and Sleuwagen (2008) adopted this methodology, they recognized it as the one that selects the most favorable weights for each analyzed territory, so that each federal state capital will obtain the highest DPICE possible. In this manner, each federal state capital will obtain its own set of weights, maximizing the DPICE of each one of them.

Furthermore, the DPICE respects the specificities of each federal state capital by valuing its best qualities differently and avoids the use of the same evaluation rule defined a priori, which concerning Brazil is especially problematical due to its regional inequality.

Formally, as explained by Bowen, Moesen, and Sleuwagen (2008), the endogenous weight method consists of solving, for each federal state capital 'i', a linear programming problem to define the weights w_{ij} to be given each of 'j' sub-indicators (I_{ij}) that are then summed to give a composite index value.

Given 'N' state capitals and 'J' sub-indexes, the linear programming problem for federal state capital i can be written

$$\max DPICE_i = \max_{w_{ij}} \sum_{j=1}^j w_{ij} N_{ij} \quad (2)$$

subject to

$$\sum_{j=1}^j w_{ij} = 1 \quad \forall i = 1 \dots n, \quad \forall j = 1 \dots j \quad (3)$$

$$0, 15 \leq w_{ij} \leq 0.50 \quad \forall j = 1 \dots j \quad (4)$$

Expression (2) states that the DPICE value for federal state capital i is to be maximized by the choice of the W_{ij} . Restriction (3) requires that the weights assigned to each dimension D_{ij} sum to one; this restriction is minimal and allows flexibility in determining the optimal weights for a region. Expression (4) restricts the value each weight can take to a particular interval. Considering that the DPICE has 3 dimensions, this restriction, in practice, assigns the dimension with the best score with a 3/6 weight, the second best dimension with a 2/6 weight and the worst dimension with 1/6.

Results

In this section, we present the DPICE results for the Brazilian federal state capitals and the Federal District and compare the results obtained with the application of equal weights to the DPICE dimensions and the application of different weights through endogenous weights. No federal state capital is expected to obtain a result with the endogenous weight lower than the result with equal weights. In addition, it is also important to recognize that the increase of the end result with endogenous weight varies significantly amongst the federal state capitals, for it does not depend on the values obtained in each dimension, but chiefly on the disparity of the result that each city has in each dimension. In other words, a federal state capital that is roughly equal in size will not obtain a large increase in the index with an endogenous weight; on the contrary, a federal state capital that shows disparity in its results in the analyzed dimensions will obtain greater variation in the final index result through endogenous weights.

Table 4 shows the normalized results for the dimensions that compose the DPICE and Figures 1–3 illustrate the ranking of the federal state capitals in each of these dimensions.

According to Figure 1, we can see that regarding the talent dimension of the DPICE, the capitals of the Southern and Southeastern federal states in Brazil occupy 7 out of the first 8 positions, displaying the enormous regional inequality in Brazil in relation to basic and higher education. The city of Florianópolis, capital of the federal state of Santa Catarina, the main highlight in this dimension, is followed by Vitória and later by a bloc formed by the cities of São Paulo, Rio de Janeiro and Curitiba, which showed very close results.

Figure 2 shows that Florianópolis stands out from the other state capitals again, followed by Vitória and later by a group of cities that obtained very close results: São Paulo, Rio de Janeiro, Brasília, Porto Alegre and Curitiba. Hence, we recognize that the attractiveness and connectivity of the federal state capitals also reflects the regional inequality in Brazil, however this time Brasília, the Federal District, is part of the group with the best performances.

Table 4. Normalized values of the DPICE dimensions for the Brazilian federal state capitals and the Federal District.

Regions	Capital Cities	D1	D2	D3
North	Rio Branco (AC)	0,28	0,10	0,14
	Macapá (AP)	0,35	0,11	0,02
	Manaus (AM)	0,23	0,16	0,14
	Belém (PA)	0,22	0,19	0,12
	Porto Velho (RO)	0,23	0,20	0,10
	Boa Vista (RR)	0,18	0,20	0,11
	Palmas (TO)	0,45	0,43	0,27
Northeast	Maceió (AL)	0,13	0,13	0,15
	Salvador (BA)	0,23	0,23	0,21
	Fortaleza (CE)	0,41	0,14	0,22
	São Luís (MA)	0,31	0,15	0,17
	João Pessoa (PB)	0,34	0,22	0,22
	Recife (PE)	0,47	0,33	0,47
	Teresina (PI)	0,42	0,09	0,07
	Natal (RN)	0,23	0,20	0,24
	Aracaju (SE)	0,28	0,30	0,23
	Brasília (DF)	0,55	0,55	0,47
Central-West	Goiânia (GO)	0,65	0,38	0,25
	Cuiabá (MT)	0,50	0,33	0,30
	Campo Grande (MS)	0,58	0,32	0,25
	Vitória (ES)	0,79	0,74	0,49
Southeast	Belo Horizonte (MG)	0,66	0,40	0,44
	São Paulo (SP)	0,73	0,57	0,68
	Rio de Janeiro (RJ)	0,73	0,56	0,59
South	Curitiba (PR)	0,72	0,53	0,48
	Florianópolis (SC)	0,93	0,80	0,74
	Porto Alegre (RS)	0,62	0,53	0,54

Elaborated by the authors. Definitions of the dimensions and variables informed in Table 2.

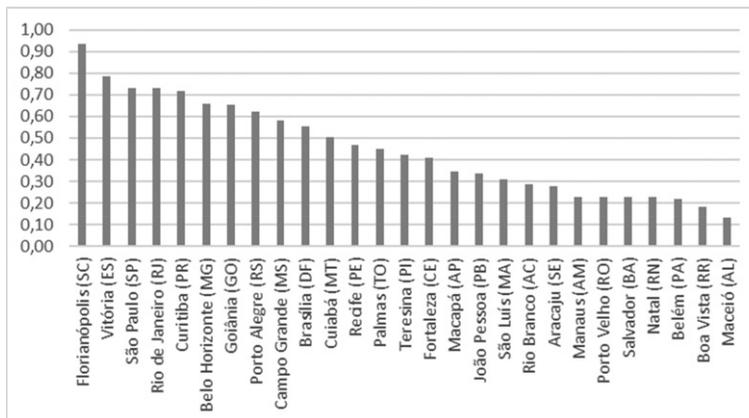


Figure 1. Ranking of the Brazilian federal state capitals and the Federal District on dimension 1 (Talent) of the DPICE.

Elaborated by the authors.

The third dimension of the DPICE, Cultural environment and creative entrepreneurship, as we can see in Figure 3, shows Florianópolis with the best result. However, São Paulo, Rio de Janeiro and Porto Alegre surpass Vitória, which shows results that place the city in an intermediate group together with Curitiba, Recife, Brasília and Belo Horizonte. Surely, this is the extent to which the dynamism of the economy most impacts the outcome.

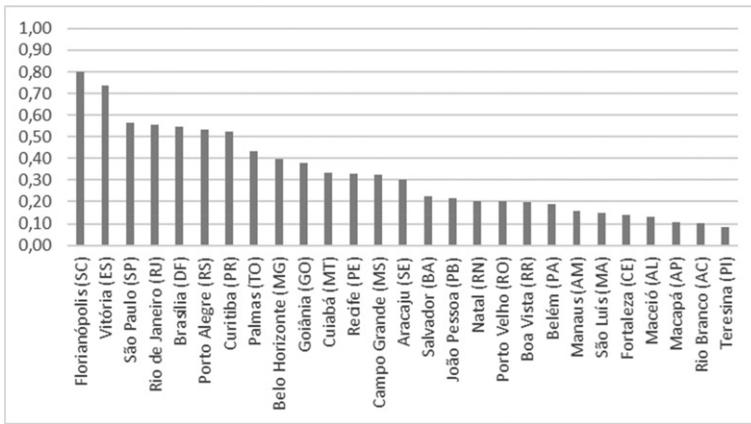


Figure 2. Ranking of the Brazilian federal state capitals and the Federal District on dimension 2 (Attractiveness and connectivity) of the DPICE. Elaborated by the authors.

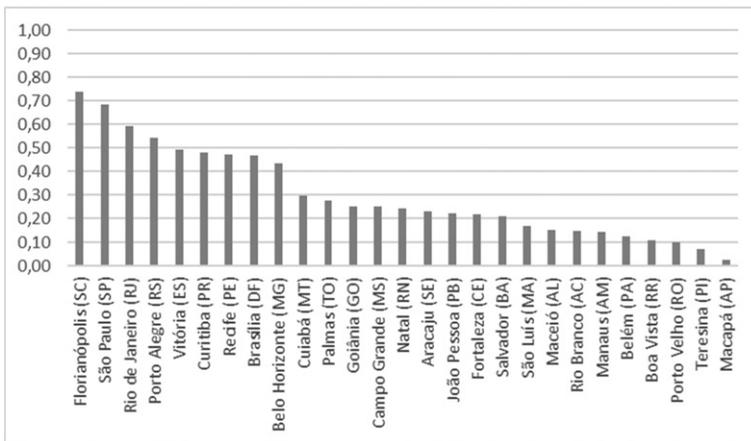


Figure 3. Ranking of the Brazilian federal state capitals and the Federal District on dimension 3 (Cultural environment and creative entrepreneurship) of the DPICE. Elaborated by the authors.

Table 5 shows the consolidation of the DPICE results and the comparison of the ranking between the two methodologies: equal weights and endogenous weights. As previously shown, the largest variations occurred in those federal state capitals that showed great variation among their results in the three dimensions.

For better understanding, Figure 4 depicts the ranking of the federal state capitals according to the DPICE calculated through endogenous weights and, finally, Figure 5 shows, through stratification of the results, how the development potential of the creative economy is unequal regarding regions in Brazil.

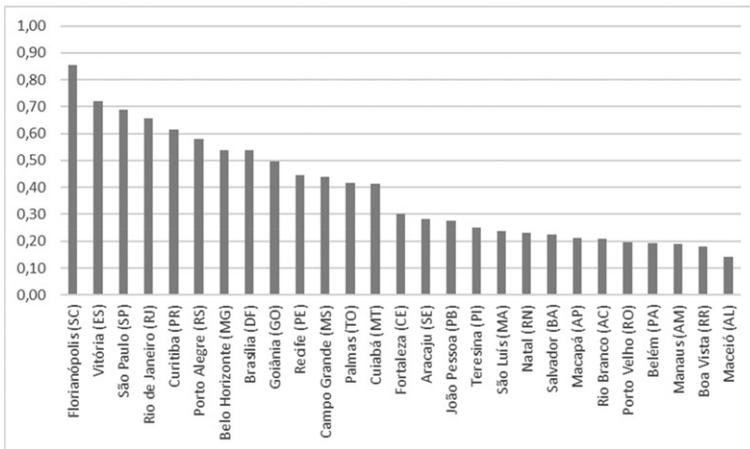
Concluding remarks

Given the increasing importance of creative activities in the current stage of Capitalism as well as the need to construct indicators capable of estimating the dynamics of creative economy, this article presents the results of the research on the

Table 5. DPICE: scores and ranks using equal and endogenous weighting.

State capitals	Equal weights		Endogenous weights		Change in	
	Score	Rank	Score	Rank	Score	Rank
Florianópolis (SC)	0,82	1	0,86	1	0,04	0
Vitória (ES)	0,67	2	0,72	2	0,05	0
São Paulo (SP)	0,66	3	0,69	3	0,03	0
Rio de Janeiro (RJ)	0,63	4	0,66	4	0,03	0
Curitiba (PR)	0,57	5	0,61	5	0,04	0
Porto Alegre (RS)	0,57	6	0,58	6	0,01	0
Brasília (DF)	0,52	7	0,54	8	0,02	-1
Belo Horizonte (MG)	0,50	8	0,54	7	0,04	1
Goiânia (GO)	0,43	9	0,50	9	0,07	0
Recife (PE)	0,42	10	0,45	10	0,03	0
Palmas (TO)	0,39	11	0,42	12	0,03	-1
Campo Grande (MS)	0,38	12	0,44	11	0,06	1
Cuiabá (MT)	0,38	13	0,41	13	0,03	0
Aracaju (SE)	0,27	14	0,28	15	0,01	-1
João Pessoa (PB)	0,26	15	0,28	16	0,02	-1
Fortaleza (CE)	0,26	16	0,30	14	0,04	2
Natal (RN)	0,22	17	0,23	19	0,01	-2
Salvador (BA)	0,22	18	0,22	20	0,00	-2
São Luís (MA)	0,21	19	0,24	18	0,03	1
Teresina (PI)	0,19	20	0,25	17	0,06	3
Belém (PA)	0,18	21	0,19	24	0,01	-3
Rio Branco (AC)	0,18	22	0,21	22	0,03	0
Manaus (AM)	0,18	23	0,19	25	0,01	-2
Porto Velho (RO)	0,18	24	0,20	23	0,02	1
Boa Vista (RR)	0,16	25	0,18	26	0,02	-1
Macapá (AP)	0,16	26	0,21	21	0,05	5
Maceió (AL)	0,14	27	0,14	27	0,00	0

Elaborated by the authors.

**Figure 4.** DPICE (endogenous weighting): Ranking of the Brazilian federal state capitals and the Federal District.

Elaborated by the authors.

construction of the Development Potential Index of Creative Economy (DPICE) and its application to the Brazilian federal state capitals and the Federal District. The DPICE is an indicator composed of secondary data that aims to estimate the development potential of creative economy in Brazilian cities. However, as the article reveals, we restricted the analysis to the federal state capitals and the Federal District.

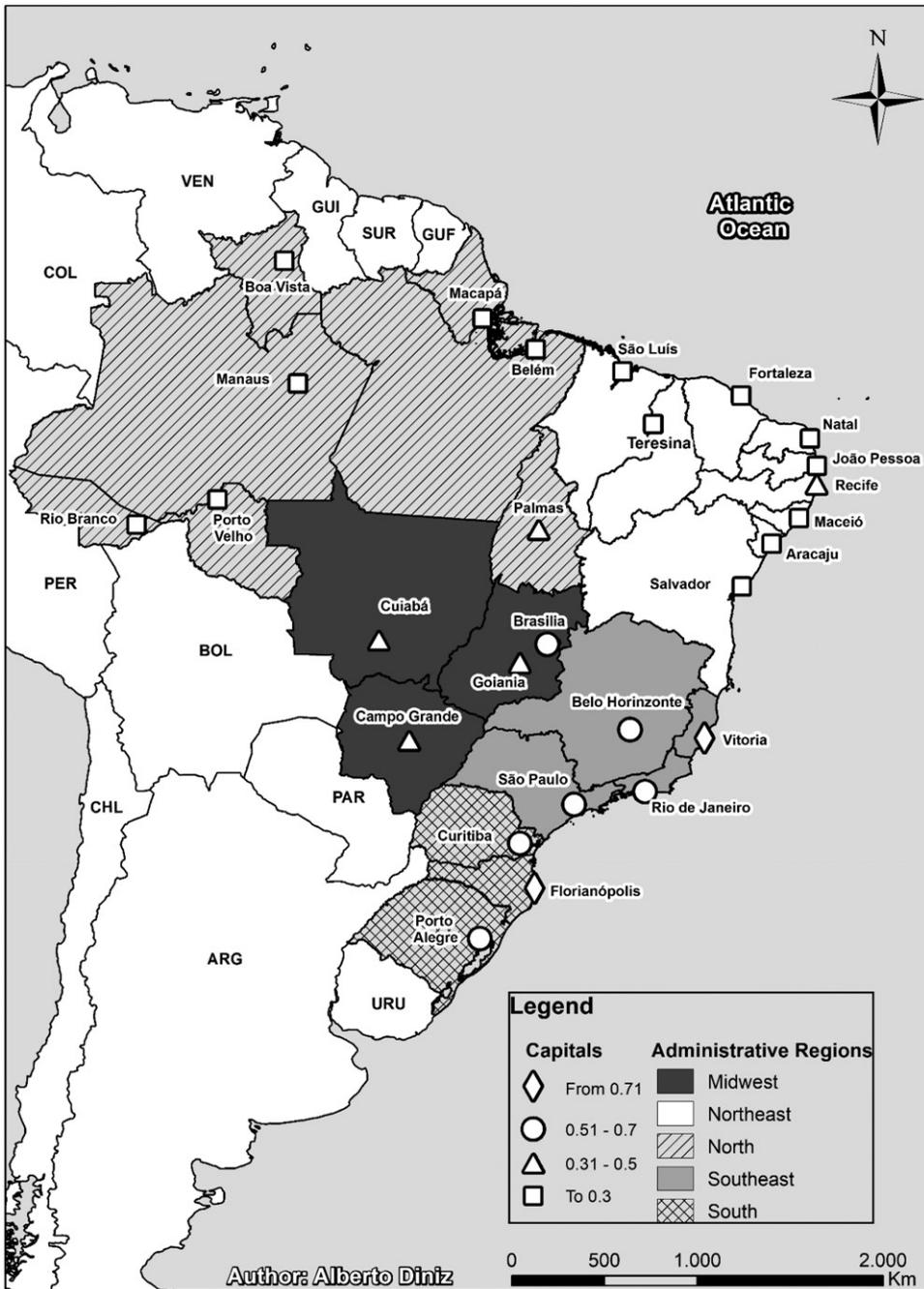


Figure 5. Map of Development Potential Index of Creative Economy (endogenous weighting) in Brazilian federal state capitals and the Federal District. Elaborated by Alberto Diniz, based on data elaborated by the authors and showed in Table 5.

Based on the selection of the three fundamental dimensions for the development of creative economy (talent, attractiveness and connectivity, cultural environment and creative entrepreneurship), and respecting territorial specificities, the DPICE estimates

the development potential of creative economy in each selected city. In other words, the result indicates which cities are better prepared to develop creative economy as a key element in its dynamics of production.

Thus, the ranking presented in this work is not an ordering of the Brazilian federal state capitals with greater impact on Brazilian creative economy, but a categorization of Brazilian federal state capitals with greater capacity to dynamize the creative economy in their own territorial backgrounds. Therefore, the selection of the secondary data needed to incorporate economic and non-economic variables for the development of creative economy and the calculation of the DPICE was based on endogenous weights.

The regional inequality in Brazil is well known and has been corroborated by the DPICE applied to Brazilian federal state capitals, since the top of the list is occupied by those capitals of the Southern and Southeast regions as well as the Federal District. Therefore, if the diagnosis on creative activities playing an increasing role in the global economy is right, then this will tend to widen the regional inequality in Brazil.

Finally, we expect the DPICE can contribute to the formulation of policies capable of strengthening creative economy in Brazil by recognizing the potentials and bottlenecks of each Brazilian federal state capital.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

João Luiz de Figueiredo (joao.silva@espm.br) coordinates the Professional Master's Degree in Creative Economy Management and the Creative Economy, Development and Territory Lab at the Superior School of Advertising and Marketing (ESPM-Rio), Rio de Janeiro, Brazil. His research focus on the relationship between creative economy, development and territory.

Diego Santos Vieira de Jesus (dvieira@espm.br) holds a Ph.D. in International Relations from PUC-Rio. He is a professor and researcher of the Professional Master's Degree in Creative Economy Management and coordinates the Creative Cities Lab at the Superior School of Advertising and Marketing of Rio de Janeiro (ESPM-Rio), Brazil.

Diogo Tavares Robaina (diogo.robaina@espm.br) holds a Ph.D. in Computer Science from Universidade Federal Fluminense. He is a researcher of the Creative Economy, Development and Territory Lab at the Superior School of Advertising and Marketing (ESPM-Rio), Rio de Janeiro, Brazil. His research focus on computational and applied mathematics, and numerical methods.

Cristina Lohmann Couri (crislcouri@gmail.com) is a PhD candidate at the Population, Territory and Public Statistics Program of the Brazilian National School of Statistical Science (ENCE/IBGE), Rio de Janeiro, Brazil. Her research focus is on creative economy productive systems and data usage for creative management.

ORCID

João Luiz de Figueiredo  <http://orcid.org/0000-0003-0292-5683>

Diego Santos Vieira de Jesus  <http://orcid.org/0000-0001-6114-7266>

References

- Barbalho, A., L. Calabre, P. Miguez, and R. Rocha (eds.). 2011. *Cultura e desenvolvimento: perspectivas políticas e econômicas [Culture and Development: Political and Economic Perspectives]*. Salvador: EDUFBA.
- Boutang, Y. M. 2007. *Le capitalisme cognitif: la nouvelle grand transformation [Cognitive Capitalism: The New Great Transformation]*. Paris: Éditions Amsterdam.
- Bowen, H. P., W. Moesen, and L. Sleuwagen. 2008. "A Composite Index of the Creative Economy." *Review of Business and Economics* 4:375–397.
- Brasil. 2011. *Plano da secretaria de economia criativa: políticas, diretrizes e ações: 2011–2014. [Plan of the Creative Economy Secretariat: Policies, Guidelines and Actions: 2011–2014]*. Brasília: Ministério da Cultura.
- Calabre, L. 2009. *Políticas culturais no brasil: dos anos 1930 ao século XXI [Cultural Policies in Brazil: From the 1930s to the XXI Century]*. Rio de Janeiro: FGV.
- Castells, M. 1996. *The Rise of the Network Society (The Information Age: Economy, Society and Culture, volume 1)*. Malden: Blackwell.
- Castro-Higueiras, A., and M. De Aguilera. 2016. "El Índice de Potencialidad de Las Industrias Culturales y Creativas' ["The Cultural and Creative Industry Potential Index"]." *Fonseca, Journal of Communication* 13: 129–146. <http://dx.doi.org/10.14201/fjc201613129146>
- Cerisola, S. 2018. "Multiple Creative Talents and Their Determinants at the Local Level." *Journal of Cultural Economics* 42 (2): 243–269. doi:10.1007/s10824-017-9299-8.
- Correia, C. M., and J. S. Costa. 2014. "Measuring Creativity in the EU Member States." *Investigaciones Regionales* 30: 7–26. <https://scholar.google.com.br/>
- Falck, O., M. Fritsch, S. Heblich, and A. Otto. 2018. "Music in the Air: Estimating the Social Return to Cultural Amenities." *Journal of Cultural Economics* 42 (3): 365–391. doi:10.1007/s10824-017-9310-4.
- Figueiredo, J. L. and D. S. V. de Jesus. (eds.). 2017. *Cidades criativas: aspectos setoriais e territoriais [Creative Cities: Sectoral and Territorial Aspects]*. Rio de Janeiro: E-Papers.
- Federação das Indústrias do estado do Rio de Janeiro (FIRJAN). 2008. *A cadeia da indústria criativa no Brasil [Creative Industry Chain in Brazil]*. Rio de Janeiro: FIRJAN.
- Federação das Indústrias do estado do Rio de Janeiro (FIRJAN). 2012. *Mapeamento da indústria criativa no brasil [Creative Industry Mapping in Brazil]*. Rio de Janeiro: FIRJAN.
- Federação das Indústrias do estado do Rio de Janeiro (FIRJAN). 2016. *Mapeamento da indústria criativa no brasil [Creative Industry Mapping in Brazil]*. Rio de Janeiro: FIRJAN. Accessed 15 January 2017. <http://www.firjan.com.br/EconomiaCriativa/pages/download.aspx>.
- Florida, R. 2002. *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community, & Everyday Life*. New York: Basic Books.
- Florida, R. 2005. *Cities and The Creative Class*. New York: Routledge.
- Florida, R., and I. Tinagli. 2004. "Europe in the Creative Age." *DEMOS*, February. Accessed 17 June 2017. <https://www.demos.co.uk/files/EuropeintheCreativeAge2004.pdf?1240939425>.
- Furtado, C. 1978. *Criatividade e dependência na civilização industrial [Creativity and Dependency in the Industrial Civilization]*. Rio de Janeiro: Paz e Terra.
- Furtado, C. 2012. "Que somos?" ["What Are We?"]. In *Ensaio sobre cultura e o ministério da cultura [Essay on Culture and the Ministry of Culture]*, edited by R. F. A. Furtado, 29–41. Rio de Janeiro: Contraponto: Centro Internacional Celso Furtado.
- Instituto Brasileiro de Geografia e Estatística (IBGE). 2011. *Censo Demográfico 2010 [2010 Demographic Census]*. Rio de Janeiro: IBGE. Accessed 10 December 2017. <https://censo2010.ibge.gov.br/resultados.html>.
- Instituto Brasileiro de Geografia e Estatística (IBGE). 2016. *Cadastro Central de empresas – CEMPRES [Enterprises Central Register]*. Rio de Janeiro: IBGE. Accessed 16 July 2017. <https://sidra.ibge.gov.br/pesquisa/empres/referencias/brasil/2016>.
- Instituto Brasileiro de Museus (IBRAM). 2018. *Museusbr – portal nacional de identificação de museus [Museusbr – National Museum Identification Portal]*. Brasília: IBRAM. Accessed 20 March 2018. [http://museus.cultura.gov.br/busca/##\(global:\(enabled:\(space:!\)filterEntity:space\)\)](http://museus.cultura.gov.br/busca/##(global:(enabled:(space:!)filterEntity:space))).

- Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP). 2015. *IDEB – índice de desenvolvimento da educação básica: Resultados e metas – ano referência 2015 [BEDI - Basic Education Development Index: Results and Goals – Year 2015]*. Brasília: INEP. Accessed 16 July 2017. <http://ldeb.inep.gov.br/>.
- Instituto Nacional da Propriedade Intelectual (INPI). 2016. *Estatísticas de propriedade industrial: Total de depósitos por tipo de proteção e cidade do depositante residente – ano referência 2016 [Industrial Property Statistics: Total Deposits by Type of Protection and Resident Depositors' City - Year 2016]*. Rio de Janeiro: INPI. Accessed 16 July 2017. <http://www.inpi.gov.br/sobre/estatisticas/estatisticas-preliminares-2013-a-partir-de-2013>.
- KEA European Affairs. 2009. *The Contribution of Culture to Creativity*. Brussels: KEA European Affairs: European Commission. Accessed 17 June 2017. <http://www.keanet.eu/docs/impactculturecreativityfull.pdf>.
- Hartley, J. 2005. "Creative industries." In *Creative industries*, edited by J. Hartley, 1–40. Oxford: Blackwell.
- Hartley, J., J. Potts, T. MacDonald, C. Erkunt, and C. Kufleitner. 2012. *Creative City Index - Final Report*. Queensland: ARC Centre of Excellence for Creative Industries and Innovation. Accessed 17 December 2017. <http://cultural-science.org/journal/index.php/culturalscience/article/download/49/79>.
- Howkins, J. 2001. *The Creative Economy: How People are Making Money From Ideas*. London: Penguin Press.
- Landry, C. 2008. *The Creative City: A Toolkit for Urban Innovators*. London: Earthscan.
- Lazzeretti, L., R. Boix, and F. Capone. 2013. "Why do Creative Industries Cluster?" In *Creative Industries and Innovation in Europe: Concepts, Measures and Comparative Case Studies*, edited by L. Lazzeretti, 45–64. New York: Routledge.
- Machado, A. F. and C. Leitão (eds.). 2016. *Por um Brasil criativo: significados, desafios e perspectivas da economia criativa brasileira [For a Creative Brazil: Meanings, Challenges and Perspectives to Brazilian Creative Economy]*. Belo Horizonte: Código Editora.
- Machado, A. F., R. F. Simões, and S. C. Diniz. 2013. "Urban Amenities and the Development of Creative Clusters: The Case of Brazil." *Current Urban Studies* 01 (04): 92–101. <https://scholar.google.com.br/doi:10.4236/cus.2013.14010>.
- Martin Prosperity institute. 2015. Global Creativity Index. Accessed 13 August 2017 <http://martin-prosperity.org/media/Global-Creativity-Index-2015.pdf>.
- Nardo, M., M. Saisana, A. Saltelli, S. Tarantola, E. Giovannini, and A. Hoffmann. 2008. *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Paris: Organisation for Economic Cooperations and Development (OECD).
- Prestes Filho, L. C. and M. C. Cavalcanti (eds.). 2002. *Economia da cultura: a força da indústria cultural no Rio De Janeiro [Cultural Economics: The Power of Cultural Industry in Rio De Janeiro]*. Rio de Janeiro: E-Papers.
- Reis, A. C. F. 2007. *Economia da cultura e desenvolvimento sustentável: o caleidoscópio da cultura [Cultural Economics and Sustainable Development: The Kaleidoscope of the Culture]*. Barueri: Manole.
- Scott, A. J. 2008. *Social Economy of the Metropolis: Cognitive-Cultural Capitalism and the Global Resurgence of Cities*. New York: Oxford University Press.
- Secretaria Nacional de Aviação Civil (SNAC). 2016. *Sistema hórus – módulo de informações gerenciais: movimento/ranking – ano referência 2016 [Hórus System – Management Information Module: Movement/Ranking – Year 2016]*. Brasília: SNAC. Accessed 16 July 2017. <https://horus.labtrans.ufsc.br/gerencial/#Movimentacao/Ranking>.
- Secretaria do Tesouro Nacional (STN). 2017. *Sistema de informações contábeis e fiscais do setor público brasileiro (siconfi) – contas anuais [Accounting and Fiscal Information System of Brazilian Public Sector]*. Brasília: STN. Accessed 20 March 2018. https://siconfi.tesouro.gov.br/siconfi/pages/public/consulta_finbra/finbra_list.jsf.
- Throsby, D. 2010. *The economics of cultural policy*. London: Cambridge University Press.

- Tubadji, A., B. J. Osoba, and P. Nijkamp. 2015. "Culture-Based Development in the USA: culture as a Factor for Economic Welfare and Social Well-Being at a County Level." *Journal of Cultural Economics* 39 (3): 277–303. doi:10.1007/s10824-014-9232-3.
- University of Hong Kong. 2017. A Study on Creativity Index. Accessed 13 August 2017. <http://www.uis.unesco.org/culture/Documents/Hui.pdf>.
- Valiati, L., and C. L. Cauzzi. 2016. 'Indústrias criativas e desenvolvimento: análise das dimensões estruturadoras' ["Creative Industries and Development: Analysis of Structuring Dimensions"]. In *Economia Criativa, Cultura e Políticas Públicas [Creative Economy, Culture and Public Policies]*, edited by L. Valiati and G. Moller, 186–210. Porto Alegre: Editora UFRGS/CEGOV.
- Valiati, L. and G. Moller (eds.). 2016. *Economia criativa, cultura e políticas públicas [Creative Economy, Culture and Public Policies]*. Porto Alegre: Editora UFRGS/CEGOV.
- Vaz de Melo, G. B., and G. L. Paiva. 2016. "Desenvolvimento e Potencial de Clusters Criativos Para as Cidades Médias Brasileiras' [Development and Creative Clusters Potential to Brazilian Medium Sized Cities]." *Nova Economia* 26 (special ed.):1287–1315. doi:10.1590/0103-6351/3953.
- Vivant, E. 2009. *Qu'est-ce que la ville créative? [What is the Creative City?]*. Paris: PUF.