# REGIONS BETWEEN CHALLENGES AND UNEXPECTED OPPORTUNITIES

edited by
Cristina Bernini, Silvia Emili

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# Table of Contents

**PART III – WELL-BEING AND SUSTAINABILITY**



**PART IV – THE ROLE OF POLICIES**

# Exploring "Resiliencies" to the Great Crisis along the Peripherality Gradient in Central-southern Italy

*Fabiano Compagnucci*, Giulia Urso**

**Abstract**

*The notion of resilience has been widely studied over the last two decades in the field of regional studies. Different dimensions have been used so far to proxy it. We suggest that the choice of these variables is not neutral in terms of evaluation of the resilience capacity, depending on the different socioeconomic structure of different territorial contexts. By using municipal data on population, employment, and personal income from 2004 to 2017 of the Abruzzo, Lazio, Marche and Umbria regions, our analysis is meant to provide empirical evidence to our assumptions by investigating the resilience of these regions in the face of the 2007-2008 Great Crisis and the subsequent recovery period. Our study intends to contribute to the production of knowledge on resilience assessment, especially with reference to peripheral areas, which are in most cases already challenged by prolonged slow-burning pressures. Results may eventually fuel both the theoretical and policy debate on the resilience of inner areas.*

## 1. Introduction

The notion of resilience has been widely studied over the last two decades in the field of regional studies, mainly because of the outbreak of the 2007-2008 crisis. Although the Great Recession has affected the entire global economy, it caused asymmetric recessionary shocks at the national, and especially, at the regional and local level (Capello *et al*., 2015; Groot *et al*., 2011). It has eventually resulted in different degrees of the magnitude of the crisis and of the extension of the recovery period depending on the different resilience capacity of places. Many scholars have corroborated these initial findings at various spatial levels: NUTS-2 (Doran, Fingleton, 2016; Crescenzi *et al*., 2016), NUTS-3 (Fratesi, Perucca, 2019; Angulo *et al*., 2018), functional areas (Faggian *et al*., 2018), and municipality level (Geelhoedt *et al*., 2021). Along with various territorial levels, different dimensions have

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been used so far to proxy resilience. Indeed, despite the popularity it has gained both in the political and academic discourse, there is no unanimous consensus about what (regional) resilience precisely is (Stanickova, Melecký, 2018; Muštra *et al*., 2020), neither in terms of definition nor in terms of measurement (Martin, 2012). Resilience is, however, commonly assessed considering three main variables: population, employment rate and GDP (Dubé, Polèse, 2016). Together with Dubé and Polèse (2016), we suggest that the choice of these variables is not neutral in terms of evaluation of the resilience capacity. Each of them, in fact, could proxy different aspects of resilience which peculiarly react to the recessionary shock depending on the concerned territorial context. For instance, assessing resilience on the basis of employees can be more effective when carried out in urban areas than in rural/peripheral ones. Within these latter, the share of retired people is usually much larger, and with it also the share of households receiving an income independently from the crisis. It follows that, when attempting to measure resilience, we must be aware of territorial level we are analyzing, be it composed by regions, local systems, towns or villages (Compagnucci, Morettini, 2020).

Against this background, the aim of this paper is twofold. First, exploiting the spatial classification provided by the National Strategy for Inner Areas (SNAI), the paper empirically investigates how the use of different variables affects the measure of resilience to the 2008 Great Crisis in the territories of the four Italian regions (Marche, Umbria, Lazio and Abruzzo) which were hit by the 2016-2017 earthquake. Second, our research aims at exploring whether using a specific variable or another can be considered more appropriate in assessing the resilience of different territorial contexts, looking at both in-between regional heterogeneity and within regional heterogeneity along the urban gradient, moving from core to more peripheral areas.

The remainder of the paper is structured as follows. After having contextualized the why question of this study within the theoretical debate, we will provide empirical evidence to our assumptions through a descriptive analysis based on municipal data on population (ISTAT), employment (ISTAT) and individual income subject to taxation (Ministry of Economy and Finance) from 2004 to 2017. Relying on previous studies reflecting on the operationalization of the notion of resilience, we will finally discuss the main findings arising from the descriptive analysis about the assessment of resilience especially when investigating inner areas, which, in most cases, are territories already severely challenged by prolonged slow-burning pressures.

## 2. Resilience of What: The Appraisal of Context

When discussing the concept of resilience several aspects need to be taken into account, hence the complexity of both its conceptualization and empirical

application (Christopherson *et al*., 2010; Martin, Sunley, 2015). Even when limiting the scope to Regional Science and Economic Geography, without contemplating the various interpretations within other domains, a broad agreed-upon definition of resilience of territories still remains far to be reached.

The geographical scale of investigation or more appropriate boundaries to be considered – a crucial dimension, or likely the primary concern, in spatial disciplines – could be controversial and must be carefully pondered. To start with, Faggian *et al*. (2018), for instance, argue that answering three fundamental questions is pivotal to guide research on resilience: 1. resilience "to what?" (referring to the kind – natural disaster, economic recession, etc. – and nature of the shock – acute, one-time or chronic stress (i. e. financial crisis vs. deindustrialization, see Pendall *et al*., 2010); 2. resilience "of what?" (which implies the definition of what we mean by economic system or, more generally, the geographic area to be scrutinized); 3. resilience "over what period?" (in order to assess the ability of a territorial system to resist the shock, bounce back or bounce forward toward new growth paths). We add to this list a fourth question which covers another crucial, lively debated point within the knowledge produced so far on resilience – to which this study aims to contribute to – and further accounts for its complexity: 4. resilience "through what indicator?"

Reviewing the huge literature on the topic (starting from the overview provided by Modica, Reggiani, 2015), the "of what" question seems to be the less investigated or, better, the one less critically scrutinized, given the (also data-driven or taken-for-granted) reliance on administrative (mostly regions) or functional areas (local labour systems). However, we deem instead essential a reflection on the geography of resilience, primarily considering the possibly different spatiality of the alternative measures to proxy it.

This because, as acknowledged for instance by Ward *et al*. (2003) discussing more generally rural development (see also Irwin *et al*., 2010), theoretical and empirical tools, being biased towards urban problem definitions, are in some cases not sufficiently sensitive to account for the peculiarities and performances of non-urban areas.

Also, an over-reliance on a narrow set of indicators could accentuate this issue further. When it comes to resilience this might be the case as well. In fact, as underlined by Fantechi *et al*. (2020), among others, referring to the academic literature on disaster resilience, the majority of studies focus on urban contexts, while research on rural areas is still a residual category that typically does not take into account the geographical characteristics of places. These latter could instead play a key role, like the degree of peripherality or accessibility moving along the urban gradient.

Even analyses at the sub-regional level if, on the one side, do allow for an appraisal of the high heterogeneity of context, on the other side very rarely go beyond the

mere urban vs. rural analytical opposition, having been designed mainly on the basis of urban areas as a reference category. However, resilience may imply different dimensions relative to those which are salient in the case of urban environments and hence be more properly detected through different measures which might better capture the actual ability of non-urban or non-core places to react to a disturbance.

Dubé and Polèse (2016) very well account for this issue in conceptualizing and empirically analyzing resilience. Essentially combining the two questions "over what period?" and "through what indicator?", they assess the resilience of Canadian regions to the 2007-2009 crisis over three phases from a short to a longer-term period (1. resistance, 2. rebound and 3. recuperation) and by means of four standard metrics (1. population, 2. employment, 3. unemployment and 4. employment rate). As largely expected, they found that regional resilience varies depending on the chosen measure.

More interestingly for the purposes of our research, empirical evidence also led to a further reflection: responses to a recessionary disturbance – or any kind of disturbance, we would add – cannot be unequivocally explained for all regions, because context as well matters a lot in revealing the ability of territories to react to a pressure. In the two authors' own words, "*the differing responses to shocks also invite the question whether 'resilience' is a concept uniformly applicable across all regions, big and small, urban and rural, industrial and resource dependant. Should the criteria be the same for a large metropolis like Toronto as for a rural region in Saskatchewan?*" (Dubé, Polèse, 2016: 626).

In the exploratory attempt to answer this question, we assume here that the context-specific socio-economic features of places along the urban – or more precisely peripherality – gradient might influence results in evaluating resilience. Against this backdrop, we thus add a further element of complexity which we deem as highly salient, especially from a regional science and economic geography perspective, to operationalize the notion of resilience: the spatial dimension.

We aim to contribute to the advancement of knowledge in this respect by including also the "of what" question in the framework outlined by Dubé and Polèse (2016) who built on the empirical literature hitherto produced on the topic, by analysing, at a more granular level, the responses of the municipalities of 4 Italian Central regions as classified within the National Strategy for Inner Areas (henceforth, SNAI, see next section), that is according to the travel-time distance from the closest service provision centre(s).

In our study, then, the spatiality issue is not tackled only as a matter of scale – i.e. sub-regional vs. regional – but also as a critical rationale in the exploitation of municipal data – i.e. overcoming the mere urban vs. rural analytical lens. The SNAI classification was utilized in other studies on resilience to the 2008 global financial crisis (Urso *et al.*, 2019), but only for a single-metric assessment.

The value of the present investigation is mainly empirical in nature in the first place, which is namely to understand what measure is more relevant to and more responsive in what territories, hence what "resilience" is more salient in what place along the peripherality gradient. Also, beyond providing insights on the operationalization of the notion from a scholarly perspective, results might help detecting the specific vulnerabilities of territories based on the dimension they are more sensitive to, and hence, policy-wise, they might input policies targeting preparedness and resistance to shocks, limiting their magnitude.

## 3. Data and Methodology

The empirical section is based on a set of descriptive statistics providing stylised facts on resilience measured through three different metrics in four Italian central (Lazio, Marche, Umbria) and southern (Abruzzo) regions. These regions, and especially their mountain areas, form the macro-region of what is now commonly referred to as the "crater of the Central Italy 2016-17 earthquake". Aiming in the future at investigating also the resilience of the area to this natural disaster as soon as updated data will be released, our research project seeks to realise whether some lessons can be learnt from the past, specifically from the effects caused by the outbreak of the 2007-2008 crisis.

More precisely, our analysis focuses on: a) a different assessment of resilience resulting from the use of different variables for its computation; and b) the kind and level of resilience of the different areas moving along the urban gradient (from poles to ultra-peripheral areas). For the latter point (b), we adopt the classification of Italian municipalities as provided by SNAI, which is based on three breakdowns both for urban and inner areas.

Urban areas are split into 3 categories: A) "poles": single-municipality service provision centres; B) "intermunicipal poles": multi-municipality service provision centres, the main difference with A lying in their capacity to jointly (and not individually) provide education, transportation and health services; and C) their "urban belts": municipalities that are less than 20 minutes far from poles and intermunicipal poles. Inner areas are split into 3 classes as well: D) "intermediate": municipalities that are between 20 and 40 minutes far from poles and intermunicipal poles; E) "peripheral": from 40 to 75 minutes, and F) "ultra-peripheral": more than 75 minutes, areas (UVAL, 2014).

To perform the descriptive analysis, building on the reflections by Dubé and Polèse (2016), we use three different variables at the municipal level to proxy resilience: 1. population (Istat, Atlante Statistico dei Comuni); 2. employment (Istat, ASIA database) – as in Dubé and Polese (2016) – and 3. total individual income subject to taxation according to the normal progressive tax rates set forth

by the financial administration[1]. We were not able to also use GDP, since in the Italian context its estimation is not available at the municipal level.

The eighteen-year period has been further subdivided into three periods with respect to the outbreak of the Great Crisis: the pre-crisis period, between 2004 and 2007, the crisis period, between 2007 and 2009, and the post-crisis period, between 2009 and 2017. Regarding this last period a comment should be made. Even though it can be considered a quite long period after the Great Crisis to assess resilience, it is worth noting that Italy also suffered from the sovereign debt crisis in 2010-2011. The sovereign debt crisis, whose effects lasted until 2014, slowed down a merely embryonic and very fragile recovery process which eventually started only in 2015.

Although the three variables can be alternatively used to describe the resilience capacity of places, as is commonly found in the empirical literature on the topic, each of them can capture different dimensions of resilience, stressing different functions taking place at the local level. More in depth, population trends can be used to describe the capacity of a place to keep its inhabitants, thus pointing to the local/residential function; employment trends, since employees are recorded on the basis of the municipality where they do work, describe the job attractiveness of a place; and finally, total individuals' income denotes the trends in the purchasing power of a given territory.

These different aspects must be taken into account when performing a territorial analysis on resilience. For instance, it is important to consider that for some municipalities the residential function might be more important than attractiveness. In a functional perspective, in fact, considering the metric of local systems or cluster of municipalities, some places can be primarily specialised in hosting households whereas some other can play as local economic engines providing job opportunities. This means that in the first case resident population might be the most affected variable in the aftermath of the shock, whereas in the latter this might be the case for employment.

These metrics will be analysed and compared on the basis of sequential variations ($\Delta$) of annual mean growth, calculated as the geometric mean of annual variations through the following equations:

$$\Delta pop = \left( \frac{pop_{t+k}}{pop_t} \right)^{\frac{1}{k}} - 1 \qquad [1]$$

$$\Delta emp = \left( \frac{emp_{t+k}}{emp_t} \right)^{\frac{1}{k}} - 1 \qquad [2]$$

1. Because of data availability constraints related to "employment" we had to limit our analysis to the period 2004-2017.

$$\Delta \sum inc = \left( \frac{\sum inc_{t+k}}{\sum inc_t} \right)^{\frac{1}{k}} - 1 \qquad [3]$$

In equation [1] we consider the ratio between population at the end of the period ($t+k$) on the value of the population at the beginning of the period ($t$), we raise the result to the power of one divided by the period length ($k$) and we subtract one from the subsequent result.

In equations [2], [3] we perform the same calculation using the variables employment (*emp*), and the sum of individual income at municipal level ($\Sigma inc$)[2].

Building on and partially rearranging Dubé and Polèse (2016), the different trends (under the three scrutinized variables) followed by the selected municipalities can be classified into 8 categories. More specifically, we can consider two blocks of trends: a first block (1-4, see Table 1) includes different crisis and post-crisis trends following a pre-crisis negative variation, whereas in the second block (5-8, Table 1) the pre-crisis variation is positive.

## 4. Discussion of Results

In 2007, in Abruzzo, Lazio, Marche and Umbria there are 1003 municipalities, most of which are located in inner areas (67,5% against 32,5% belonging to core areas). In terms of population the situation is completely reversed: only 26,2% of the total population live in peripheral areas, while 73,8% in urban ones. Looking at the different typologies identified by SNAI, data show that the most common category is that of intermediate inner areas (43,4%), followed by urban belts (27,7%), peripheral inner areas (20,8%), ultra-peripheral (3,3%), poles (3,1%) and intermunicipal poles (1,7%) (See Statistical Appendix, Table A1 and A2).

A first stylised fact arising from the descriptive analysis revolves around one of the main why question inspiring this contribution. Does considering different variables affect the measure of resilience? Results show that, at the regional level, using population or employees or income leads to different results in terms of degrees of resilience (as identified in Table 1): a resistance trend when using population, or a severely hit trend, when employees or income are concerned. This is true for all the regions considered but Lazio, where employees and population followed a resistance path while total income proved to be severely hit by the crisis (Table 2).

The differences in terms of resilience arising from the choice of one of the three variables, however, become striking when considering the local level. Table 3, which reports the number of municipalities following the same trend independently from the variables used in assessing resilience, suggests that

2. Regional values of population, employment and individual income have been calculated by summing their respective municipal values. In the case of individual income, for the calculation of the regional value, we obviously considered the total amount of individual income at the municipal level and not the mean of the municipal individual income.

selecting different variables affects the measure of resilience. When considering population, employment and total income, in fact, only 48 municipalities (4,8% out of total) follow the same sequential variations, independently from the concerned variable.

Moreover, although the existence of some common macro-pattern related to pre-crisis, crisis and post-crisis periods, the choice of a given variable results in different territorial outcomes, both in the number and the typology of the concerned municipalities (Figures 1 and 2).

As for population trends, among the municipalities following a negative pre-crisis performance, which were 42% out of total, about half of them (208 units) were affected by a systemic declining (– – –) (Tables B, C and D, Statistical Appendix). It is worth noting that 90,1% of these municipalities belong to inner areas (Figure 1), a share which is quite higher than their relative weight on the total number of municipalities. The second most common trend was the one labelled as counter cyclical (– + –), which characterized 170 municipalities. Here again, the phenomenon has affected inner areas more than proportionally.

Concerning the municipalities that were following a positive growth path before the crisis (58% out of total), we find that the most common trends are resistance (+ + +, 302 units) and lagged shock (+ + –, 211 units). Unlike the first block, and particularly regarding resistance (+ + +), these trends are more common in all the typologies of urban areas (poles, intermunicipal poles, and belt areas).

From a regional perspective, each of the four regions behaved accordingly with the average outlined above described. The only difference concerns Umbria region, where systematically declining municipalities were substantially fewer than counter-cyclical ones (Figures 1 and 2).

When considering employment, the picture changes considerably. First of all, the difference between municipalities following a growth path and those following a declining path before the crisis is larger. Municipalities with a negative performance between 2004 and 2007, in fact, amount to 24,7%, which is about half of those showing a declining demographic trend (Tables B, C and D, Statistical Appendix).

Here again the trends with the highest frequencies are those characterised by a systemic declining path (– – –, 96 municipalities) and a counter cyclical one (– + –, 80 municipalities). As for the former, it affected more than proportionally the belt areas, whereas the counter cyclical trend is a feature of mostly all the three classes of inner areas.

Among the municipalities that experienced an employment growth before the crisis, the highest number of them followed the severely hit trend (+ – –), which affected more than proportionally all the typologies of urban areas. On the contrary, the lagged shock trend (+ + –), with 214 municipalities, is not linked with any specific typology of municipalities (Tables B, C and D, Statistical Appendix).

*Table 1 – Pre-crisis, Crisis and Post-crisis Resilience Trends*

| | Trend | Periods (2004-2007) | (2007-2009) | (2009-2017) |
|---|---|---|---|---|
| 1 | Systemic declining | – | – | – |
| 2 | Turnaround | – | – | + |
| 3 | Counter cyclical | – | + | – |
| 4 | Positive jolt | – | + | + |
| 5 | Resistance | + | + | + |
| 6 | Severely hit | + | – | – |
| 7 | Standard resilience | + | – | + |
| 8 | Lagged shock | + | + | – |

*Note*: + indicates positive sequential variations of annual mean growth; – the opposite

*Source*: Authors' elaboration building on Dubé and Polèse (2016)

*Table 2 – Resilience Trends per Region and Variable*

| Region | Population | Employees | Income |
|---|---|---|---|
| Umbria | + + + | + – – | + – – |
| Marche | + + + | + – – | + – – |
| Lazio | + + + | + + + | + – – |
| Abruzzo | + + + | + – – | + – – |

*Source:* Authors' elaboration on Istat and MEF data

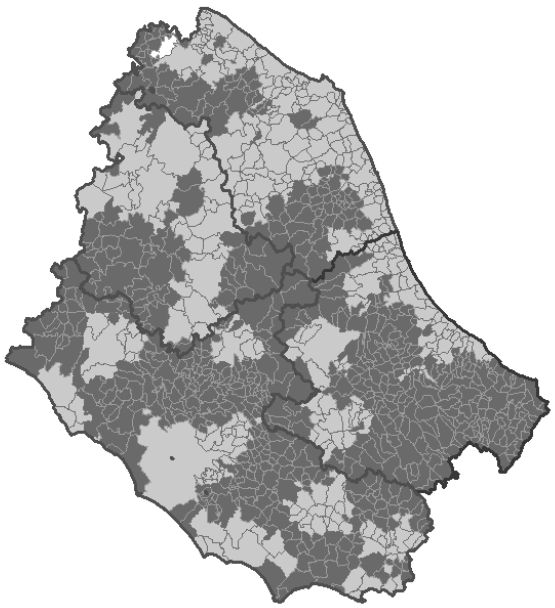
*Table 3 – Resilience Trends along the Peripherality Gradient*

| | Urban areas | | Inner areas | | Total |
|---|---|---|---|---|---|
| | Poles | Belt areas | Intermediate areas | Peripheral areas | |
| + – – | 0 | 1 | 3 | 2 | 6 |
| + – + | 0 | 0 | 2 | 0 | 2 |
| + + – | 0 | 10 | 15 | 4 | 29 |
| + + + | 1 | 4 | 4 | 2 | 11 |
| Total | 1 | 15 | 24 | 8 | 48 |
| % on total municipalities | | | | | 4,8 |

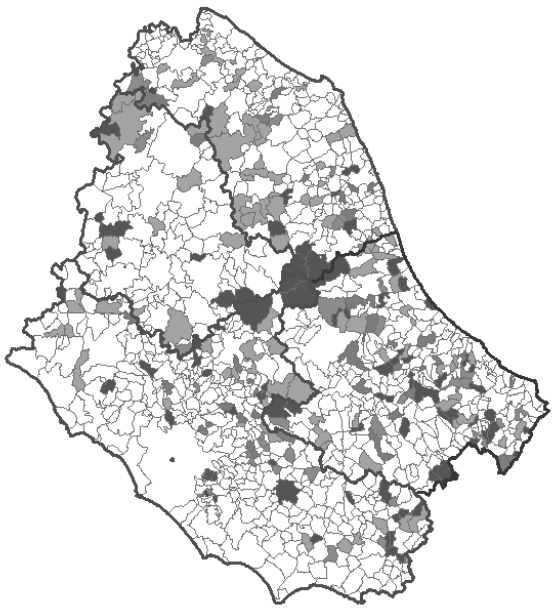
*Note*: Table 3 reports only the typologies of municipalities within which at least one municipality followed the same trend independently from the concerned variable.

*Source*: Authors' elaboration on Istat and MEF data

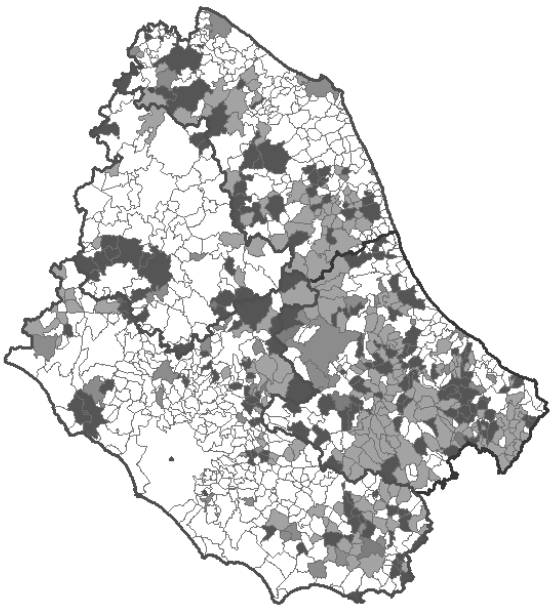
*Figure 1 – Post-crisis Trends Following a Pre-crisis Negative Variation*



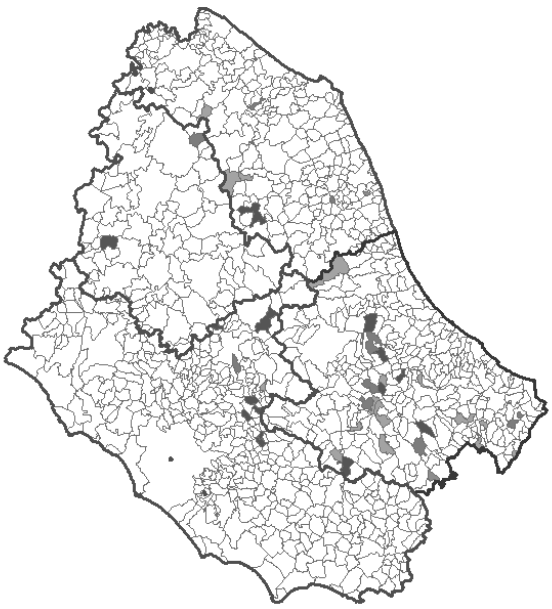
*Inner areas: dark grey; Urban areas: grey*



*Employees*



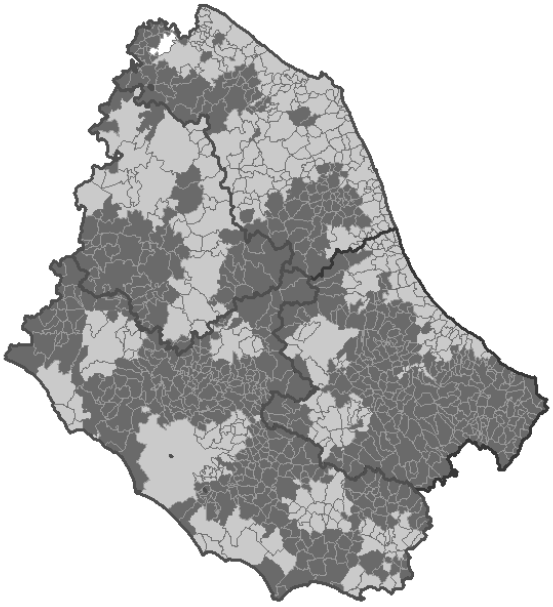
*Population*



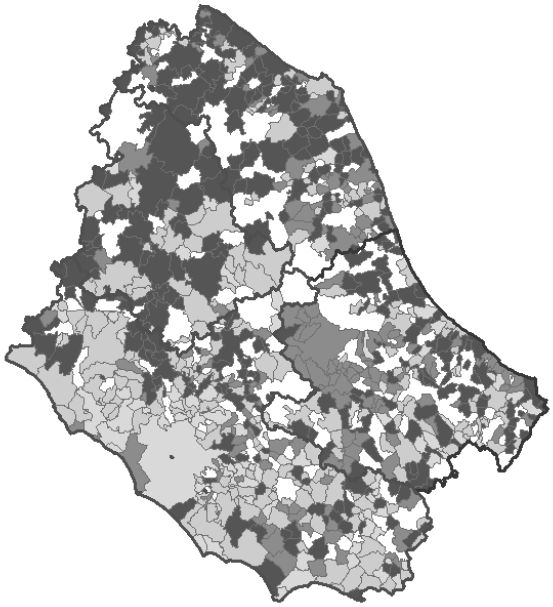
*Income*

*Legend*: – – – – – + – + – – + +

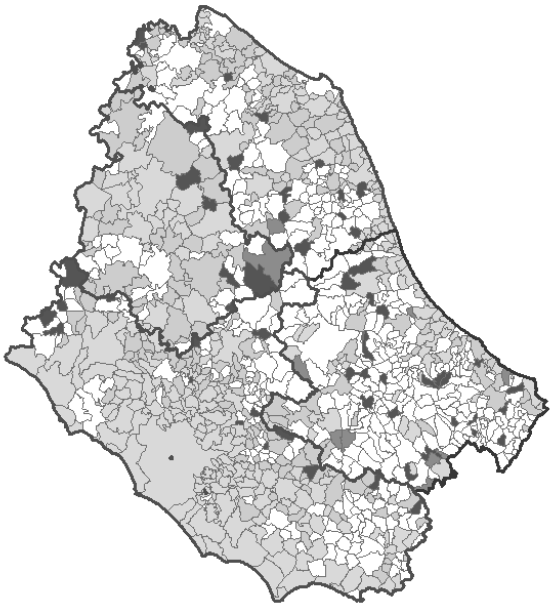
*Figure 2 – Post-crisis Trends Following a Pre-crisis Positive Variation*



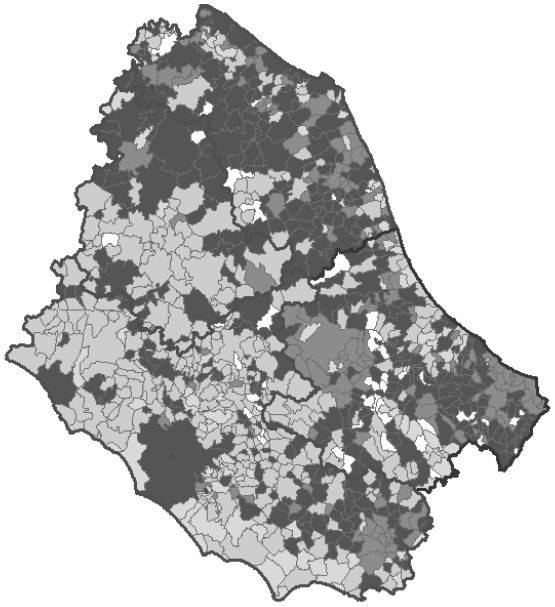
*Inner areas: dark grey; Urban areas: grey*



*Employees*



*Population*



*Income*

*Legend*: + – – + – + + + – + + +

Unlike demographics trends, some differences are found across the four regions when considering employment. While Marche and Umbria followed the average trends, some peculiarities distinguish Abruzzo and Lazio. In both regions, in fact, the highest number of municipalities followed the counter cyclical path (– + –). Furthermore, in Abruzzo, unlike the general average and in common with Marche region, we find that the second trend in terms of frequencies was the standard resilience path instead of the lagged shock one (Figures 1 and 2). It will be worth exploring whether this result is related to both the L'Aquila earthquake in 2009 and to the Central Italy earthquake in 2016-17 and to the possible effects arising from the implementation of targeted local policies for recovery.

The analysis of total income trends at the municipal level produces a further different geography. In this case the number of municipalities which followed a declining path before the crisis is a minority, amounting to only 4,3% out of total. As in the previous cases, the most common trends we found are the systemic declining path (– – –, 17 municipalities), which had a more than proportional incidence on peripheral and ultra-peripheral areas, and the counter cyclical one (– + –, 15 municipalities), which had a more than proportional incidence on intermediate and peripheral areas. Finally, regarding the municipalities that experienced a total income growth before the crisis, we find the same patterns found for employment, namely with severely hit trend (+ – –) and lagged shock trend (+ + –) as the most common. In the first case the incidence was higher in poles and intermunicipal poles, but also in peripheral and ultra-peripheral areas. In the second case, the incidence was higher only in peripheral and ultra-peripheral areas.

Finally, looking at the regional scale, the use of the total income variable produces a quite heterogenous outcome. Municipalities of Lazio and Umbria preferentially followed the lagged shock (+ + –) and the severely hit (+ – –) patterns in the same order. In Abruzzo and Marche region, on the contrary, the most common trends were respectively the standard resilience (+ – +) and the severely hit sequences (+ – –) (Figures 1 and 2).

## 5. Concluding Remarks

Operationalizing the notion of resilience remains a very complex issue. This, however, in our view, does not undermine the explicative power of the concept in examining and interpreting the different reactions of territories to more or less unexpected changes. If this is true, and also in light of a growing abuse of the term outside the scientific debate which might weaken it, much effort is still needed academic-wise in making resilience an effective analytical tool through which producing usable knowledge for policy-making. This is even more compelling due to the huge global shock carried out by the ongoing COVID-19 pandemic, which has made increasingly salient the necessity of a workable definition of resilience (think, for instance, of the National Recovery and Resilience

Plan – PNRR, the name of the Italian investment program within the Next Generation EU, the European plan to respond to the pandemic crisis).

In the attempt to contribute to this endeavour and enrich the literature on the topic, in this article we resume the work made by other scholars in this direction and we add some further elements of reflection on the issue of the empirical investigation of resilience. Engaging with and intersecting two fundamental defining questions when dealing with it – that is the space/scale-related one, i.e. "resilience of what?", and the measurement-related one, i.e. "resilience through what indicator?" – we assess the reaction of different territories located in four central-southern Italian regions (Marche, Umbria, Lazio and Abruzzo) in the face of the 2007-2008 economic-financial crisis. In doing so, we consider the peripherality gradient (made up of six classes from core to ultra-peripheral areas) and three metrics (population, employment and income) in order to ultimately understand which dimension of resilience is relevant to which context.

First of all, as largely expected, the use of different indicators to proxy resilience produces different outcomes. Broadly speaking, i.e. for three of the regions under scrutiny out of four, Lazio, the only one with a metropolitan city within its boundaries, population variation is less sensitive to the recessionary disturbance, hence through this lens the territories under scrutiny are globally resistant. However, if their resilience is measured through employment or income, they seem to be in general severely hit by the shock. In Lazio, while using population and employment as proxies, municipalities proved to be mostly resistant, when looking at income they appear to be severely impacted by the crisis. This very first evidence leads us to investigate further the role of context in explaining resilience. As is intuitively inferable, the appropriateness of the metric used clearly depends on the nature of the stress which is considered (namely, if it is a natural disaster or a recession, for example), but also on the socio-economic characteristics of places. In fact, when coming at the spatial variation of the three "resiliencies" that we explored along the peripherality gradient, as interpreted in this contribution, we find that this is rather large.

As regards resilience measured through population, the territorial factor plays a key role. If the pre-crisis trend was negative, as is mostly the case for inner areas, a systemic decline is detected. Conversely, in the case of a positive pre-crisis population growth, resistance is the most common trend which mainly characterizes core (urban) areas.

Resilience measured through employment proves to be more sensitive in terms of intensity and context variation. Following a pre-shock negative performance, urban belts kept on declining while inner areas showed a counter cyclical trend. In the case of growth trends before the Great Recession, most of municipalities falling in this class, mainly urban areas, were severely affected by the economic stress.

Resilience measured through income displays further specific territorial features, starting from a more positive initial condition, with few municipalities

negatively performing in the pre-crisis period. High-performing territories show the same patterns as the ones detected through the employment metric in the aftermath of the recession, with core areas largely impacted by it and inner areas showing a lag in displaying the effects of the crisis (as also found in Urso *et al*., 2019).

The differing responses assessed through different metrics result therefore in a heterogeneous geography which deserves further attention to be unveiled in its underlying determinants. Given the multiple layers it is made up of, interpretations of results could thus be rather complex. What our findings definitely highlight is the significance of context in the examination of the ability of territories to resist recessionary disturbances, especially when aiming to account for the cases when these combine with vulnerability conditions as the ones connected to peripherality. The evidence that the magnitude of a shock, or the resilience ability of a region, are highly dependent on the type of measurement and of context, calls for a scientific reflection on place-specific indicators better able to capture the peculiarities of the local reaction to more or less abrupt changes, hence informing space-sensitive both preparedness and post-shock recovery policies.

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## Sommario

### “Resilienze” dell’Italia centro-meridionale alla Grande Crisi lungo il gradiente di perifericità

*La nozione di resilienza è stata ampiamente studiata negli ultimi due decenni nel campo delle scienze regionali. In letteratura sono state individuate diverse dimensioni per indagare la resilienza dei sistemi territoriali. L’assunto da cui muove questa riflessione è che la scelta delle variabili utilizzate per descriverla non sia neutra in termini di valutazione della capacità di resilienza, poiché questa può dipendere anche dalla diversa struttura socio-economica dei diversi contesti territoriali. Utilizzando dati a livello comunale sulla popolazione, sull’occupazione e sul reddito delle persone fisiche dal 2004 al 2017 delle regioni Abruzzo, Lazio, Marche ed Umbria, la nostra analisi intende fornire evidenza empirica alle ipotesi formulate rispetto alla Grande Crisi del 2007-2008, contribuendo così a produrre conoscenza sulla valutazione della resilienza. Questo obiettivo assume una rilevanza particolare rispetto alle aree periferiche, che, nella maggior parte dei casi, hanno subito fenomeni di declino socio-economico prolungato.*

## Statistical Appendix

*Table A1 – Number of Municipalities per Region and SNAI Classification*

| | | *Poles* | *Inter-municipal poles* | *Belt areas* | *Inter-mediate areas* | *Peripher-al areas* | *Ultra-peripher-al areas* | *Total* |
|---|---|---|---|---|---|---|---|---|
| Abruzzo | N. | 6 | 4 | 65 | 115 | 84 | 31 | 305 |
| | % | 2,0 | 1,3 | 21,3 | 37,7 | 27,5 | 10,2 | 100 |
| Lazio | N. | 10 | 0 | 78 | 205 | 83 | 2 | 378 |
| | % | 2,6 | 0,0 | 20,6 | 54,2 | 22,0 | 0,5 | 100 |
| Marche | N. | 11 | 8 | 109 | 75 | 25 | 0 | 228 |
| | % | 4,8 | 3,5 | 47,8 | 32,9 | 11,0 | 0,0 | 100 |
| Umbria | N. | 4 | 5 | 26 | 40 | 17 | 0 | 92 |
| | % | 4,3 | 5,4 | 28,3 | 43,5 | 18,5 | 0,0 | 100 |

*Table A2 – Population per Region and SNAI Classification*

| | | *Poles* | *Inter-municipal poles* | *Belt areas* | *Inter-mediate areas* | *Peripher-al areas* | *Ultra-peripher-al areas* | *Total* |
|---|---|---|---|---|---|---|---|---|
| Abruzzo | N. | 362619 | 67005 | 415824 | 330447 | 125240 | 21112 | 1322247 |
| | % | 27,4 | 5,1 | 31,4 | 25,0 | 9,5 | 1,6 | 100 |
| Lazio | N. | 3399140 | 0 | 881741 | 1374679 | 238089 | 4475 | 5898124 |
| | % | 57,6 | 0,0 | 14,9 | 23,3 | 4,0 | 0,1 | 100 |
| Marche | N. | 568524 | 134053 | 626010 | 182087 | 27381 | 0 | 1538055 |
| | % | 37,0 | 8,7 | 40,7 | 11,8 | 1,8 | 0,0 | 100 |
| Umbria | N. | 373330 | 72166 | 221701 | 190436 | 31275 | 0 | 888908 |
| | % | 42,0 | 8,1 | 24,9 | 21,4 | 3,5 | 0,0 | 100 |

*Table B – Crosstab between Typology of Municipalities and Total Income Trends*

| | | *Poles* | *Inter-municipal poles* | *Belt areas* | *Inter-mediate areas* | *Peripheral areas* | *Ultra-peripheral areas* | *Total* |
|---|---|---|---|---|---|---|---|---|
| - - - | N. | 0 | 0 | 2 | 6 | 8 | 1 | 17 |
| | % inc. | 0,0% | 0,0% | 11,8% | 35,3% | 47,1% | 5,9% | 100% |
| | % mun. | 0,0% | 0,0% | 0,7% | 1,4% | 3,8% | 3,0% | 1,7% |
| - - + | N. | 0 | 0 | 2 | 2 | 5 | 0 | 9 |
| | % inc. | 0,0% | 0,0% | 22,2% | 22,2% | 55,6% | 0,0% | 100% |
| | % mun. | 0,0% | 0,0% | 0,7% | 0,5% | 2,4% | 0,0% | 0,9% |
| - + - | N. | 0 | 0 | 2 | 8 | 5 | 0 | 15 |
| | % inc. | 0,0% | 0,0% | 13,3% | 53,3% | 33,3% | 0,0% | 100% |
| | % mun. | 0,0% | 0,0% | 0,7% | 1,8% | 2,4% | 0,0% | 1,5% |
| - + + | N. | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| | % inc. | 0,0% | 0,0% | 50,0% | 0,0% | 50,0% | 0,0% | 100% |
| | % mun. | 0,0% | 0,0% | 0,4% | 0,0% | 0,5% | 0,0% | 0,2% |
| + - - | N. | 20 | 10 | 92 | 159 | 84 | 23 | 388 |
| | % inc. | 5,2% | 2,6% | 23,7% | 41,0% | 21,6% | 5,9% | 100% |
| | % mun. | 64,5% | 58,8% | 33,1% | 36,6% | 40,2% | 69,7% | 38,7% |
| + - + | N. | 2 | 2 | 57 | 65 | 23 | 5 | 154 |
| | % inc. | 1,3% | 1,3% | 37,0% | 42,2% | 14,9% | 3,2% | 100% |
| | % mun. | 6,5% | 11,8% | 20,5% | 14,9% | 11,0% | 15,2% | 15,4% |
| + + - | N. | 8 | 4 | 77 | 162 | 69 | 4 | 324 |
| | % inc. | 2,5% | 1,2% | 23,8% | 50,0% | 21,3% | 1,2% | 100% |
| | % mun. | 25,8% | 23,5% | 27,7% | 37,2% | 33,0% | 12,1% | 32,3% |
| + + + | N. | 1 | 1 | 45 | 33 | 14 | 0 | 94 |
| | % inc. | 1,1% | 1,1% | 47,9% | 35,1% | 14,9% | 0,0% | 100% |
| | % mun. | 3,2% | 5,9% | 16,2% | 7,6% | 6,7% | 0,0% | 9,4% |
| Total | N. | 31 | 17 | 278 | 435 | 209 | 33 | 1003 |
| | % inc. | 3,1% | 1,7% | 27,7% | 43,4% | 20,8% | 3,3% | 100% |
| | % mun. | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

*Table C – Crosstab between Typology of Municipalities and Employment Trends*

| | | *Poles* | *Inter-municipal poles* | *Belt areas* | *Intermediate areas* | *Peripheral areas* | *Ultra-peripheral areas* | *Total* |
|---|---|---|---|---|---|---|---|---|
| - - - | N. | 1 | 1 | 35 | 43 | 13 | 3 | 96 |
| | % emp. | 1,0% | 1,0% | 36,5% | 44,8% | 13,5% | 3,1% | 100% |
| | % mun. | 3,2% | 5,9% | 12,6% | 9,9% | 6,2% | 9,1% | 9,6% |
| - - + | N. | 0 | 0 | 11 | 20 | 5 | 2 | 38 |
| | % emp. | 0,0% | 0,0% | 28,9% | 52,6% | 13,2% | 5,3% | 100% |
| | % mun. | 0,0% | 0,0% | 4,0% | 4,6% | 2,4% | 6,1% | 3,8% |
| - + - | N. | 0 | 1 | 13 | 38 | 23 | 5 | 80 |
| | % emp. | 0,0% | 1,3% | 16,3% | 47,5% | 28,8% | 6,3% | 100% |
| | % mun. | 0,0% | 5,9% | 4,7% | 8,7% | 11,0% | 15,2% | 8,0% |
| - + + | N. | 0 | 0 | 4 | 18 | 10 | 2 | 34 |
| | % emp. | 0,0% | 0,0% | 11,8% | 52,9% | 29,4% | 5,9% | 100% |
| | % mun. | 0,0% | 0,0% | 1,4% | 4,1% | 4,8% | 6,1% | 3,4% |
| + - - | N. | 13 | 10 | 98 | 104 | 55 | 10 | 290 |
| | % emp. | 4,5% | 3,4% | 33,8% | 35,9% | 19,0% | 3,4% | 100% |
| | % mun. | 41,9% | 58,8% | 35,3% | 23,9% | 26,3% | 30,3% | 28,9% |
| + - + | N. | 5 | 3 | 46 | 62 | 37 | 1 | 154 |
| | % emp. | 3,2% | 1,9% | 29,9% | 40,3% | 24,0% | 0,6% | 100% |
| | % mun. | 16,1% | 17,6% | 16,5% | 14,3% | 17,7% | 3,0% | 15,4% |
| + + - | N. | 9 | 2 | 53 | 98 | 45 | 7 | 214 |
| | % emp. | 4,2% | 0,9% | 24,8% | 45,8% | 21,0% | 3,3% | 100% |
| | % mun. | 29,0% | 11,8% | 19,1% | 22,5% | 21,5% | 21,2% | 21,3% |
| + + + | N. | 3 | 0 | 18 | 52 | 21 | 3 | 97 |
| | % emp. | 3,1% | 0,0% | 18,6% | 53,6% | 21,6% | 3,1% | 100% |
| | % mun. | 9,7% | 0,0% | 6,5% | 12,0% | 10,0% | 9,1% | 9,7% |
| Total | N. | 31 | 17 | 278 | 435 | 209 | 33 | 1003 |
| | % emp. | 3,1% | 1,7% | 27,7% | 43,4% | 20,8% | 3,3% | 100% |
| | % mun. | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

*Table D – Crosstab between Typology of Municipalities and Population Trends*

| | | *Poles* | *Inter-municipal poles* | *Belt areas* | *Intermediate areas* | *Peripheral areas* | *Ultra-peripheral areas* | *Total* |
|---|---|---|---|---|---|---|---|---|
| - - - | N. | 3 | 0 | 16 | 100 | 70 | 19 | 208 |
| | % pop. | 1,4% | 0,0% | 7,7% | 48,1% | 33,7% | 9,1% | 100% |
| | % mun. | 9,7% | 0,0% | 5,8% | 23,0% | 33,5% | 57,6% | 20,7% |
| - - + | N. | 0 | 0 | 1 | 3 | 1 | 1 | 6 |
| | % pop. | 0,0% | 0,0% | 16,7% | 50,0% | 16,7% | 16,7% | 100% |
| | % mun. | 0,0% | 0,0% | 0,4% | 0,7% | 0,5% | 3,0% | 0,6% |
| - + - | N. | 1 | 2 | 36 | 77 | 49 | 5 | 170 |
| | % pop. | 0,6% | 1,2% | 21,2% | 45,3% | 28,8% | 2,9% | 100% |
| | % mun. | 3,2% | 11,8% | 12,9% | 17,7% | 23,4% | 15,2% | 16,9% |
| - + + | N. | 3 | 1 | 8 | 20 | 8 | 1 | 41 |
| | % pop. | 7,3% | 2,4% | 19,5% | 48,8% | 19,5% | 2,4% | 100% |
| | % mun. | 9,7% | 5,9% | 2,9% | 4,6% | 3,8% | 3,0% | 4,1% |
| + - - | N. | 0 | 0 | 11 | 23 | 17 | 5 | 56 |
| | % pop. | 0,0% | 0,0% | 19,6% | 41,1% | 30,4% | 8,9% | 100% |
| | % mun. | 0,0% | 0,0% | 4,0% | 5,3% | 8,1% | 15,2% | 5,6% |
| + - + | N. | 0 | 0 | 2 | 3 | 4 | 0 | 9 |
| | % pop. | 0,0% | 0,0% | 22,2% | 33,3% | 44,4% | 0,0% | 100% |
| | % mun. | 0,0% | 0,0% | 0,7% | 0,7% | 1,9% | 0,0% | 0,9% |
| + + - | N. | 2 | 5 | 67 | 102 | 34 | 1 | 211 |
| | % pop. | 0,9% | 2,4% | 31,8% | 48,3% | 16,1% | 0,5% | 100% |
| | % mun. | 6,5% | 29,4% | 24,1% | 23,4% | 16,3% | 3,0% | 21,0% |
| + + + | N. | 22 | 9 | 137 | 107 | 26 | 1 | 302 |
| | % pop. | 7,3% | 3,0% | 45,4% | 35,4% | 8,6% | 0,3% | 100% |
| | % mun. | 71,0% | 52,9% | 49,3% | 24,6% | 12,4% | 3,0% | 30,1% |
| Total | N. | 31 | 17 | 278 | 435 | 209 | 33 | 1003 |
| | % pop. | 3,1% | 1,7% | 27,7% | 43,4% | 20,8% | 3,3% | 100% |
| | % mun. | 100% | 100% | 100% | 100% | 100% | 100% | 100% |