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 healthcare 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.
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; Martiniaitė 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 disciples, 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) Odorhei 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)\textsuperscript{1}. 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:

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

\textbf{H2:} Creative industries can boost recovery in the wake of economic shocks;

\textbf{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.

\textsuperscript{1} Please see Figure 2 for the delimitation of the resistance and recovery phases.
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):

\[
\text{Resilience}_i = \frac{\text{Employment}_i^t - \text{Employment}_{i-1}^t}{\text{Employment}_{i-1}^t - \text{Employment}_{i-1}^{nat}} = \frac{\text{Employment}_{i-1}^{nat} - \text{Employment}_{i-1}^t}{\text{Employment}_{i-1}^t}.
\]

wherein \( i \) stands for resilience in city \( i \), \( t \) is the employment rate in city \( I \) at time period \( t \), \( t-1 \) 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:

\[
\text{Resilience}_i = \alpha + \beta_{creative} + \gamma X_i + \eta_i + \epsilon_i,
\]

wherein \( i \) 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 other 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-
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.

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

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

**Notes:** Employment rate is computed as the share of employees in private sectors to population aged 20-64 years.
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\textsuperscript{2}.

![Figure 3: Resistance and recovery of Romanian cities from the Great Recession](image)

**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)
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 Marmației, while others were more affected, namely Câmpia Turzii, Caracal, Gherla, Codlea and Pașcani. Some of these cities managed
to recover rather fast, such as Pașcani and Codlea, but others displayed both poor resistance and recovery, such as Câmpia Turzii, Vaslui, Calafat and Onești. The large Romanian cities were also affected, only Cluj-Napoca, Sibiu, Brașov and București 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 | % 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.
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, Odorhei 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 Recessions 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.
References:

1. Agenția pentru Dezvoltare Regională Centru (ADR – Centru), 'Stadiul actual al Industriilor Culturale și Creative – Regiunea Centru Romania' (The Current State of the Cultural and Creative Industries – Center Region Romania), ADR – Centru, 2016, [Online] available at http://www.adrcentru.ro/Document_Files/CRE_HUB_Info/00002681/5g9py_Analiza%20Industriilor%20Culturale%20si%20Creative%20-%20Regiunea%20Centru.pdf, accessed on December 10, 2019.

2. Asociația Cluj-Napoca 2021 Capitală Culturală Europeană, ‘Strategia Industrii Creative 2014-2020. Cluj-Napoca: Smarter City’ (Creative Industries Strategy 2014-2020. Cluj-Napoca: Smarter City), Cluj-Napoca, 2014, [Online] available at http://cmpg.ro/wp-content/uploads/2014/02/Strategie_Industrii_Creative_24.01.2014_SZI_2.pdf, accessed on December 10, 2019.

3. Bagwell, S., ‘Creative Clusters and City Growth’, 2008, Creative Industries Journal, vol. 1, no. 1, pp. 31-46.

4. Bănică A. and Muntele, I., ‘Urban Transitions and Resilience of Eastern European Union Cities’, 2017, Eastern Journal of European Studies, vol. 8, no. 2, pp. 45-69.

5. Bănică, A., Istrate, M. and Muntele, I., ‘Challenges for the Resilience Capacity of Romanian Shrinking Cities’, 2017, Sustainability, vol. 9, no. 12, pp. 2289-2309.

6. Benedek J. and Lembeck, A.C., ‘Characteristics of Recovery and Resilience in the Romanian Regions’, 2017, Eastern Journal of European Studies, vol. 8, no. 2, pp. 95-126.

7. Bobircă, A. and Drăghici, A., ‘Measuring Romania’s Creative Economy’, 2nd International Conference on Business, Economics and Tourism Management, IPEDR, vol. 24, Singapore: IACSIT Press, 2011, pp. 83-87.

8. Boccella, N. and Salerno, I., ‘Creative Economy, Cultural Industries and Local Development’, 2016, Procedia – Social and Behavioral Sciences, vol. 223, pp. 291-296.

9. Boix, R., Lazzeretti, L., Hervás, J.L. and De Miguel, B., ‘Creative Clusters in Europe: A Microdata Approach’, conference paper, 51st European Congress of the Regional Science Association International, Barcelona, 2011, [Online] available at http://www-sre.wu.ac.at/ersa/ersaconfs/ersa11/e110830aFinal00471.pdf, accessed on December 10, 2019.

10. Boix-Domènech, R. and Rausell-Köster, P., ‘The Economic Impact of the Creative Industry in the European Union’, in Santamarina-Campos, V. and Segarra-Oña, M. (eds.), Drones and the Creative Industry, Springer, 2018, pp. 19-36.

11. Buheji, M., ‘Museums and Their Role in Resilient Creative Economy – The Canadian Experience’, 2019, International Journal of Economics, Commerce and Management, vol. 7, no. 6, pp. 26-45.

12. Capello, R., Caragliu, A. and Fratesi, U., ‘The Costs of the Economic Crisis: Which Scenario for the European Regions?’, 2016, Environment and Planning C: Government and Policy, vol. 34, no. 1, pp. 113-130.

13. CIVITTA România, ‘Alianță Regională de Industrii Creative. Analiza Industriilor Culturale și Creative. Regiunea Nord-Vest’ (Regional Alliance of Creative Industries. Analysis of Cultural and Creative Industries. The North-West Region), ADR Nord-Vest, 2019, [Online] available at https://www.nord-vest.ro/wp-content/uploads/2020/01/Analiza-Industriilor-Culturale-si-Creative-Regiunea-Nord-Vest.pdf, accessed on December 10, 2019.

92
14. Cooke, P. and Lazzeretti, L., ‘Creative Cities: An Introduction’, in Cooke, P. and Lazzeretti, L. (eds.), Creative Cities, Cultural Clusters and Local Economic Development, Edward Elgar Publishing, 2007, pp. 1-22.
15. Cunningham, S. and Potts, J., ‘Creative Industries and the Wider Economy’, in Jones, C., Lorenzen, M. and Sapsed, J. (eds.), The Oxford Handbook of the Creative Industries, Oxford: Oxford University Press, 2015, pp. 387-404.
16. Department for Culture, Media and Sport (DCMS), ‘Creative Industries Mapping Document’, DCMS, 2001, [Online] available at https://www.gov.uk/government/publications/creative-industries-mapping-documents-2001, accessed on December 10, 2019.
17. Dovey, J. and Pratt, A.C., ‘Creative Hubs: Understanding the New Economy’, The Creative Hubs Report, London: British Council, 2016.
18. Doyle, G., ‘Creative Economy and Policy’, 2015, European Journal of Communication, vol. 31, no. 1, pp. 33-45.
19. European Commission, Proposal for a Regulation of the European Parliament and of the Council establishing the Creative Europe programme (2021 to 2027) and repealing Regulation (EU) No 1295/2013, Brussels, COM(2018) 366 final, 2018, [Online] available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:366:FIN, accessed on December 10, 2019.
20. Eurostat, Culture statistics – cultural employment, 2018, [Online] available at Eurostat: https://ec.europa.eu/eurostat/statistics-explained/index.php/Culture_statistics_-_cultural_employment, accessed on December 10, 2019.
21. Eurostat, Culture statistics – cultural enterprises, 2016, [Online] available at Eurostat: https://ec.europa.eu/eurostat/statistics-explained/index.php/Culture_statistics_-_cultural_enterprises, accessed on December 10, 2019.
22. Ezcurra, R. and Rios, V., ‘Quality of Government and Regional Resilience in the European Union. Evidence from the Great Recession’, 2019, Papers in Regional Science, vol. 98, no. 3, pp. 1267-1290.
23. Fingleton, B., Garretsen, H. and Martin, R., ‘Recessionary Shocks and Regional Employment: Evidence on the Resilience of U.K Regions’, 2012, Journal of Regional Science, vol. 52, no. 1, pp. 109-133.
24. Florida, R., ‘The Creative Class and Economic Development’, 2014, Economic Development Quarterly, vol. 28, no. 3, pp. 196-205.
25. Florida, R., The Rise of the Creative Class: And How It’s Transforming Work, Leisure, Community, and Everyday Life, Basic Books, 2002.
26. Fontainha, E. and Lazzaro, E., ‘Cultural and Creative Entrepreneurs in Financial Crises: Sailing Against the Tide?’, 2019, Scientific Annals of Economics and Business, vol. 66, pp. 73-89.
27. Giannakis E. and Bruggeman A., ‘Determinants of Regional Resilience to Economic Crisis: A European Perspective’, 2017, European Planning Studies, vol. 25, no. 8, pp. 1394-1415.
28. Gripaios. P. and Bishop, P., ‘Objective One Funding in the UK: A Critical Assessment’, 2006, Regional Studies, vol. 40, no. 8, pp. 937-951.
29. Holling, C.S., ‘Resilience and Stability of Ecological Systems’, 1973, Annual Review of Ecology and Systematics, vol. 4, pp. 1-23.
30. Hong, Y.-S., and Chen, H.-W., ‘Does the Medium-term Development of the Creative Economy Guarantee Long-term Evolution?’, 2017, *International Journal of Cultural and Creative Industries*, vol. 5, no. 1, pp. 22-45.

31. Hosu, R. and Hosu, I., ‘Smart’ in Between People and the City’, 2019, *Transylvanian Review of Administrative Sciences*, Special Issue, pp. 5-20.

32. Howkins, J., *The Creative Economy: How People Make Money from Ideas*, London: Penguin Books Limited, 2001.

33. Hrib, B., ‘Actors of Creativity and Entrepreneurship in Romania’, 2018, *Management Dynamics in the Knowledge Economy*, vol. 6, no. 4, pp. 655-672.

34. Ișfănescu-Ivan, R., ‘Creative Industries and Innovation in Romania: The Case Study of Timișoara City’, 2018, *Lucrările Seminarului Geografic Dimitrie Cantemir*, vol. 46, no. 2, pp. 65-76.

35. Istudor, L.G., ‘Innovation and Entrepreneurship in Romania’s Cultural and Creative Industries’, 2018, *Proceedings of the 12th International Conference on Business Excellence*, vol. 12, no. 1, pp. 498-507.

36. Ivanovici, M. and Mândruleanu, A., ‘Creative Economy’s Guages. Romania’s Case’, 2009, *Management & Marketing*, vol. 4, no. 2, pp. 125-150.

37. Kitsos, A. and Bishop, P., ‘Economic Resilience in Great Britain: The Crisis Impact and its Determining Factors for Local Authority Districts’, 2018, *Annals of Regional Science*, vol. 60, no. 2, pp. 329-347.

38. Kourtit, K. and Nijkamp, P., ‘Creative Actors and Historical-Cultural Assets in Urban Regions’, 2018, *Regional Studies*, vol. 53, no. 7, pp. 977-990.

39. Kourtit, K. and Nijkamp, P., ‘Impact of Cultural ‘Ambiance’ on the Spatial Distribution of Creative Professions: A Modeling Study on the Netherlands’, 2016, *International Regional Science Review*, vol. 41, no. 1, pp. 103-128.

40. Kourtit, K. and Nijkamp, P., ‘The Use of Visual Decision Support Tools in an Interactive Stakeholder Analysis – Old Ports as New Magnets for Creative Urban Development’, 2013, *Sustainability*, vol. 5, no. 10, pp. 4379-4405.

41. Kourtit, K., ‘Cultural Heritage, Smart Cities and Digital Data Analytics’, 2019, *Eastern Journal of European Studies*, vol. 10, no. 1, pp. 151-159.

42. Landry, C. and Bianchini, F., *The Creative City*, Demos, 1995.

43. Landry, C., *The Creative City: A Toolkit for Urban Innovators*, Earthscan, 2012.

44. Lazzeretti, L., Boix, R. and Capone, F., ‘Why Do Creative Industries Cluster? An Analysis of the Determinants of Creative Industries’, paper presented at the Summer Conference 2009 at Copenhagen Business School, 2009.

45. Leovaridis, C. and Bahnă, M., ‘Aspects Regarding Virtual Reality as Innovation in Creative Industries’, 2017, *Revista română de sociologie*, no. 3-4, pp. 157-172.

46. Marco-Serrano, F., Rausell-Kosterb, P. and Abeledo-Sanchisc, R., ‘Economic Development and the Creative Industries: A Tale of Causality’, 2014, *Creative Industries Journal*, vol. 7, no. 2, pp. 81-91.

47. Martin, R., ‘Regional Economic Resilience, Hysteresis and Recessionary Shocks’, 2012, *Journal of Economic Geography*, vol. 12, no. 1, pp. 1-32.

48. Martin, R., Sunley, P., Gardiner, B. and Tyler, P., ‘How Regions React to Recessions: Resilience and the Role of Economic Structure’, 2016, *Regional Studies*, vol. 50, no. 4, pp. 561-585.
49. Martin, R.L., ‘Shocking Aspects of Regional Development: Towards an Economic Geography of Resilience’, in Clark, G.L., Feldman, M.P., Gertler, M.S. and Wójcik, D., The New Oxford Handbook of Economic Geography, Oxford: Oxford University Press, 2018, pp. 1-33.

50. Martinaitytė, E. and Kregždaitė, R., ‘The Factors of Creative Industries Development in Nowadays Stage’, 2015, Economics and Sociology, vol. 8, no. 1, pp. 56-71.

51. Mazilu, S., ‘Creative Industries as an Enhancing Factor for Regional Development in European Union’, Reflecting on Europe’s (Dis)order: Scenarios for the EU’s Future, EURINT 2018, Iași: Editura Universității ‘Alexandru Ioan Cuza’, 2018, pp. 289-301.

52. Motoiu, E., Pavel, O.A. and Lakatos, E.S., ‘A Brief Quantitative Analysis of Clusters from the Creative Industry in Romania’, 2016, Review of Applied Socio- Economic Research, vol. 11, no. 1, pp. 57-66.

53. Network of European Museum Organisations, ‘Cartea Albă a Sectoarelor Culturale și Creative din România’ (White Paper for Cultural and Creative Sectors in Romania), 2019, [Online] available at https://www.ne-mo.org/fileadmin/Dateien/public/Working_Group_1/Working_Group_MCI/White_paper_for_CCS_in_Romania.pdf, accessed on December 10, 2019.

54. O’Brien, D., Laurison, D., Miles, A. and Friedman, S., ‘Are the Creative Industries Meritocratic? An Analysis of the 2014 British Labour Force Survey’, 2016, Cultural Trends, vol. 25, no. 2, pp. 116-131.

55. Olazabal, M., Chelleri, L., Waters, J.J. and Kunath, A., ‘Urban Resilience: Towards an Integrated Approach’, 1st International Conference on Urban Sustainability & Resilience, London, 2012.

56. Oliveira, A. and Paulino, F., ‘European Creativity and Urban Regeneration’, 2017, The Journal of Public Space, vol. 2, no. 2, pp. 127-140.

57. Östh, J., Reggiani, A. and Nijkamp, P., ‘Resilience and Accessibility of Swedish and Dutch Municipalities’, 2018, Transportation, vol. 45, pp. 1051-1073.

58. Pimm, S.L., ‘The Complexity and Stability of Ecosystems’, 1984, Nature, vol. 307, pp. 321-326.

59. Pintilii, R.-D., Peptenatu, D., Ciobotaru, A.-M., Toma, S.G., Grigore, A.M., Drăghici, C.-C. et al., ‘Creative Economies in Romania – Spatial Projections and Trends’, 2017, Bulletin of Geography. Socio–economic Series, no. 37, pp. 95-108.

60. Popescu, D.I., Ceptureanu, S.I., Alexandru, A. and Ceptureanu, E.G., ‘Relationships between Knowledge Absorptive Capacity, Innovation Performance and Information Technology. Case Study: The Romanian Creative Industries SMEs’, 2019, Studies in Informatics and Control, vol. 28, no. 4, pp. 463-475.

61. Power, D., ‘Priority Sector Report: Creative and Cultural Industries’, Europa Innova Paper no.16, European Cluster Observatory, 2011.

62. Pratt, A.C., ‘Resilience, Locality and the Cultural Economy’, 2015, City, Culture and Society, vol. 6, no. 3, pp. 61-67.

63. Rodríguez-Pose, A. and Fratesi, U., ‘Regional Business Cycles and the Emergence of Sheltered Economies in the Southern Periphery of Europe’, 2007, Growth and Change, vol. 38, no. 4, pp. 621-648.

64. Sava, D.-C. and Bădulescu, A., ‘Dimensions and Performances of the Creative Economy in Romania’, in Proceedings of the 12th International Management Conference ‘The Role of Management in the Economic Paradigm of the XXIst Century’, Bucharest, 2018, pp. 223-232.
65. Sepe, M., ‘Creative Urban Regeneration between Innovation, Identity and Sustainability’, 2009, *International Journal of Sustainable Development*, vol. 12, no. 2, pp. 144-159.
66. Simmie, J. and Martin, R., ‘The Economic Resilience of Regions: Towards an Evolutionary Approach’, 2010, *Cambridge Journal of Regions, Economy and Society*, vol. 3, no. 1, pp. 27-43.
67. Southwick, S.M., Bonanno, G.A., Masten, A.S., Panter-Brick, C. and Yehuda, R., ‘Resilience Definitions, Theory, and Challenges: Interdisciplinary Perspectives’, 2014, *European Journal of Psychotraumatology*, vol. 5, art. no. 25338, pp. 1-14.
68. Stoian, D., Peptenatu, D., Pintilii, R. and Schvab, A., ‘Territorial Distribution of Creative Poles in Romania’, 2014, *Procedia – Social and Behavioral Sciences*, vol. 122, pp. 184-188.
69. Tafel-Viia, K., and Lassur, S., ‘Explaining the Change: Creative Industries Policy from the Perspective of Social Innovation’, 2013, *Territoire en mouvement Revue de géographie et aménagement*, no. 19-20, pp. 118-130.
70. UNESCO, ‘Creative Economy Report 2013 Special Edition. Widening Local Development Pathways’, United Nations, 2013.
71. United Nations, ‘Creative Economy Outlook: Trends in International Trade in Creative Industries 2002-2015. Country Profiles 2005-2014’, United Nations Conference on Trade and Development, 2018a.
72. United Nations, ‘Creative Economy Report 2008: The Challenge of Assessing the Creative Economy: towards Informed Policy-making’, UNCTAD, 2008.
73. United Nations, ‘Creative Economy Report’, UNCTAD, 2010.
74. United Nations, ‘The World’s Cities in 2018. Data Booklet’, 2018b, [Online] available at https://www.un.org/en/events/citiesday/assets/pdf/the_worlds_cities_in_2018_data_booklet.pdf, accessed on December 10, 2019.
75. Volintiru, C. and Miron, D., ‘Business Environment and Creative Industries in Romania’, 2015, *Amfiteatr Economic*, vol. 17, no. 38, pp. 358-369.
76. World Economic Forum, ‘These Will Be the Most Important Cities by 2035’, 2020, [Online] available at https://www.weforum.org/agenda/2019/10/cities-in-2035/, accessed on December 10, 2019.
77. Zaman G. and Goschin Z., ‘Economic Downfall and Speed of Recovery in Romanian Counties. A Spatial Autoregressive Model’, 2015, *Economic Computation and Economic Cybernetics Studies and Research*, vol. 49, no. 3, pp. 21-40.
## Appendices

### Appendix A

Table A1: Creative Industries Classification

| Domain | CAEN code (Romanian) | English |
|--------|----------------------|---------|
| 1. Advertising | 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 |
| 2. Architecture | 7111 Activități de arhitectură | Architecture activities |
| 3. Art and antiques market | 9003 Activități de creație artistică | Artistic activities |
| 4. Libraries, museums, cultural heritage | 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 grădiniilor zoologice, botanice și ale rezervațiilor naturale | Activities of zoos, botanical gardens and nature reserves |
| 5. Design | 7410 Activități de design specializat | Specialized design activities |
| | 7420 Activități fotografice | Photographic activities |
| 6. Film, video, music, TV and Radio | 1820 Reproducerea înregistrărilor | Recording reproduction |
| | 2680 Fabricarea suportilor 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) |
| 7. Interactive leisure, games and software | 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 Bâlciuri 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) 9002 Activități suport pentru interpretarea artistică (spectacole) 9004 Activități de gestionare a sălilor de spectacole | Performing arts activities (shows) Support activities for artistic interpretation (shows) Activities of management of the theaters |
| 9. Publishing | 1811 Tipărirea ziarelor 1812 Alte activități de tipărire n.c.a. 1813 Servicii pregătitoare pentru pretipărire 1814 Legături și servicii conexe 4761 Comerț cu amânuntul alb cărților, în magazine specializate 4762 Comerț cu amânuntul al ziarelor și articolelor de papetărie, în magazine specializate 5811 Activități de editare a cărților 5812 Activități de editare de ghiduri, compendii, liste de adrese și similare 5813 Activități de editare a ziarelor 5814 Activități de editare a revistelor și periodicelor 5819 Alte activități de editare 7430 Activități de traducere scrisă și orală (interpreți) | Printing of newspapers Other printing activities Preparatory services for pre-printing Binding and related services Retail sale of books in specialized stores Retail sale of newspapers and stationery in specialized stores Book publishing activities Editing guides, compendiums, address lists and similar items Newspaper editing activities Activities of publishing magazines and periodicals Other publishing activities Written and oral translation activities (interpreters) |
| 10. Software and computer services | 5829 Activități de editare a altor produse software 6201 Activități de realizare a soft-ului la comandă (software orientat client) 6202 Activități de consultanță în tehnologia informației 6209 Alte activități de servicii privind tehnologia informației 6311 Prelucrarea datelor, administrarea paginilor web și activități conexe 6312 Activități ale portalurilor web | Editing activities of other software products Custom software development activities (customer-oriented software) Information technology consultancy activities Other service activities regarding information technology Data processing, web page management and related activities Web portal activities |
| 11. Cultural education | 8551 Învățământ în domeniul sportiv și recreațional 8552 Învățământ în domeniul cultural (limbi străine, muzică, teatru, dans, arte plastice, alte domenii) | Education in sport and recreation Education in the cultural field (foreign languages, music, theater, dance, fine arts, other fields) |
| 12. Research | 7211 Cercetare-dezvoltare în biotehnologie 7219 Cercetare-dezvoltare în alte științe naturale și ingerierie 7220 Cercetare-dezvoltare în științe sociale și umaniste | Research and development in biotechnology Research and development in other natural sciences and engineering 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

| Dimension                  | Variable               | Description                                                                 | Source                                                   |
|----------------------------|------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------|
| 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               |
| Economic structure         | Agriculture            | Share of employees in agriculture                                           | Romanian National Institute for Statistics               |
|                            | 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**|              |              |              |              |              |              |              |              |              |              |              |              |
| Share of firms of creative industries | 0.113        | 0.0875      | 0.0462      | 0.0783      | 0.0874**     | 0.0429      |              |              |              |              |              |              |
| Share of empl. of creative industries | (0.0856)     | (0.0427)    | (0.0388)    | (0.0639)    | (0.0378)     | (0.0356)    |              |              |              |              |              |              |
| Share of turnover of creative industries | -0.0996      | -0.0681     | -0.0411     |              |              |              |              |              |              |              |              |              |
| Log of initial employment | (0.136)      | (0.110)     | (0.108)     |              |              |              |              |              |              |              |              |              |
| Share of empl. in agriculture | 0.00776      | 0.00219     | 0.00552     |              |              |              |              |              |              |              |              |              |
| Share of empl. in construction | -0.0301**    | -0.0250**   | -0.0223     | -0.0316**    | -0.0278**    | -0.0247**   | -0.0268**    | -0.0290**   | -0.0287**   | -0.0328**    | -0.0278**   | -0.0289**   |
| Share of empl. in finance | 0.0592       | 0.0735      | 0.0775      | 0.0720       | 0.0803       | 0.0803      | 0.0752       | 0.0691      | 0.0834      | 0.0665       | 0.0780      | 0.0867      |
| Share of turnover in finance | (0.0589)     | (0.0576)    | (0.0644)    | (0.0677)     | (0.0542)     | (0.0618)    | (0.0724)     | (0.0631)    | (0.0626)    | (0.0653)     | (0.0601)    | (0.0628)    |
| Population per doctors | (0.386)      | (0.411)     | (0.432)     | -0.511       | -0.556       | -0.626      | -0.546       | -0.526      | -0.580      | -0.556       | -0.478       | -0.558      |
| Share of green spaces | 0.0166        | 0.0166      | 0.0175      | (0.0154)     | (0.0154)     | (0.0153)    | (0.0150)     | (0.0160)    | (0.0163)    | (0.0141)     | (0.0148)     | (0.0145)    |
| Share of own income | 0.00686       | 0.0105      | 0.0108      | 0.00646      | 0.00768      | 0.00934     | 0.0107       | 0.00474     | 0.0101      | 0.0107       | 0.00851      | 0.0124*     |
| Share of turnover in own income | (0.00648)    | (0.00880)   | (0.0097)    | (0.00649)    | (0.00631)    | (0.00640)   | (0.00608)    | (0.00653)   | (0.00678)   | (0.00698)    | (0.00633)    | (0.00637)   |
| Log of income per capita | 0.0193       | 0.0174      | 0.0154      | 0.0190**     | 0.0174**     | 0.0164*     | 0.0121       | 0.0148      | 0.0105      | 0.0160*      | 0.0160*      | 0.0107      |
| Share of capital expenditure | 0.0106       | 0.00979     | 0.0100      | (0.00859)    | (0.00863)    | (0.00874)   | (0.0102)     | (0.00970)   | (0.0102)    | (0.00929)    | (0.00933)    | (0.00967)   |
| Share of students (20-24 pop) | -0.00225      | -0.00231*   | -0.00186     | -0.00238*    | -0.00255*    | -0.00183**  | -0.000879    | -0.000309** | -0.00233*   | -0.00147     | -0.000209     | -0.00168    |
| Net migration | 0.00586       | 0.00644     | 0.00439     | (0.00133)    | (0.00114)    | (0.00141)   | (0.000131)   | (0.00121)   | (0.00127)   | (0.000137)   | (0.000963)   | (0.00102)   |
| Age dependency | 0.00450       | 0.000122    | 0.0000332   |              |              |              |              |              |              |              |              |              |
| Share of turnover in age dependency | (0.0209)    | (0.0221)    | (0.0225)    |              |              |              |              |              |              |              |              |              |
| Creative industries (1) |              |              |              | -0.240       | 0.154**      | 0.0392      | -0.204       | 0.179**     | 0.0583      |              |              |              |
| Creative industries (2) |              |              |              | 0.412**      | 0.300        | 0.392       | 0.397**      | 0.570*      | 0.606*      |              |              |              |

*Significant at the 10% level.
**Significant at the 5% level.
***Significant at the 1% level.
| Creative industries (3) | -0.479 | -1.693 | -5.289 |
|------------------------|--------|--------|--------|
|                        | (0.858)| (1.060)| (4.804)|
| Creative industries (4) | -1.095 | 0.330  | 2.232  |
|                        | (1.067)| (2.530)| (1.453)|
| Creative industries (5) | -0.158 | -0.202 | -0.212 |
|                        | (0.308)| (0.327)| (0.393)|
| Creative industries (6) | -0.0760| 0.0594 | 0.106  |
|                        | (0.318)| (0.0412)| (0.140)|
| Creative industries (7) | 0.332  | 0.337  | 0.0879 |
|                        | (0.233)| (0.383)| (0.150)|
| Creative industries (8) | 0.269  | 0.598  | 1.512  |
|                        | (0.870)| (1.841)| (1.473)|
| Creative industries (9) | 0.121  | 0.172  | 0.0991 |
|                        | (0.149)| (0.117)| (0.0808)|
| Creative industries (10)| -0.120 | 0.111  | 0.168  |
|                        | (0.144)| (0.0920)| (0.129)|
| Creative industries (11)| 1.125  | -0.223 | -0.730 |
|                        | (1.132)| (1.973)| (0.923)|
| Creative industries (12)| 0.739  | -0.240 | -0.701*|
|                        | (1.036)| (0.243)| (0.382)|
| Constant               | 0.625  | 1.285  | 0.327  |
|                        | (4.530)| (4.542)| (4.551)|
| Region dummies         | yes    | yes    | yes    |
| Observations           | 103    | 103    | 103    |
| R-squared              | 0.228  | 0.243  | 0.209  |
| Adj. R-Squared         | 0.0397 | 0.0581 | 0.0160 |
| Log-likelihood         | -66.13 | -65.14 | -67.39 |
| AIC                    | 172.3  | 170.3  | 174.8  |
| BIC                    | 225.0  | 223.0  | 227.5  |

**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 2008-2011. Explanatory variables are averaged during the 2006-2008 period, except for initial employment and creative data which are from 2008.

**Source:** Authors’ estimations
Table B2: Estimation results of the impact of creative industries on cities’ recovery to the Great Recession

|                        | 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             |
| Creative industries    | 0.109                 | 0.0332                     | -0.0244                       | 0.0237                     | 0.0147                      | -0.0337                       |
|                        | (0.102)               | (0.0418)                   | (0.100)                       | (0.0585)                   | (0.0372)                    | (0.0885)                      |
| Log of initial employment | -0.136               | -0.0870                    | -0.0307                       | -0.0982*                   | 0.0961*                     | 0.0909*                       |
|                        | (0.225)               | (0.196)                    | (0.184)                       | (0.0512)                   | (0.0501)                    | (0.0518)                       |
| Share of empl. in agriculture | 0.0954*              | 0.0930*                    | 0.0902                        | 0.0825*                    | 0.0712                      | 0.0848                        |
|                        | (0.0530)              | (0.0534)                   | (0.0543)                      | (0.0574)                   | (0.0610)                    | (0.0636)                      |
| Share of empl. in construction | -0.0142             | -0.00562                   | -0.00553                      | -0.196*                    | 0.282*                      | 0.294*                        |
|                        | (0.0326)              | (0.0323)                   | (0.0323)                      | (0.107)                    | (0.122)                     | (0.104)                       |
| Share of empl. in finance | 0.245*               | 0.243*                     | 0.249*                        | 0.196*                     | 0.282*                      | 0.294*                        |
|                        | (0.129)               | (0.124)                    | (0.125)                       | (0.102)                    | (0.0887)                    | (0.0881)                      |
| Population per doctors | -0.111                | -0.209                     | -0.175                        | -0.00875                   | -0.0103                     | -0.00687                      |
|                        | (0.679)               | (0.689)                    | (0.685)                       | (0.0305)                   | (0.0309)                    | (0.0327)                      |
| Share of green spaces  | -0.00875              | -0.0103                    | -0.00687                      | 0.00428                    | 0.00577                     | 0.00289                       |
|                        | (0.0305)              | (0.0309)                   | (0.0327)                      | (0.0168)                   | (0.0167)                    | (0.0172)                      |
| Share of own income    | 0.676                 | 0.657                      | 0.695                         | 0.697*                     | 0.708*                      | 0.750*                        |
|                        | (0.411)               | (0.397)                    | (0.419)                       | (0.3865)                   | (0.366)                     | (0.370)                       |
| Log of income per capita | -0.0210              | -0.0225                    | -0.0209                       | -0.0226                    | -0.0237                     | -0.0227                       |
|                        | (0.0165)              | (0.0167)                   | (0.0164)                      | (0.0159)                   | (0.0160)                    | (0.0156)                      |
| Share of capital expenditure | -0.00131           | -0.00040                   | -0.000306                     | 0.00160                    | 0.00164                     | 0.00167                       |
|                        | (0.00285)             | (0.00285)                  | (0.00291)                     | (0.00160)                  | (0.00164)                   | (0.00157)                     |
| Share of students (20-24 pop) | -0.00286           | -0.00560                   | -0.00431                      | -0.0558*                   | -0.0586*                    | -0.0610*                       |
|                        | (0.0343)              | (0.0347)                   | (0.0339)                      | (0.0277)                   | (0.0265)                    | (0.0254)                      |
| Age dependency         | -0.0590*              | -0.0642*                   | -0.0625                       | -0.0415                    | -0.0541*                    | -0.0605*                       |
|                        | (0.0314)              | (0.0317)                   | (0.0324)                      | (0.0299)                   | (0.0282)                    | (0.0284)                      |
| Creative industries (1) |                      |                            |                               | -0.122                     | -0.217*                     | -0.429*                       |
|                        |                      |                            |                               | (0.394)                    | (0.0651)                    | (0.204)                       |
| Creative industries (2) |                      |                            |                               | -0.362                     | -0.169                      | 0.662                         |
|                        |                      |                            |                               | (0.332)                    | (0.533)                     | (0.805)                       |
| Creative industries (3) |                      |                            |                               | -2.361                     | -0.897                      | 0.236                         |
|                        |                      |                            |                               | (2.363)                    | (1.433)                     | (8.158)                       |
| Creative industries (1) | -1.473 | -0.225 | -1.791 | (1.713) | (1.035) | (1.530) | -0.0940 | 1.099 | 0.0821 | (0.619) | (0.634) | (1.309) |
|------------------------|--------|--------|--------|---------|---------|---------|---------|-------|-------|---------|---------|---------|
| Creative industries (2) | 0.120  | 1.208* | -0.120 | (0.730) | (0.668) | (1.246) | (0.619) | (0.634) | (1.309) |
| Creative industries (3) | 0.0863 | -0.0448 | -0.0626 | (0.361) | (0.0618) | (0.144) | (0.619) | (0.634) | (1.309) |
| Creative industries (4) | 0.484  | 0.0524 | -0.256 | (0.427) | (0.162) | (0.308) | (0.619) | (0.634) | (1.309) |
| Creative industries (5) | -1.525 | 0.102 | -1.875 | (1.479) | (5.443) | (9.888) | (0.194) | 0.0888* | 0.0819* | (0.267) | (0.0383) | (0.0484) |
| Creative industries (6) | 0.230  | 0.115* | 0.0846 | (0.238) | (0.0608) | (0.165) | (0.267) | (0.0383) | (0.0484) |
| Creative industries (7) | 0.0598 | -0.198 | -0.212 | (0.311) | (0.179) | (0.230) | (0.194) | 0.0888* | 0.0819* | (0.267) | (0.0383) | (0.0484) |
| Creative industries (8) | 1.002  | -2.106 | 0.392  | (1.822) | (1.320) | (1.990) | (1.555) | (1.084) | (2.010) |
| Creative industries (9) | 1.421  | 0.410 | 0.136  | (1.846) | (0.391) | (0.915) | (1.846) | (0.391) | (0.915) |
| Creative industries (10) | 1.475  | 0.305 | -0.120 | (1.386) | (0.310) | (0.626) | (1.386) | (0.310) | (0.626) |
| Creative industries (11) | -1.791 | -3.995 | -2.773 | (3.750) | (3.480) | (3.470) | (3.196) | (3.393) | (3.151) |
| Creative industries (12) | -3.955 | -3.297 | -3.938 | (4.047) | (4.070) | (4.086) | (4.047) | (4.070) | (4.086) |
| Constant               | -4.681 | -4.741 | (3.178) | (3.178) | (3.178) | (3.178) | (3.178) | (3.178) | (3.178) |
| Observations           | 103    | 103    | 103    | 103    | 103    | 103    | 103    | 103    | 103    |
| R-squared              | 0.195  | 0.187  | 0.187  | 0.183  | 0.183  | 0.183  | 0.247  | 0.248  | 0.245  |
| Adj. R-Squared         | -0.00908 | -0.0118 | 0.0635 | 0.0654 | 0.0148 | 0.0163 | 0.0126 | 0.0476 | 0.0892 | 0.0571 |
| Log-likelihood         | -130.9 | -131.1 | -131.5 | -131.7 | -131.7 | -131.6 | -127.5 | -127.4 | -127.6 |
| AIC                    | 301.9  | 302.7  | 302.9  | 289.4  | 289.4  | 289.2  | 303.0  | 302.9  | 303.3  |
| BIC                    | 354.6  | 355.3  | 355.6  | 323.6  | 323.7  | 323.4  | 366.3  | 366.1  | 366.5  |
| 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 |