Socio-economic characteristics of resilient localities – experiences from Slovenia

Lucija Lapuh

ABSTRACT
The concept of resilience is used to refer to a territory’s capability to withstand recession and recover afterwards. This paper explores what types of localities were most resilient to the 2008 economic recession due to their socio-economic structure. Resilience was defined on the basis of a business cycle as the recovery to pre-recession value and is measured with the change in gross value added per employee by municipality in Slovenia (LAU 2), and the change in the registered unemployment rate. Descriptive statistics were used to determine the most resilient Slovenian municipalities’ socio-economic structure before the recession. It was found out that specialization, export and transport infrastructure had the greatest influence on local resilience, while economic development and social structure partly influenced it. This paper adds to the discussion of the vagueness of the concept of resilience by clarifying its definition and measurement. Findings about socio-economic structure’s influence on resilience are important for academics as well as practitioners who contribute to municipality’s ability to avoid or mitigate a future recession.

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Resilience; resistance; economic recession; economic downturn; socio-economic structure; regional planning; municipality; Slovenia

INTRODUCTION
The concept of resilience has plenty of meanings and uses in different fields. This research focuses on the economic dimension of resilience which is used to refer to territorial capability to withstand recession and recover afterwards (Martin, 2012). This research contributes to methodological, contextual and theoretical issues regarding resilience. Examining resilience at the local level was neglected in previous studies. It contributes to a better understanding of resilience’s factors, by not only focusing on pre-recession economic factors but also considering the social characteristics.

The recession in 2008 caused an economic downturn and an increase in the number of unemployed people across Europe, including Slovenia, on which this study focuses. This small heterogeneous country, which was severely affected by the recession, has not been used as a case study to
investigate resilience so far. Different pathways and timings of the recovery among municipalities inspired us to study Slovenia as a case study in order to explore characteristics of municipalities that have recovered so far.

Resilience is usually examined on the regional level, but in this research it is examined on the local level. The Slovenian territory is according to standard classification of territorial units divided on the regional level into two cohesion regions (NUTS 2) and 12 statistical or developmental regions (NUTS 3). But as Slovenia is a relatively small country, with around two million inhabitants, and geographically very diverse, the regional level is not suitable for the analysis of the socio-economic structure. Therefore, we examined the concept of resilience on the local level of 212 municipalities (LAU 2).

The basic research question addressed in this paper is how pre-recession municipalities’ socio-economic structure influences their resilience. On the basis of the literature review socio-economic factors were determined to describe municipal characteristics before the recession. Municipalities were classified according to resilience, which was measured by gross value added (GVA) per employee and the registered unemployment rate.

THEORIZING THE CONCEPT OF ECONOMIC RESILIENCE

Regional resilience is a concept used in geography, among other uses, to describe regional response to the recession and recovery afterwards (Christopherson, Michie, & Tyler, 2010). Three interpretations of resilience exist in the literature. First, the engineering one, explains resilience as a resistance to shocks and stability near equilibrium (Martin, 2012). Recovery is measured with the time it takes to return to the previous state following disturbance (Folke, 2006). Second, the ecological one, the magnitude of a shock that a region can absorb (Martin, 2012) is important before a region is moved to another stable state (Folke, 2006). Third, the adaptive resilience (Martin, 2012) or social–ecological resilience (Folke, 2006) is regional ability to restructure, self-organize and adapt. A framework for analysing regional economic resilience is, according to Simmie and Martin (2010), an evolutionary approach to regional resilience, which emphasizes adaptation and change as key processes in the development of regional economies. An evolutionary approach is not denying the possible return to a pre-existing equilibrium state or to move to a new one, which belongs to equilibrist and ecological understandings of resilience (Simmie & Martin, 2010).

There is neither a unified definition of resilience nor methodology for its measurement. This paper follows an adaptive interpretation, as resilience is permanently changeable and a dynamic process, and defines local economic resilience as the ability of a local economy to withstand, absorb, or overcome an external economic shock (ESPON, 2014; Raco & Street, 2012) and to recover from it relatively quickly (Augustine, Wolman, Wial, & McMillen, 2013). Two distinct schools of analysis can be identified in the literature on measuring resilience. The first one seeks to create an index (e.g., Briguglio, Cordina, Farrugia, & Vella, 2008; Ekosgen, 2009; Graziano, 2013; Martin, 2012), the second approach takes resilience as a dependent variable and seeks to identify the factors that influence it (e.g., Augustine et al., 2013; Chapple & Lester, 2007; ESPON, 2014). Surveys examining resilience vary according to the spatial level, field of study, hypothesis, definition of resilience, methods, factors and indicators used, all of which makes existing indexes imprecise in forecasting regional resilience.

How territorial socio-economic characteristics influence regions’ ability to recover quickly, has been studied on a national and a subnational level. Augustine et al. (2013) found out on the metropolitan-area level that conditions prior to the recession were not associated with resilience; consecutively they proposed additional enquiries.
Table 1. Indicators defining the socioeconomic structure of municipalities.

| Factor                  | Indicator                                                                 |
|-------------------------|---------------------------------------------------------------------------|
| Economic development    | Gross value added per employee [EUR]                                      |
|                         | Gross income tax base per capita [EUR]                                    |
|                         | Number of businesses per 1,000 inhabitants                                |
|                         | Number of workers per business                                           |
|                         | Gross investment per 1,000 inhabitants [EUR]                              |
|                         | Number of big businesses per 10,000 inhabitants                          |
|                         | Net profit or net loss of companies according to the number of companies  |
| Specialization          | Specialization ratio                                                      |
| Export orientation      | Share of net revenues from sales on international markets in total revenues [%] |
| Social structure        | Density of population (inhabitant/km²)                                   |
|                         | Unemployment rate [%]                                                     |
|                         | Aging index                                                               |
|                         | Share of employed people in the entire population [%]                    |
|                         | Labour migration index                                                    |
|                         | University graduates per 1,000 inhabitants                                |
|                         | Natural change of population: rate of natural increase per 1,000 inhabitants |
|                         | Net migration rate per 1,000 inhabitants                                  |
|                         | Net internal migration rate (between municipalities) per 1,000 inhabitants |
| Transport infrastructure | Density of motorways per 100 km² [km/km²]                                |
|                         | Average travel time with a car to the highway [min]                      |
|                         | Share of people living more than 500 metres from the public transport stations [%] |

Source: Agency of the Republic of Slovenia for Public Legal Records & Related Services, 2014, 2015a, 2015b; Gabrovec et al., 2008; Kozina, 2010; Statistical Office of the Republic of Slovenia, 2016; Tax administration of the Republic of Slovenia, 2014.

*Data for 2008 were used, except for two transport infrastructure indicators due to data accessibility for 2005 and 2006.

METHODOLOGY: CALCULATING MUNICIPAL RESILIENCE AND DETERMINING THE SOCIO-ECONOMICAL CHARACTERISTICS

First, the municipal socio-economic structure before the last recession was determined, second, municipal resilience was calculated, and, third, socio-economic characteristics of the most resilient municipalities were verified.

Slovenian municipalities were classified with cluster analysis into five types according to their socio-economic structure (economic development, specialization, export orientation, social structure, transport infrastructure) through 21 indicators (data from official national statistical and professional sources) presented in the Table 1. Indicators were selected according to the literature on regional resilience and the importance of factors influencing resilience (Augustine et al., 2013; Briguglio et al., 2008; Diodato & Weterings, 2012; ESPON, 2014; Hundt & Holtermann, 2014; Martin, 2012; Sagan & Masik, 2014). Apart from afore-mentioned factors resilience can also be examined by including an environmental factor. Briguglio et al. (2008) were aware of taking an ecological point of view into consideration, but due to data unavailability it was not considered. Environmental aspects, which are important during a restructuring of the economy, were also not included in research by Chapple and Lester (2007), Hill, Wial, and Wolman (2008) and Hundt and Holtermann (2014).
Second, resilience, which refers to the latter half of the business cycle (ESPON, 2014), was defined as the recovery to pre-recession value and is measured with the change in GVA per employee by the municipality, and the change in registered unemployment rate. The number of people unemployed refers to the permanent residence (Statistical office …, 2016) of those who have registered at the Employment service of Slovenia.

The business cycle’s extreme points – peak, which ends growth, and trough, which ends a recession – were identified and taken in consideration for every municipality. Being aware that the adaptive (Martin, 2012) interpretation of resilience emphasizes non-linear dynamics that concerns the capacity for renewal, re-organization, innovation and development, this analysis builds on the engineering conceptualization of resilience with static attractors for quantitative measuring of localities’ resilience to bounce back to the former peak. Data were included from 2006 to last available at the time of the research – 2013 for GVA per employee and 2014 for the registered unemployment rate. Years of peaks and troughs varied between municipalities. Most of municipalities experienced a peak in 2009, while a year of recovery differs between them.

Municipalities were classified according to recovery following the recession into five types presented in the Table 2.

Resilient municipalities are those which were resistant to recession or had recovered after it, municipalities that did not reach the same level of development as before the shock are non-resilient. Municipalities of the same or higher GVA per employee after recession cannot be considered resistant, as they lost economically.

Third, as the municipalities were really diverse according to their socio-economic structure, statistical analysis (contingency tables, analysis of variance (ANOVA) and logistic regression) could not satisfactorily explain the resilience factors. For this reason average values of indicators by municipal resilience types were analysed with descriptive statistics.

The study then determined the characteristics of the most resilient Slovenian municipalities where unemployment has almost not decreased yet despite the recession. Socio-economic characteristics of resilient Slovenian municipalities prior to the recession, which were examined as a case study, were the main point of interest.

Measuring resilience in Slovenia at a later time after the recession could give us different results, so one should be careful with generalizing the evidence provided in this paper. We can learn from the result that socio-economic structure prior to the recession influences localities’ ability to be resilient to it.

**CHARACTERISTICS OF RESILIENT SLOVENIAN MUNICIPALITIES**

More than half of Slovenian municipalities were resilient measured by GVA per employee (Figure 1) and two (Gorišnica and Vitanje) measured by the registered unemployment rate. Municipalities from western Slovenia recovered better than those from the eastern part of the country.
Despite the recovery of the economy, the reduction of the unemployed had barely occurred at the time of the analysis. For this reason average values of indicators by municipal resilience’s types only measured by GVA per employee were analysed with descriptive statistics and presented below. Slovenian municipalities, which were not the most developed, were resilient. The municipalities with competitive companies of different sizes were found to be more resilient. The companies in resilient municipalities were both profitable and the biggest employers as well.

Specialization reduced resilience, whereas greater export orientation increased it. Resilient municipalities were prevalingly densely populated, had the lower registered unemployment rate, more job vacancies, a more favourable demographic structure, a well-educated population and more immigration before the recession.

More accessible municipalities, close to traffic corridors (northwest-southeast and southwest-northeast) were resilient – good road infrastructure, better access to the freeway, expressway interchanges and public transport stops contributed to resilience. Municipalities on the border were less resilient.

**DISCUSSING THE CONCEPT OF LOCAL RESILIENCE AND FACTORS INFLUENCING IT**

The discussion draws attention to the vagueness of the concept of resilience in terms of both its definition and measurement. Resilience means that besides the recovery of the economy employment also increases, but in Slovenia the unemployment rate remained high. The paper demonstrates that the business cycle approach of measuring resilience is suitable for the local level. As with every process according to Sagan and Masik (2014) full recognition of local resilience to the recession is only possible retrospectively. According to Martin (2012) regional resilience
has been changing over time not only because of the differences of recessions’ characteristics but also as factors which contribute to resilience influence the results and their generalization. As territories are constantly subject to external shocks it is important to know what factors contribute to resilience.

The aim of this study has been to define resilient localities’ socio-economic characteristics with the case study of Slovenian municipalities. Regarding economic characteristics this research found out, confirming the insights from previous research (ESPON, 2014), that entrepreneurship was promoted in the resilient municipalities and that the companies in these municipalities were profitable. Slovenian municipalities which were not the most developed, were resilient, which is contrary to Hundt and Holtermann’s (2014) findings on the regional level which prove that successful economies are more resilient. Findings on the size of companies were for Slovenian municipalities contrary to Sagan and Masik’s (2014) finding on the regional level which prove that small companies react faster to recession than large companies. Less specialized Slovenian municipalities were resilient, which confirmed the findings of previous research on resilience (Martin, 2012; Hundt & Holtermann, 2014; ESPON, 2014; Raco & Street, 2012).

Resilient municipalities in Slovenia were also export oriented. Export orientation enabled firms to operate and produce goods and services further, despite the recession. According to Augustine et al. (2013) it is important that firms export new products and services and export to new markets (ESPON, 2014).

The research also confirms that urban centres and more accessible municipalities are more resilient (ESPON, 2014), but demonstrates the opposite regarding immigration in resilient municipalities. Finally, it was found that, before the recession, resilient municipalities had more immigration than emigration (the highest net immigration rate).

CONCLUSIONS

The objective of this paper was to explore how municipalities’ pre-recession socio-economic structure influences their resilience. The findings confirmed that local resilience in Slovenia depended on specialization, export orientation, and transport infrastructure prior to the recession. Local resilience partly depended on economic development, and social structure prior to the recession.

These findings shed new light on the scholarly discussion on local resilience to economic crises by clarifying that it is not only about resistance to the recession but also recovery after it to restructure, adapt, and renew localities’ socio-economic structure. The research also offers important lessons for policy-makers, local leaders, businesses and communities on what makes municipalities able to avoid or mitigate the negative impacts of a future recession. The findings suggest that to achieve greater local resilience to future crises, territorial policy should dedicate greater attention to entrepreneurship and ensure a diverse business structure as well as a stable development and export orientation of the economy. To this aim, territorial policy should focus on stimulating job creation, access to education, and good transport accessibility.

The consequences of the recession are still present in Slovenia and unemployment remains high in the majority of municipalities. The limitation of this study is the lack of comparable long-term data series. Thus, a long-term investigation, adopting an evolutionary economic geography approach and testing change of growth rates before and after the recession, is recommended for future research, with an indicator GVA per inhabitant.

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