

# THE CREATIVE ECONOMY THROUGH THE LENS OF URBAN RESILIENCE. AN ANALYSIS OF ROMANIAN CITIES\*

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## Abstract

The creative economy has attracted increasing attention from academia and policymakers for more than two decades. However, despite the flourishing literature on this topic, its complex connection with development and its role in strengthening resilience are yet to be properly examined. The paper addresses this issue by investigating how different cities in Romania, with a different intensity of creative industries, have managed to resist and to recover from the aftermath of the Great Recession. Our findings reveal that, as a whole, creative industries strengthen urban resistance against a recession, but do not necessarily fasten urban recovery. As our results suggest, this might be due to the asymmetrical impact across different groups of creative industries. Besides a creative economy proliferation, other factors are also identified as significant resilience drivers. Whilst a better access to health-care services, higher local investments and a higher decentralization of local budgets appear to enhance the cities' resistance, higher shares of agriculture and finance, as well as a higher income per capita appear to correlate with a faster urban recovery.

**Keywords:** creative economy, creative industries, urban resilience, resistance, recovery.

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## 1. Introduction

Since its first development, two decades ago (Howkins, 2001), *the creative economy* has generated interest for an increasing number of specialists from various fields (economics, business and management, law, policy studies, organization studies, geography, sociology and psychology etc.), as well as from world-known organizations, concerned with its potential in promoting growth, prosperity and well-being in regional and national economies (United Nations, 2018a, 2010, 2008; UNESCO, 2013; Dovey and Pratt, 2016). At its core, the creative economy comprises economic activities which capitalize creativity through intellectual property rights that form the *creative industries*. Although there is no generally accepted definition regarding the specific activities included in this sector, one of the most referred to approaches is provided by the UK Department for Culture, Media and Sport (DCMS), which states that creative industries are ‘those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property’ (DCMS, 2001, p. 5). The importance attached to creativity within the creative sector is advocated by scholars such as Richard Florida (‘human creativity is the ultimate economic resource’, Florida, 2002, p. xiii), while others have stressed that ‘the industries of the twenty-first century will depend increasingly on the generation of knowledge through creativity and innovation’ (Landry and Bianchini, 1995, p. 4). From an economic perspective, the discourse on the creative economy has been continuously diversified, aiming to capture the complex reality in which creativity intertwined with different aspects of growth and development. Consequently, related concepts have also emerged, which linked together the creative economy to cluster theory (Boix *et al.*, 2011; Lazzeretti, Boix and Capone, 2009; Bagwell, 2008), cities (Hosu and Hosu, 2019; Oliveira and Paulino, 2017; Kourtit, 2019; Landry, 2012; Sepe, 2009; Cooke and Lazzeretti, 2007), and policy (Doyle, 2015; Tafel-Viia and Lassur, 2013), amongst others. The proliferation of theoretical and empirical studies on this topic was accompanied by the rising awareness of national and supranational groups, which elaborated policies and strategies with the purpose of supporting the creative sector. In this regard, at the European Union level, for example, several financing instruments were applied for sustaining the cultural and creative sector (Mazilu, 2018, pp. 295-297), among which the Creative Europe programme has received a crucial role (receiving a funding of 1.46 billion EUR for the 2014-2020 period, respectively 1.85 billion EUR for the 2021-2027 period – European Commission, 2018). These measures came as a recognition of the importance of the creative economy’s place within the European economy, which accounts for 3.8% of the total employment (Eurostat, 2018), while the cultural enterprises, representing 5% of the total number of firms in the non-financial business economy, generated 192 billion EUR of added value (Eurostat, 2016).

The multi-faced spectrum of researches about the influence of creative industries within economies ranges from the ones concerning the analysis of the relation be-

tween the creative economy and development, including its economic impact (Boix-Domènech and Rausell-Köster, 2018; Hong and Chen, 2017; Boccella and Salerno, 2016), to the ones which focus on revealing the prerequisites that may explain their spatial distribution, formation or dynamics (Kourtit and Nijkamp, 2018, 2016; Martinaitytė and Kregždaitė, 2015), as well as the involved workforce (sometimes referred to as *the creative class* – Florida, 2014; O’Brien *et al.*, 2016). However, while acknowledging that there is a ‘virtuous circle’ – bidirectional causality – between growth and creative economy (Marco-Serrano, Rausell-Kosterb and Abeledo-Sanchisc, 2014), and that ‘regions with high concentrations of creative and cultural industries have Europe’s highest prosperity levels’ (Power, 2011, p. 5), there is still a lack of evidence dealing with creative industries’ capacity to affect the anticipating, resisting, and recovering capabilities of the economies (at local, regional and national level) in dealing with various shocks or crises, through *resilience*.

In the case of Romania, most of the researches analyzing the domestic specificities of the creative economy aimed to identify their dimension and spatial distribution (Sava and Bădulescu, 2018; Pintilii *et al.*, 2017; Motoiu, Pavel and Lakatos, 2016; Stoian *et al.*, 2014; Bobircă and Drăghici, 2011; Ivanovici and Mândruleanu, 2009), to uncover the transformations induced by the creative industries to entrepreneurship and business environment (Hrib, 2018; Istudor, 2018; Volintiru and Miron, 2015), or to depict the mutations driven by innovation and new technologies to the field (Popescu *et al.*, 2019; Leovaridis and Bahnă, 2017). In addition, several national development agencies have conducted studies at regional level (e.g. CIVITTA România, 2019; ADR – Centru, 2016), which along with other case studies (Ișfănescu-Ivan, 2018; Asociația Cluj-Napoca 2021 Capitală Culturală Europeană, 2014), offered a better picture on the sector at regional or city level. But the Romanian creative industries’ relation with resilience remained insufficiently addressed, which may be detrimental from a strategic point of view if we take into account that the creative economy has shown a spectacular rise in interest, as well as a sustained growth of turnover in recent years (Network of European Museum Organisations, 2019).

Considering the reasons stated before, our paper aims to examine the capacity of creative industries to act as a bulwark against economic crises. In particular, the paper looks at the Romanian cities over the Great Recession and explores the role that creative industries play in buffering the economic shock (resistance), as well as their importance for recovery in the aftermath of shocks.

The remainder of the paper includes the following sections. Section 2 discusses the relevance of considering the urban resilience for deepening the understanding of the creative economy’s role in development and it formulates the study hypotheses. Sections 3 and 4 present our methodological approach, the econometric models, and data used. Section 5 discusses the empirical findings, while the last section concludes.

## 2. Setting up the lens

As history reveals, the economic growth and development is not a linear, constant process, but its dynamics describe complex patterns, under the influence of the transformations which affect human society and which sometimes depict the efforts to cope with threats, shocks or even crisis, as an expression of what is generally referred to as resilience capacity. The idea is acknowledged by the economic geography's disciplines, as well: *'The first defining feature of a 'resilience perspective' on the economic landscape is a recognition that uneven geographical development itself is not some smooth or slowly changing phenomenon, but an inherently shock-prone process, subject to all sorts of disruption, perturbation, and interruption.'* (Martin, 2018, p. 4) Although not a new concept, being introduced in the early 1970s, in the field of ecology (Holling, 1973), resilience became a hot topic on interdisciplinary grounds, because of worldwide concerns regarding overcoming adversities, such as natural calamities, economic crises, terrorism, diseases, and other threats which can disturb development and prosperity.

From the diverse array of definitions trying to explain and adapt resilience's meaning to particular science fields, we can identify approaches that refer it as the amount of disruption that can be absorbed by the system (ecological resilience – Holling, 1973), focusing on keeping functional capacity, while others emphasize on maintaining efficiency (engineered resilience – Pimm, 1984). These show a double hypostasis of resilience – resistance and recovery.

The acceptations on resilience depend on the level of appliance, as well. Starting from individual level, resilience can be seen as a feature, outcome or process of peoples overcoming crisis situations (Southwick *et al.*, 2014); also, it can be considered at community level, including local, city, regional or national level. As the area of assessment expands, so does the complexity of forces explaining the resilient capacity of a system because this is not always assured by the simple aggregation of the resilience of its smaller components.

From an economic perspective, a special attention is payed to urban resilience, due to the importance of cities as key engines for growth. It is estimated that by 2030 more than 60 percent of the world population will live in metropolitan areas (United Nations, 2018b), while major cities contribute with significant amounts to their countries' GDPs (e.g. in 2019, Tokyo was the first city in the world, with an estimate of \$1.6 trillion GDP – World Economic Forum, 2020). As 'urban resilience can be conceived as a multidisciplinary framework to analyze the reactive, adaptive and transformative capacities of (and within) urban systems' (Olazabal *et al.*, 2012), revealing the factors that explain the shaping of economic resilience at city level could provide clues which will promote sustainability of the cities over time, as they will deal with the ever-changing environment remodeled by a globalized and digitalized world.

Given the increased interest in explaining the resilience capacity of economies, there are only few studies focusing on the role played by creative industries (Buheji, 2019; Pratt, 2015). Given that they are accounting for around 7 percent of firms, 4 per-

cent of employees, and 3 percent of turnover at national level (2008-2017), studying their importance for explaining economic resilience might be worthwhile. A focus on their evolution during the crisis shows no major changes at national level. However, zooming the analysis to the urban level reveals significant changes (please see Figure 1). If before the crisis (2008) Odorheiu Secuiesc, București, Iași, Alexandria, Cluj-Napoca and Timișoara were hosting the highest concentrations of creative industries (measured by the share of enterprises' turnover), it was only Iași and Cluj-Napoca that reported a growth during the resistance period (2008-2011)<sup>1</sup>. The recovery phase (2011-2017) brought out some essential changes which placed Medgidia, Fălticeni and Turnu Măgurele in the first positions in terms of creatives industries' concentration.

Considering the dynamics of creative industries across the Romanian cities over the last recession, the paper aims to investigate their role in configuring the economic resilience capacity at city level. Considering previous studies that offer clues on the potential positive impact of the creative economy on resilience (Buheji, 2019; Pratt, 2015) and the ability of the sector 'to sail against the tide' (Fontainha and Lazzaro, 2019), our research explores the relation between creative industries and the resistance and recovery of the cities, at the level of Romania.

Several related questions lie at the heart of our research: Given the very different reaction of Romanian cities to the Great Recession, what explains this variation? Are creative industries a significant factor in explaining better resistance of cities? Are creative industries an important trigger of cities recovery in the aftermath of shocks? Are there any differences across the various creative groups in their role for urban resistance and recovery? Which are the other factors that might help cities to better cope with economic shocks and boost their recovery?

In order to address them, we formulated the following hypotheses to be tested:

H1: Creative industries can act as a bulwark against economic shock, being positively associated with a better resistance of cities;

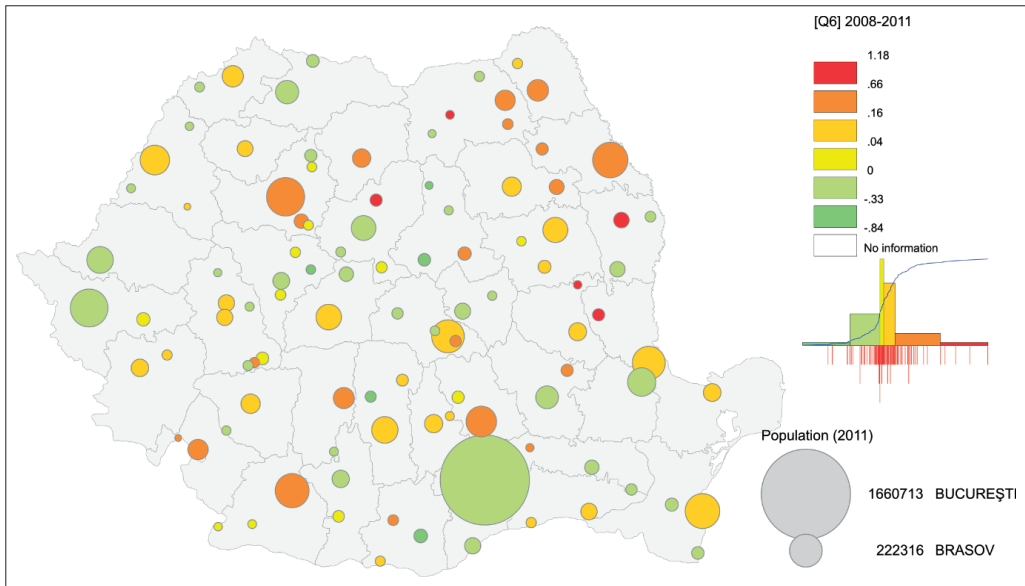
H2: Creative industries can boost recovery in the wake of economic shocks;

H3: The role of creative industries in supporting resistance and recovery differs across creative classes (please see Table A1 in Appendix A for more details about the creative industries' classification).

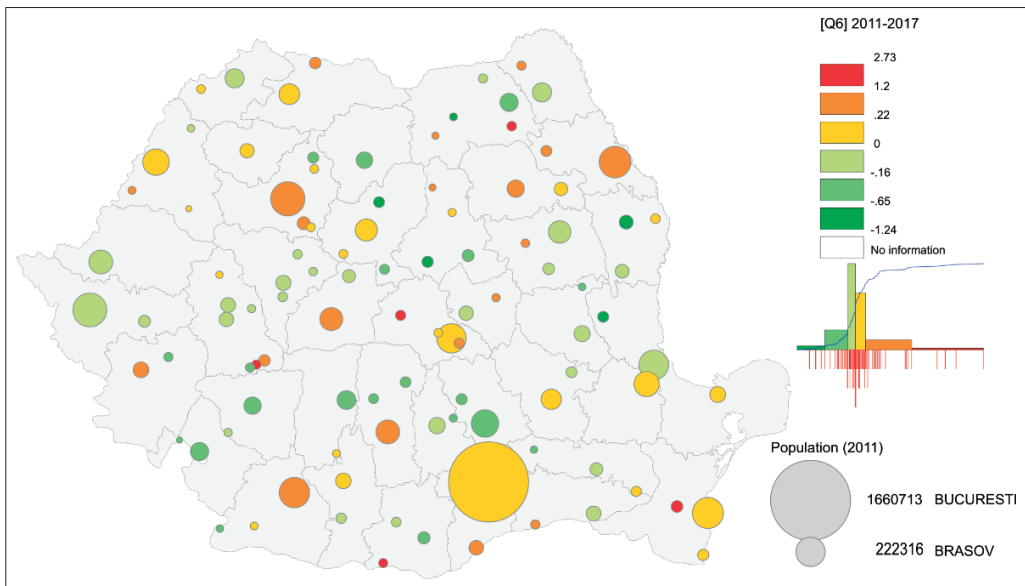
Considering its latest positive results in terms of revenues and employment, but also acknowledging that the Romanian creative economy is in a rather emerging stage, we hope that our research, given its dynamic approach, will provide some pertinent arguments to the policy makers, as well as to the concerned agencies and professionals, to address creative industries with an increased attention, as the sector may represent a key element in enhancing resilience at the city level.

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<sup>1</sup> Please see Figure 2 for the delimitation of the resistance and recovery phases.



(a)



(b)

**Notes:** The dynamics of creative industries' concentration is displayed by using location quotients (in terms of enterprises' turnover). The maps were made with Philcarto, <http://philcarto.free.fr>

**Figure 1:** Mapping the creative industries' concentration dynamics during the resistance and recovery phases

**Source:** Authors' representation

### 3. Empirical strategy

For analyzing its connection with the creative economy, our study relies on a widely used measure of resilience which assumes that the trajectory of the national economy as a whole is taken as the expected change of lower aggregation units, such as regions or cities (e.g. Ezcurra and Rios, 2019; Giannakis and Bruggeman, 2017; Martin, 2012; Östh, Reggiani and Nijkamp, 2018):

$$Resilience_i = \frac{\frac{Employment_t^i - Employment_{t-1}^i}{Employment_{t-1}^i} - \frac{Employment_t^{nat} - Employment_{t-1}^{nat}}{Employment_{t-1}^{nat}}}{\frac{Employment_t^{nat} - Employment_{t-1}^{nat}}{Employment_{t-1}^{nat}}},$$

wherein stands for resilience in city  $i$ , is the employment rate in city  $I$  at time period  $t$ , is the employment rate in city  $I$  during the initial period of the analysis  $t-1$ , while stands for the employment rate at the national level in year  $t$  and is the national level of employment rate in the initial time period  $t-1$ .

For better capturing the capacity of cities to absorb and recover from shocks, our study considers two distinct phases of resilience, namely *resistance* and *recoverability* (Martin, 2012). Resistance is computed as the difference between maximum employment level before the crisis (2008) and minimum employment level during the crisis (2011), while recovery is computed as the difference between the most recent data available after the crisis (2017) and the minimum employment level during the crisis (2011). The interpretation is similar for both resistance and recovery. A positive value index means that city  $i$  exhibits greater resistance/recoverability to recessionary shock than the national average, while a negative value implies that city  $i$  is less resistant or has a lower recoverability than the national average.

The following cross-sectional model is used for estimating the role of creative industries regarding resilience:

$$Resilience_i = \alpha + \beta creative_i + \gamma X_i + \eta_i + \varepsilon_i,$$

wherein stands for resilience of city  $I$ , while the model is estimated for each of the two distinct phases of resilience, namely resistance and recovery. is the main interest explanatory variable and measures creative industries using different proxies (i.e. such as the share of firms and employees activating in creative industries, but also the share of turnover owned by the creative industries). What is more, creative industries were split into 12 distinctive branches in order to allow for an asymmetrical impact across them (please see Table A1 in Appendix A for more details). Finally, despite the variable measuring the creative industries, includes a set of explanatory variables (see Table A2 in Appendix A), includes the unobserved regional (NUTS2) specific effects and is the error term.

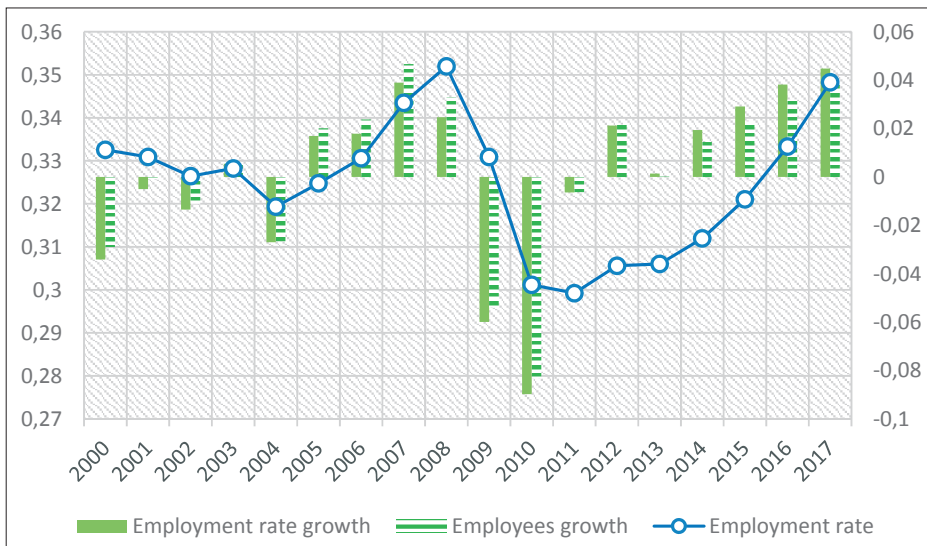
The models were estimated by means of robust OLS, where the spatial dependency tests did not suggest a different approach. In order to avoid reverse causality, the explanatory variables are computed as average during the 2006-2008 period for the re-

sistance model, while for the recovery model averages for the 2009-2011 period were used.

#### 4. Urban resilience in Romania

The costs of the Great Recession at the end of 2000s have induced a high degree of spatial heterogeneity across the EU regions (Capello, Caragliu and Fratesi, 2016). Romania was no exception, as studies point out different regional reactions to the latest global economic shocks (Zaman and Goschin, 2015; Benedek and Lembcke, 2017), which focuses the research attention on empirical analysis of urban resilience.

As already described, our study relies on a widely used definition of resilience, that is the Martin (2012) sensitivity index. This approach is more dynamic and corresponds rather to the ecological resilience which ‘assumes that systems are characterized by multiple stability domains and that if a shock pushes a system beyond its ‘elasticity threshold’, the system may move to a different domain or state’ (Martin, 2012, p. 7). Nevertheless, this approach assumes that regions are expected to follow the same trajectory of the national economy, and not an autonomous path or return to the pre-shock growth path. Thus, we have delimited the two distinct resilience stages by looking at the national evolution of the employment rate (Figure 2). Given the yearly radiography of employment evolution in Romania, the 2008-2011 period can be regarded as the resistance interval and it covers the change from peak to trough. The recovery phase is marked by the 2011-2017 interval, namely the timeframe between the minimum during the crisis (trough) and the most recent data available.



**Notes:** Employment rate is computed as the share of employees in private sectors to population aged 20-64 years.

**Figure 2:** Evolution of employment in Romania (2000-2017)

**Source:** Authors' representation using data from the National Institute for Statistics in Romania

Our decision to rely on the labor market data to measure the impact of the Great Recession derives from both theoretical and methodological considerations. In theoretical terms, labor market adjustments may be among the main options available for firms in order to reduce costs in times of economic downturns, which make labor market indicators, such as employment, a good predictor for economic fluctuations (Fingleton, Garretsen and Martin, 2012). The employment rate was largely used for measuring resilience at lower geographical levels (Simmie and Martin, 2010; Giannakis and Bruggeman, 2017; Kitsos and Bishop, 2018; Östh, Reggiani and Nijkamp, 2018; Ezcurra and Rios, 2019). In methodological terms, other output measures at subnational levels, such as GVA, have been criticized (Gripaios and Bishop, 2006) and, also, are not available at city level. Nevertheless, we need to point out that the present study only relies on the number of employees in the private sector. However, this does not reduce the value of our results, as the private sector employment is much more sensitive to the economic cycles. Furthermore, employment in the public sector was drastically limited in 2009, which smoothed fluctuations during the recession<sup>2</sup>.

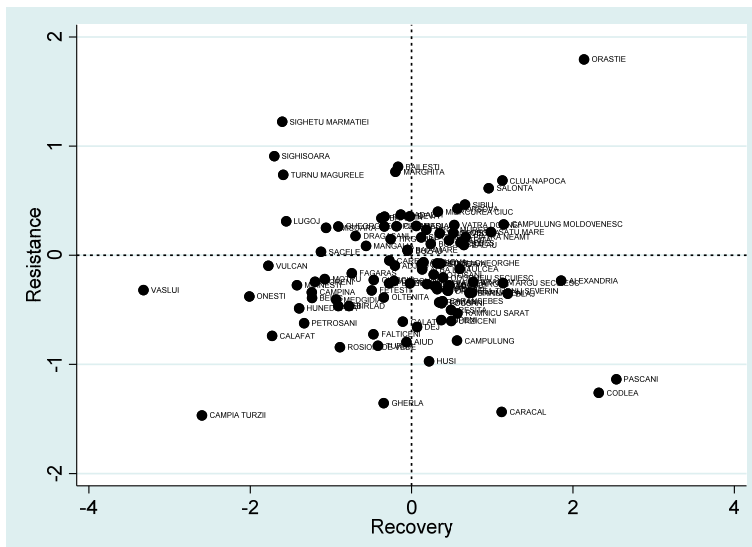


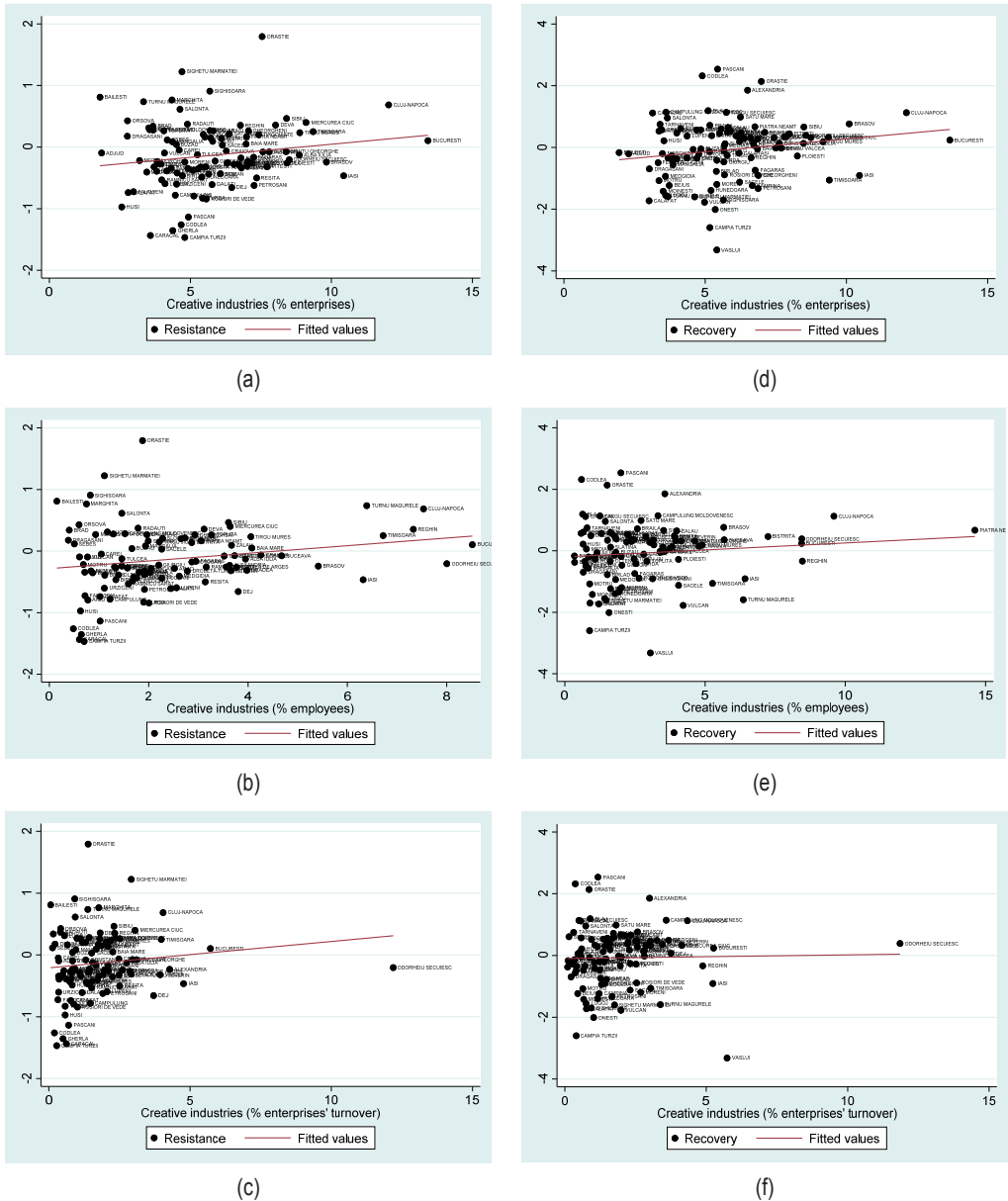
Figure 3: Resistance and recovery of Romanian cities from the Great Recession

Source: Authors' representation

Considering the values displayed during the resistance and recovery periods, the following city types were defined (after Martin *et al.*, 2016): a) cities with good resistance and good recoverability; cities with good resistance, but weak recoverability; c)

<sup>2</sup> A normative act adopted in 2009 (GEO no. 34/2009) was meant to reduce public spending. The act brought some significant changes to the law on wages in the public sector and it involved freezing state employment (with few exceptions).

cities with weak resistance, but good recoverability and d) cities with weak resistance and weak recoverability. Therefore, Figure 3 reveals a high heterogeneity in terms of resilience among the Romanian cities. Some cities showed a better resistance to the crisis, such as Orăștie and Sighetu Marmăției, while others were more affected, namely Câmpia Turzii, Caracal, Gherla, Codlea and Pașcani. Some of these cities managed



**Figure 4:** Resistance, recovery and creative industries

Source: Authors' representation

to recover rather fast, such as Paşcani and Codlea, but others displayed both poor resistance and recovery, such as Câmpia Turzii, Vaslui, Calafat and Oneşti. The large Romanian cities were also affected, only Cluj-Napoca, Sibiu, Braşov and Bucureşti displaying positive values for both resistance and recovery capacities.

Given the very different reactions of Romanian cities in the aftermath of the Great Recession, our study seeks to shed more light on the role played by the creative economy. Therefore, Figures 4a-f provide a framework for the relation between the share of creative industries (in terms of enterprises, employees and turnover) and resilience. All figures appear to suggest a positive correlation, which clearly hints at a significant role of creative industries related to both city resistance and recovery capacity. However, such conclusion should be made with great caution, since it might be a spurious correlation resulted from the omission of other important variables influencing the labor market performance. Previous studies which focused on Romanian cities pointed out more factors affecting their resilience capacity. Migration, reducing number of employees and aging were shown to be the main causes behind the so-called ‘shrinking cities’ (Bănică, Istrate and Muntele, 2017). These factors reduced their resilience capacity, as well as accentuating urban decline. Bucharest remarks itself with a higher resilience capacity than the other cities. Despite its spatial and environmental vulnerabilities, the Romanian capital benefits from higher social and economic endowments, better learning capacities and innovative potential (Bănică and Muntele, 2017). This comes in line with previous findings, as creative industries were shown to be an important triggering factor of innovative capacity in modern cities, as well as for social and economic growth (Kourtit and Nijkamp, 2013; Cunningham and Potts, 2015).

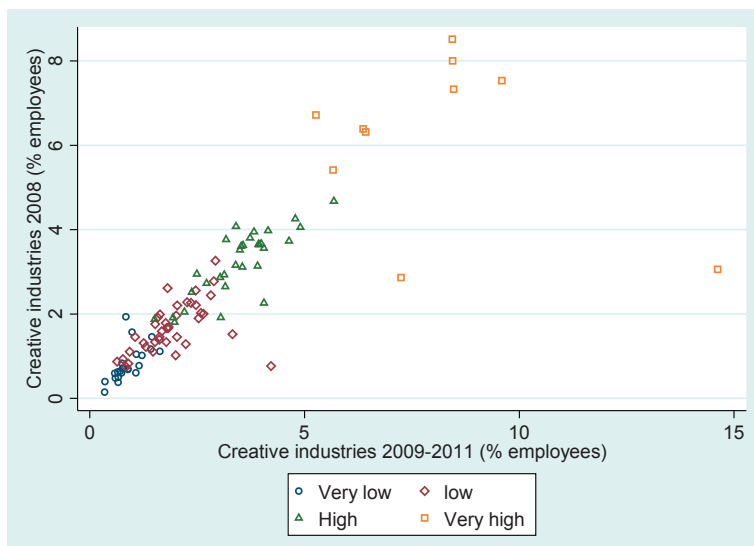
**Table 1:** Size of creative industries across the Romanian cities

cluster	N	2008			2009-2011		
		% enterprises	% employees	% turnover	% enterprises	% employees	% turnover
1	23	3.65	0.82	0.49	3.65	0.88	0.51
2	39	4.90	1.69	1.32	5.10	1.92	1.52
3	31	7.26	3.21	2.24	7.24	3.46	2.36
4	10	8.68	6.21	4.09	8.76	8.05	4.56
Total	103	5.70	2.39	1.68	5.78	2.75	1.84

**Source:** Authors’ computations using data from the Romanian National Trade Register Office

Although focusing on larger cities in Romania, the geography of creative industries reveals a heterogeneous dispersion, both before and during the economic crisis. Using the six criteria displayed in Table 1, the cluster analysis has market 4 clusters in terms of creative industry concentration, with the percentage varying from approximately 1 percent to 9 percent in terms of firms.

Overall, the numbers reveal that, on average, creative industries did not recorded decline during the crisis. On the contrary, a slight increase is displayed for all three measurements, as compared to their level in 2008.



**Figure 5:** Clustering Romanian cities by the magnitude of creative industries

**Source:** Authors' representation

The first cluster encloses 10 cities (Figure 5), with the highest concentration in terms of creative industries both before and during the economic crisis. With over 8 percent of the firms, 6 to 8 percent of workforce and over 4 percent of turnover, this cluster includes large Romanian cities (e.g. Cluj-Napoca, Iași, București, Timișoara and Brașov), as well as smaller cities (e.g. Piatra Neamț, Odorheiu Secuiesc, Reghin, Turnu Măgurele and Bistrița).

At the other end of the sample lies the fourth cluster, which includes 23 cities with very low concentration of creative industries. While the creative industries account, on average, less than 4 percent of firms, their share in terms of both employee and turnover is below 1 percent.

## 5. Creative economy and resilience: estimation results

As previously discussed, the paper explores the role played by creative industries in the resilience of Romanian cities during the Great Recession by relying on an estimation strategy using ordinary least squares (OLS). As mentioned, a spatial autocorrelation test using Moran I statistic for resilience and recovery variables, as well as for the model errors, did not indicate a significant presence of spatial dependence. Two distinct stages of resilience were considered, namely resistance and recovery (based on Martin *et al.*, 2016). Table B1 in Appendix B displays results for the model explaining the resistance of cities to the economic shock, while Table B2 (Appendix B) resumes results for the recovery model. Both tables have similar structures. While models (1) – (6) display results when the creative industries are measured as a whole, models (7) – (12) account for 12 different creative classes, in order to allow for a different impact across different creative classes.

The estimation results reveal *that larger shares of creative industries are associated with greater regional resistance* (model (2) in Table B1), which confirm our first hypothesis (H1). However, the result is only confirmed when creative industries were measured as the share of employees (but not when the creative sector was measured by the share of firms or the share of turnover). Dropping some of the insignificant explanatory variables does not significantly change our previous results (model (4) in Table B1).

Further, models (7) – (12) in Table B1 deepen the analysis of the role of creative industries to cities' resistance. Thus, the creative activities were divided in 12 different groups in order to account for a possible asymmetrical impact across them. The results indicate that cities with larger shares of activities belonging to groups 1 and 2 (Advertising and Architecture) managed to surpass easier the shocks caused by the Great Recession. Larger shares of groups 4 and 6 (Libraries, museums, cultural heritage and Film, video, music, TV, radio) also appear to be positively correlated with greater resistance, but these become statistically significant only after dropping some of the insignificant variables (models (11) and (12) in Table B1). In comparative terms, there are the groups 2 and 4 which show the highest support to cities' resistance, as displayed by the estimated coefficients. Given the asymmetrical impact across different creative industries groups, the third hypothesis is also confirmed (H3).

Among the different groups of creative industries, group 12 (Research activities) is the only one indicating a significant negative sign. Thus, cities with larger research activities before the crisis were more affected and thus displayed higher employment downturns.

Focusing on Table B2, which reports the results for the model explaining the recovery of cities, we conclude that, unlike the model referring to resistance, *the creative industries, measured as a whole, do not seem to explain the recovery of cities in the aftermath of the Great Recession* (Models (1) – (3) in Table B2), which rejects our second hypothesis (H2). The results remain roughly the same when insignificant variables are dropped (Models (4) – (6) in Table B2). Nevertheless, when splitting them into more groups, some asymmetrical influences are revealed. On the one hand, *the recovery of cities is positively affected by large shares of creative groups 5 and 9* (Design and Publishing – models (7) – (12) in Table B2). On the other hand, higher intensity of creative groups 1 and 11 (Advertising; Cultural education) are associated with slower recovery over the 2011-2017 period (the negative influence of creative group 11 is only confirmed after insignificant variables are dropped – Model (11) in Table 2B). Unlike class 11, one explanation for the negative impact of class 1 might be that this group was shown to support better resistance to shocks and, thus, a shorter gap to be recovered compared to the pre-crisis level.

Besides creative industries, other factors were also validated as significant for explaining the capacity of cities to resist and recover from shocks. Structural differences of the cities' economic activities were confirmed to matter for urban resilience. If higher shares of the construction sector translate into lower resistance, higher shares

of employment in agriculture and financial intermediation and insurance seems to be related to faster post-crisis recoveries. One explanation for the lower resistance of cities with larger construction sectors might be related to the fact that this sector was one of the triggers of the Great Recession and, consequently, one of the most affected. As for the positive contribution of agriculture, this may be related to the high degree of protection that characterizes agricultural markets in the EU, which helped cities to face easier the shocks and recover faster, returning to pre-crisis employment levels (Rodríguez-Pose and Fratesi, 2007).

An easier access to healthcare services, higher public local investments and a higher degree of decentralization of local budgets appear to be important factors in explaining the better capacity to resist to economic shocks. On the other hand, higher shares of green spaces, as a proxy for local amenities, and higher share of students appear to negatively relate to the city's capacity to cope with economic shocks. The negative correlation between the share of students and the resistance capacity may be related to the fact that the young population was among the most vulnerable demographic categories during the Great Recession. Finally, when it comes to recovery, higher income levels per capita support faster recoveries, while higher age dependency levels undermine it.

## Conclusions

This article examines the relation between creative economy and urban resilience in Romania during the Great Recession. The country is an interesting case study because the impact varied significantly across Romanian cities. Thus, we used the rich data set from the Romanian National Trade Register Office to separate 12 distinctive creative groups while testing their importance for both urban resistance and recovery after the last economic crisis. In addition, other factors stemming from resilience and economic growth studies were also tested.

The added value of this paper is twofold. First, the study deepens the understanding of the creative economy on national grounds, identifying the creative industries at urban level and assessing their contribution to development, considering employment and turnovers. Second, the research contributes to a topic still not enough tackled in the literature – the potential influence of the creative industries on urban resilience, by providing empirical clues derived from the Romanian case. The estimation results reveal that, when creative industries were accounted as a whole, they were confirmed as a significant driver for urban resistance, but not to urban recovery. The division of the creative industries into 12 different groups unveiled an asymmetrical impact across them. If creative groups 1, 2, 4 and 6 (Advertising; Architecture; Libraries, museums, cultural heritage; Film, video, music, TV, radio) appear to be positively correlated with better resistance, higher shares of group 12 undermine urban resistance. When it comes to recovery, whereas larger shares of creative groups 5 and 9 (Design and Publishing) enhance urban recovery, cities with larger shares of groups

1 and 11 (Advertising; Cultural education) display slower recoveries in the aftermath of crisis.

Furthermore, other factors were also shown to have a significant explanatory power. A better access to healthcare services, higher local investments and a higher decentralization of local budgets appear to enhance the resistance of cities against economic shocks, whilst higher shares of agriculture and finance, as well as a higher income per capita help to a better urban recovery. At the other end lies the construction sector, local amenities and the share of students which seem to negatively relate to resistance of cities. In the wake of shocks, urban recovery is marred by higher age dependency rates.

The results of this analysis suggest possible implications for policy initiatives that aim to identify triggers which may enhance urban resilience. Our paper provides indications that rising attractiveness for the creative economy may act as a buffer to potential economic downturns. In the same time, developing specific instruments (e.g. financing funds, learning and training programs, creative hubs initiatives) focused on key creative industries could compensate and sustain them in the recovery process. In order to do so, we consider that an important step further is defining a national strategy concerning the creative economy. A nationwide framework for addressing the creative sector is for a more comprehensive and homogenous look on the dimension, nature and domestic specificities of the sector (including disparities and threats). Although several researches were conducted on various themes related to the Romanian creative industries, defining the economic activities (using NACE codes) included in the sector varies, making the findings and possible implications for the local agendas harder to implement and to integrate at strategic level. Also, it makes the comparison between the findings of various researches more difficult.

When assessing the results of the present study, another concern relates to the limited perspective on development used when analyzing the economic resilience of the cities. Relying solely on the share of enterprises, turnover and employees does not provide insights about the creative sectors' relation with other components of development, or about their possible spillover effects which may influence resilience after a crisis, even on lower recovery rates.

Therefore, our study is a preliminary step towards a better understanding of the connection between creative economy and urban resilience. While offering reasons for a closer and deeper look at the creative economy when designing strategies seeking to enhance the resistance and recovery capacities of the cities, our work initiated a fresh approach on the role played by creative industries in urban resilience. Future research could try capturing the whole creative industries by including both private and public sectors. At the same time, a different methodological setting that accounts for a potential simultaneity between creative industries and resilience might also strengthen our findings. Considering the recent changes in the creative class' movement patterns, our analysis could be applied on a wider geographical area, including both urban and rural settings.

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## Appendices

### Appendix A

**Table A1:** Creative Industries Classification

Domain	CAEN code (Romanian)	English
<b>1. Advertising</b>	7311 Activități ale agențiilor de publicitate	Activities of advertising agencies
	7312 Servicii de reprezentare media	Media representation services
	7320 Activități de studiere a pieței și de sondare a opiniei publice	Market research and public opinion polling activities
<b>2. Architecture</b>	7111 Activități de arhitectură	Architecture activities
<b>3. Art and antiques market</b>	9003 Activități de creație artistică	Artistic creation activities
<b>4. Libraries, museums, cultural heritage</b>	9101 Activități ale bibliotecilor și arhivelor	Libraries and archives activities
	9102 Activități ale muzeelor	Museums activities
	9103 Gestionarea monumentelor, clădirilor istorice și a altor obiective de interes turistic	Management of monuments, historical buildings and other objectives of tourist interest
	9104 Activități ale grădinilor zoologice, botanice și ale rezervațiilor naturale	Activities of zoos, botanical gardens and nature reserves
<b>5. Design</b>	7410 Activități de design specializat	Specialized design activities
	7420 Activități fotografice	Photographic activities
<b>6. Film, video, music, TV and Radio</b>	1820 Reproducerea înregistrărilor	Recording reproduction
	2680 Fabricarea suporturilor magnetici și optici destinați înregistrărilor	Fabrication of magnetic and optical media for recording
	3220 Fabricarea instrumentelor muzicale	Fabrication of musical instruments
	4763 Comerț cu amănuntul al discurilor și benzilor magnetice cu sau fără înregistrări audio/video, în magazine specializate	Retail sale of magnetic discs and tapes with or without audio/video recordings, in specialized stores
	5911 Activități de producție cinematografică, video și de programe de televiziune	Film, video and television program production activities
	5912 Activități post-producție cinematografică, video și de programe de televiziune	Post-production activities of film, video and television programs
	5913 Activități de distribuție a filmelor cinematografice, video și a programelor de televiziune	Film, video and television program distribution activities
	5914 Proiecția de filme cinematografice	Movies projection
	5920 Activități de realizare a înregistrărilor audio și activități de editare muzicală	Audio recording and music editing activities
	6010 Activități de difuzare a programelor de radio	Radio broadcasting activities
	6020 Activități de difuzare a programelor de televiziune	Television broadcasting activities
	6391 Activități ale agențiilor de știri	Activities of news agencies
	7722 Închirierea de casete video și discuri (CD-uri, DVD-uri)	Rental of video cassettes and discs (CDs, DVDs)
<b>7. Interactive leisure, games and software</b>	5821 Activități de editare a jocurilor de calculator	Computer game editing activities
	9200 Activități de jocuri de noroc și pariuri	Gambling and betting activities
	9311 Activități ale bazelor sportive	Activities of sports bases
	9312 Activități ale cluburilor sportive	Activities of sports clubs
	9313 Activități ale centrelor de fitness	Activities of fitness centers
	9321 Bălciuri și parcuri de distracții	Carnivals and amusement parks
9329 Alte activități recreative și distractive n.c.a.	Other recreational and leisure activities	

Domain	CAEN code (Romanian)	English
8. Performing arts	9001 Activități de interpretare artistică (spectacole)	Performing arts activities (shows)
	9002 Activități suport pentru interpretarea artistică (spectacole)	Support activities for artistic interpretation (shows)
	9004 Activități de gestionare a sălilor de spectacole	Activities of management of the theaters
9. Publishing	1811 Tipărirea ziarelor	Printing of newspapers
	1812 Alte activități de tipărire n.c.a.	Other printing activities
	1813 Servicii pregătitoare pentru pretipărire	Preparatory services for pre-printing
	1814 Legătorie și servicii conexe	Binding and related services
	4761 Comerț cu amănuntul al cărților, în magazine specializate	Retail sale of books in specialized stores
	4762 Comerț cu amănuntul al ziarelor și articolelor de papetărie, în magazine specializate	Retail sale of newspapers and stationery in specialized stores
	5811 Activități de editare a cărților	Book publishing activities
	5812 Activități de editare de ghiduri, compendii, liste de adrese și similare	Editing guides, compendiums, address lists and similar items
	5813 Activități de editare a ziarelor	Newspaper editing activities
	5814 Activități de editare a revistelor și periodicelor	Activities of publishing magazines and periodicals
10. Software and computer services	5819 Alte activități de editare	Other publishing activities
	7430 Activități de traducere scrisă și orală (interpreți)	Written and oral translation activities (interpreters)
	5829 Activități de editare a altor produse software	Editing activities of other software products
	6201 Activități de realizare a soft-ului la comandă (software orientat client)	Custom software development activities (customer-oriented software)
	6202 Activități de consultanță în tehnologia informației	Information technology consultancy activities
	6209 Alte activități de servicii privind tehnologia informației	Other service activities regarding information technology
	6311 Prelucrarea datelor, administrarea paginilor web și activități conexe	Data processing, web page management and related activities
11. Cultural education	6312 Activități ale portalurilor web	Web portal activities
	8551 Învățământ în domeniul sportiv și recreațional	Education in sport and recreation
12. Research	8552 Învățământ în domeniul cultural (limbi străine, muzică, teatru, dans, arte plastice, alte domenii)	Education in the cultural field (foreign languages, music, theater, dance, fine arts, other fields)
	7211 Cercetare-dezvoltare în biotehnologie	Research and development in biotechnology
	7219 Cercetare-dezvoltare în alte științe naturale și inginerie	Research and development in other natural sciences and engineering
	7220 Cercetare-dezvoltare în științe sociale și umaniste	Research and development in social and human sciences

**Source:** Authors' classification of creative industries by using the codes included in the Classification of Activities in the National Economy (ro. CAEN). The 12 categories were selected considering John Howkins's (Howkins, 2001) and Richard Florida's (Florida, 2002) perspectives.

**Table A2:** Variable description

<b>Dimension</b>	<b>Variable</b>	<b>Description</b>	<b>Source</b>
Creative industries	Creative industries	Share of turnover by creative industries	Romanian National Trade Register Office
		Share of employees in creative industries	Romanian National Trade Register Office
		Share of firms in creative industries	Romanian National Trade Register Office
Initial economic conditions	Initial employment	Log of initial employment level (year 2008 for resistance model and 2011 for recovery model)	Romanian National Trade Register Office
Demographics	Age dependency	Share of population aged 0 to 14 years	Romanian National Institute for Statistics
	Agriculture	Share of employees in agriculture	Romanian National Institute for Statistics
Economic structure	Construction	Share of employees in constructions	Romanian National Institute for Statistics
	Finance	Share of employees in financial intermediation and insurance	Romanian National Institute for Statistics
Healthcare	Healthcare	Population for 1 family doctor in public medical units	Romanian National Institute for Statistics
Human capital	Human capital	Share of students (% population aged 20 to 24 years)	Romanian National Institute for Statistics
Public investments	Investments	Share of capital expenditure (local budget)	Romanian Ministry of Regional Development and Public Administration
Local amenities	Local amenities	Share of green spaces	Romanian National Institute for Statistics
Local income	Income per capita	Log of local income per capita	Romanian Ministry of Regional Development and Public Administration
Financial autonomy	Own local income	Share of own income	Romanian Ministry of Regional Development and Public Administration
Migration	Net migration	Difference between internal and external immigration and emigration (per 1000 inhabitants)	Romanian National Institute for Statistics

**Appendix B**

**Table B1:** Estimation results of the impact of creative industries on cities' resistance to the Great Recession

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance
	Whole creative sector			Creative industries measured as			Creative industries measured as			Creative industries measured as		
	Share of firms	Share of empl.	Share of turnover	Share of firms	Share of empl.	Share of turnover	Share of firms	Share of empl.	Share of firms	Share of empl.	Share of firms	Share of turnover
Creative industries	0.113 (0.0856)	0.0975** (0.0427)	0.0462 (0.0388)	0.0793 (0.0639)	0.0874** (0.0378)	0.0429 (0.0356)	-0.268* (0.151)	-0.290* (0.168)	-0.287* (0.159)	-0.328** (0.144)	-0.278* (0.149)	-0.289* (0.146)
Log of initial employment	-0.0996 (0.138)	-0.0681 (0.110)	-0.0411 (0.108)									
Share of empl. in agriculture	0.00776 (0.0216)	0.00219 (0.0226)	0.00552 (0.0223)									
Share of empl. in construction	-0.0301* (0.0164)	-0.0250* (0.0135)	-0.0223 (0.0142)	-0.0316* (0.0161)	-0.0278** (0.0126)	-0.0247* (0.0129)	-0.268* (0.151)	-0.290* (0.168)	-0.287* (0.159)	-0.328** (0.144)	-0.278* (0.149)	-0.289* (0.146)
Share of empl. in finance	0.0592 (0.0589)	0.0736 (0.0576)	0.0775 (0.0644)	0.0720 (0.0567)	0.0803 (0.0552)	0.0803 (0.0618)	0.0752 (0.0724)	0.0691 (0.0631)	0.0934 (0.0626)	0.0665 (0.0653)	0.0780 (0.0601)	0.0887 (0.0628)
Population per doctors	-0.618 (0.386)	-0.681 (0.411)	-0.680 (0.432)	-0.511 (0.337)	-0.556 (0.324)	-0.626 (0.335)	-0.548 (0.399)	-0.526 (0.387)	-0.580 (0.380)	-0.556 (0.440)	-0.478 (0.391)	-0.558 (0.379)
Share of green spaces	-0.0353** (0.0166)	-0.0379** (0.0166)	-0.0377* (0.0175)	-0.0397** (0.0154)	-0.0408*** (0.0145)	-0.0401** (0.0153)	-0.0287* (0.0150)	-0.0390** (0.0160)	-0.0335** (0.0163)	-0.0303** (0.0141)	-0.0337** (0.0148)	-0.0313** (0.0145)
Share of own income	0.00868 (0.00848)	0.0105 (0.00880)	0.0108 (0.00897)	0.00546 (0.00649)	0.00768 (0.00631)	0.00934 (0.00640)	0.0107 (0.00688)	0.00474 (0.00653)	0.0101 (0.00678)	0.0107 (0.00698)	0.00851 (0.00633)	0.0124* (0.00637)
Log of income per capita	-0.0483 (0.509)	-0.102 (0.486)	0.0244 (0.490)									
Share of capital expenditure	0.0193* (0.0106)	0.0174* (0.00997)	0.0154 (0.0100)	0.0190** (0.00859)	0.0174** (0.00863)	0.0164* (0.00871)	0.0121 (0.102)	0.0148 (0.00970)	0.0105 (0.102)	0.0160* (0.00929)	0.0160* (0.00933)	0.0107 (0.00967)
Share of students (20-24 pop)	-0.00225* (0.00133)	-0.00231* (0.00115)	-0.00168 (0.00114)	-0.00238* (0.00142)	-0.00255** (0.00114)	-0.00183 (0.00110)	-0.000879 (0.00131)	-0.00309** (0.00121)	-0.00233* (0.00127)	-0.00147 (0.00137)	-0.00209** (0.000963)	-0.00168 (0.00102)
Net migration	0.00586 (0.0162)	0.00644 (0.0145)	0.00439 (0.0156)									
Age dependency	0.00450 (0.0209)	0.000122 (0.0221)	0.0000332 (0.0225)									
Creative industries (1)				-0.240 (0.193)	0.154*** (0.0467)	0.0392 (0.197)	-0.240 (0.193)	0.154*** (0.0467)	0.0392 (0.197)	-0.204 (0.171)	0.179*** (0.0341)	0.0583 (0.199)
Creative industries (2)				0.412 (0.169)	0.300 (0.386)	0.392 (0.393)	0.412 (0.169)	0.300 (0.386)	0.392 (0.393)	0.397*** (0.148)	0.570*** (0.313)	0.606* (0.300)



**Table B2:** Estimation results of the impact of creative industries on cities' recovery to the Great Recession

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery	Recovery
	Whole creative sector						Different creative sectors					
	Creative industries measured as			Creative industries measured as			Creative industries measured as			Creative industries measured as		
	Share of firms	Share of empl.	Share of turnover	Share of firms	Share of empl.	Share of turnover	Share of firms	Share of empl.	Share of turnover	Share of firms	Share of empl.	Share of turnover
Creative industries	0.109 (0.102)	0.0332 (0.0418)	-0.0244 (0.100)	0.0237 (0.0585)	0.0147 (0.0372)	-0.0337 (0.0885)						
Log of initial employment	-0.136 (0.225)	-0.0870 (0.196)	-0.0307 (0.184)									
Share of empl. in agriculture	0.0954* (0.0530)	0.0930* (0.0534)	0.0902 (0.0543)	0.0982* (0.0512)	0.0961* (0.0501)	0.0909* (0.0518)	0.0825 (0.0574)	0.0712 (0.0610)	0.0848 (0.0636)	0.0894* (0.0516)	0.0771 (0.0548)	0.0895 (0.0558)
Share of empl. in construction	-0.0142 (0.0326)	-0.00562 (0.0323)	-0.00553 (0.0323)									
Share of empl. in finance	0.245* (0.129)	0.243* (0.124)	0.249* (0.125)	0.211** (0.102)	0.220** (0.0887)	0.236*** (0.0881)	0.196* (0.107)	0.282** (0.122)	0.294*** (0.104)	0.228** (0.103)	0.228** (0.0892)	0.247*** (0.0894)
Population per doctors	-0.111 (0.679)	-0.209 (0.689)	-0.175 (0.685)									
Share of green spaces	-0.00875 (0.0305)	-0.0103 (0.0309)	-0.00687 (0.0327)									
Share of own income	0.00428 (0.0168)	0.00577 (0.0167)	0.00289 (0.0172)									
Log of income per capita	0.676 (0.411)	0.657 (0.397)	0.695 (0.419)	0.697* (0.385)	0.708* (0.366)	0.750** (0.370)	0.892** (0.448)	0.612 (0.393)	0.559 (0.386)	0.764** (0.366)	0.563 (0.394)	0.609* (0.352)
Share of capital expenditure	-0.0210 (0.0165)	-0.0225 (0.0167)	-0.0209 (0.0164)	-0.0228 (0.0159)	-0.0237 (0.0160)	-0.0227 (0.0158)	-0.0195 (0.0160)	-0.0203 (0.0184)	-0.0171 (0.0187)	-0.0227 (0.0161)	-0.0195 (0.0148)	-0.0204 (0.0157)
Share of students (20-24 pop)	-0.00131 (0.00285)	-0.000400 (0.00285)	-0.000306 (0.00291)									
Net migration	-0.00288 (0.0343)	-0.00560 (0.0347)	-0.00341 (0.0339)									
Age dependency	-0.0590* (0.0314)	-0.0642** (0.0317)	-0.0625 (0.0324)	-0.0558** (0.0277)	-0.0586** (0.0265)	-0.0610* (0.0254)	-0.0415 (0.0299)	-0.0541* (0.0282)	-0.0605** (0.0284)	-0.0539* (0.0301)	-0.0526* (0.0277)	-0.0607** (0.0275)
Creative industries (1)							-0.122 (0.394)	-0.217** (0.0851)	-0.429** (0.204)	-0.132 (0.259)	-0.236*** (0.0613)	-0.447** (0.189)
Creative industries (2)							-0.0362 (0.332)	-0.160 (0.533)	0.662 (0.805)			
Creative industries (3)							-2.381 (2.363)	-0.897 (1.433)	0.236 (8.158)			

Creative industries (4)	-1.473 (1.713)	-0.225 (1.035)	-1.791 (1.530)	-0.0940 (0.619)	1.099* (0.634)	0.0821 (1.309)
Creative industries (5)	0.120 (0.730)	1.208* (0.668)	-0.120 (1.246)			
Creative industries (6)	-0.0863 (0.361)	-0.0448 (0.0618)	-0.0626 (0.144)			
Creative industries (7)	0.484 (0.427)	0.0524 (0.162)	-0.256 (0.308)			
Creative industries (8)	-1.525 (1.479)	0.102 (5.443)	-1.875 (9.888)			
Creative industries (9)	0.230 (0.238)	0.115* (0.0608)	0.0846 (0.165)			
Creative industries (10)	0.0598 (0.311)	-0.198 (0.179)	-0.212 (0.230)			
Creative industries (11)	1.002 (1.822)	-2.106 (1.320)	0.392 (1.990)			
Creative industries (12)	1.421 (1.846)	0.410 (0.391)	0.136 (0.915)			
Constant	-3.955 (4.047)	-3.297 (4.070)	-3.938 (4.086)	-4.849 (3.212)	-4.681 (3.167)	-4.741 (3.178)
Region dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	103	103	103	103	103	103
R-squared	0.195	0.189	0.187	0.183	0.183	0.185
Adj. R-Squared	-0.00151	-0.00908	-0.0118	0.0637	0.0635	0.0654
Log-likelihood	-130.9	-131.3	-131.5	-131.7	-131.7	-131.6
AIC	301.9	302.7	302.9	289.4	289.4	289.2
BIC	354.6	355.3	355.6	323.6	323.7	323.4
				366.3	366.1	366.5
				103	103	103
				0.197	0.232	0.205
				0.0476	0.0892	0.0571
				-130.8	-128.5	-130.3
				293.6	289.0	292.6
				335.8	331.2	334.7

**Notes:** Robust standard errors are given in parentheses. Significance levels: \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The dependent variable was computed as a relative change to the national level over the period 2011-2017. Explanatory variables are averaged during the 2009-2011 period, except for initial employment level which refers to 2011.

**Source:** Authors' estimations