

# Regional Economic Resilience in the Economy of the European Union

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**ABSTRACT:** Regions adapt regional economic models differently in the face of economic shock and recession, some quickly recovering the values of pre-shock economic indicators, others slowly and underperformingly. During the 2008 crisis at regional level, against the background of social, political and cultural factors, reorientation decisions demonstrated distinct results. These orientations have determined the evolution of different scenarios of economic growth. The crisis has forced regional systems to implement different models of economic and structural decisions, such as the current pandemic situation only in a different form and with different effects. The crisis scenarios include the severe impact on the regional economy and the decline in the value of economic indicators, stagnation and last but not least regional success in terms of managing the financial crisis and stabilizing the indicators. This paper aims to categorize according to the behavior of the GDP per capita indicator during the crisis of 2008. The aim is to identify and test the resilient regions that have applied measures to avoid the negative effects of the crisis in a relatively short period.

**KEYWORDS:** regional resilience, growth, crisis

## Introduction

An analysis of the response to the economic crisis of GDP per capita in 2008 can provide important details in the perception of regional disparities. By identifying the centers and peripheries that responded differently to the circumstances of the crisis regardless of their level of development and depending on the impact of the shock, we will be able to delimit its level of resilience. These circumstances and details of regional testing over a predefined period could outline the effective success models applicable in managing an economic shock. Taking into account the current pandemic circumstances, this small study shows at NUTS 2 the regional background during the 2008 crisis in response to the GDP per capita indicator in the crisis.

## Literature review

Partly due to its relatively recent emergence as an analytical concept, there is not yet a universal definition of resilience in economics or social sciences, much less in regional or urban studies. In fact, some even dispute the value of the notion of resilience altogether (Hanley 1998). Some initial studies have emerged recently that attempt to highlight how the idea of resilience in economics and regional studies could be defined (e.g., Rose and Liao 2005, Briguglio 2006, Foster 2007, Pendall 2008, Hill 2008, Ormerod, 2008), but this task is still far from being completed. Therefore, some (Simmie and Martin 2010) define resilience as the ability of a system, a regional or local economy to either return to a pre-existing stable or balanced state, or to move quickly to a new one. The latter being interested in resilience as an "adaptability". Because regions or localities have a differentiated ability to adapt to changes and shocks in competitive, market, technological, political and other connections that shape the evolutionary dynamics and trajectories of that regional or local economy over time.

Holm (2013) argues that regional resilience is an adaptive capacity to overcome shocks, but the dominant issues and sources of resilience are not uniform for all regions. Four general types of regions were identified in the empirical analysis: adaptive regions, rigid

resilient, non-resilient regions, and entrepreneurial resilient regions. They differ in their response to shock and growth performance. High or low levels of diversity create resilience, while an average level of diversity results in sensitivity to changes in the business cycle as well as adaptability. Essletzbichler (2007) argues that systems that continuously adapt to the current environment through efficiency could reduce their resilience because they diminish their diversity. Reducing diversity reduces pre-adaptive characteristics and makes systems vulnerable to shocks, while high diversity reduces the possibilities for synergy between firms. The results of the empirical analysis also show a potential curvilinear effect of diversity, but in contrast Essletzbichler (2007) and Frenken et al. (2007) do not lead to stability. In our small study, we decided to use the concept of economic resilience as "a differentiated regional ability to adapt to economic shocks". Economic resilience will come as an ability of the region to stabilize its GDP per capita values in terms of economic growth.

### **Methodology**

For the analysis we will use the GDP per capita indicator, this indicator being considered one of the most representative in times of economic crisis and recession. The data are taken from the Eurostat NUTS 2 level site for the period 2005-2018, excluding some regions whose data are missing for certain periods.

Aggregation and weighting will be done by using descriptive statistics to obtain Z scores. To assess the regional economic resilience, the speed of recovery and the magnitude of the impact on the indicator, we will artificially introduce increased significance in the standard deviations of the period of the most significant high-impact economic crisis and the last year to increase the growth slope. The results will allow visual interpretation with the help of regional mapping of values.

This indicator of resilience to external shocks is defined by two dimensions. The first dimension will be the resistance period for evaluation of 3 years respectively: 2008-2011 and the second dimension will be the destabilizing economic shock of the indicator. The representative time period is 14 years will stabilize the results. The latter will allow the visualization of the recovery speed and the magnitude of the impact on the indicator.

The approach will be carried out in several stages, as follows:

1. Data collection and selection;
2. Data reduction depending on availability;
3. Weighting, aggregation through descriptive statistics;
4. Applying the calculation of the modified average;
5. Spatial analysis.

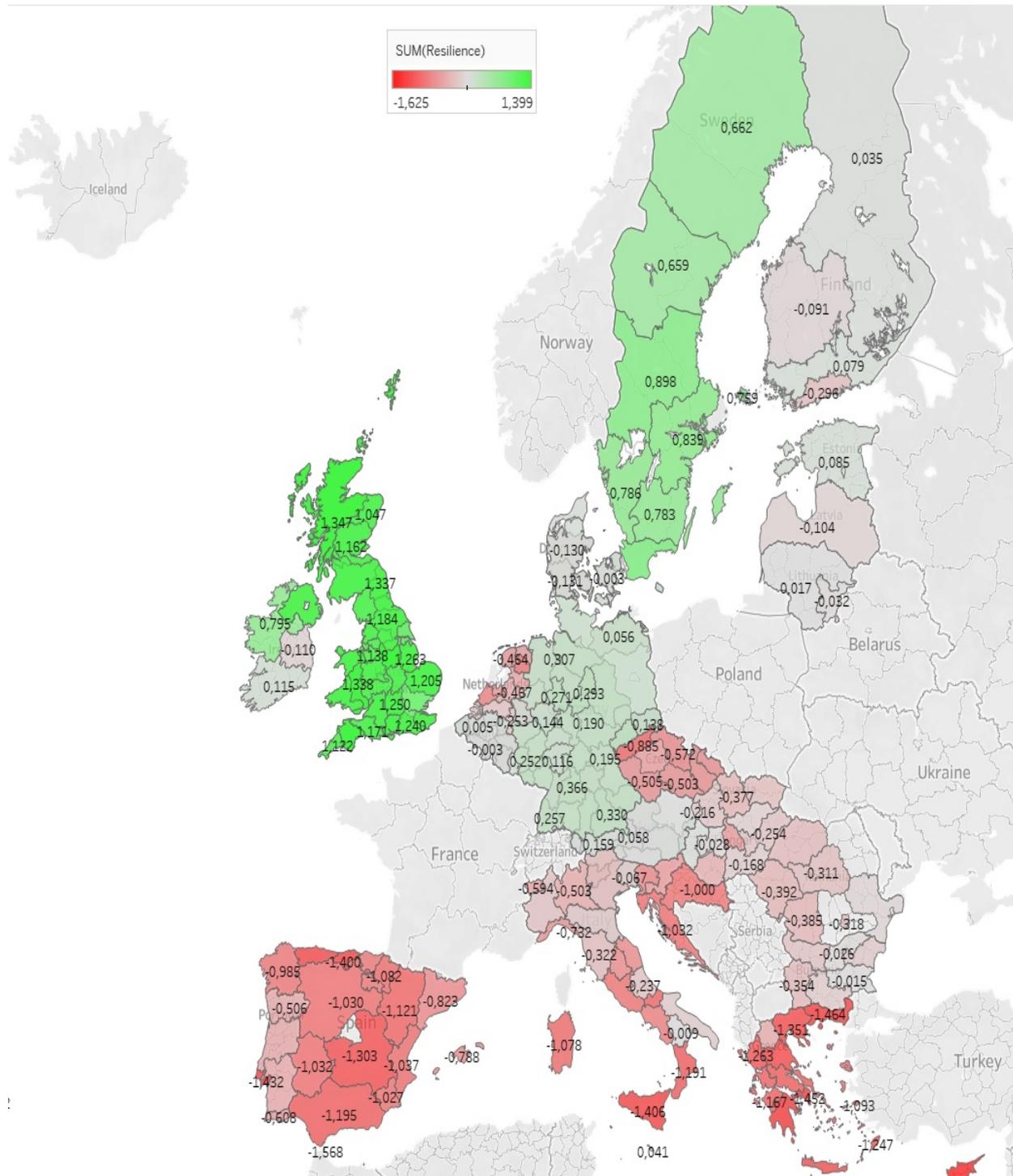
In this study, we will use annual data at constant prices in euros for the period 2005-2018 at regional level NUTS 2. Standardization and aggregation of indicators is done through descriptive statistics to identify Z scores. The latter will represent deviations from the average in standardized values. The data will be taken over and adapted.

### **Results**

The indicator is for 225 regions NUTS 2 was built in accordance with the standardization, aggregation and modification procedures specified above. Because the variation for the period 2005 - 2018 presented small values within 5 decimal places, we amplified the results in order to be able to view them more effectively. Thus we obtained a range of results within the limits "- 1,625 and 1,399". The negative values represent a strong impact of the economic shock of 2008, a weak capacity of the regions in the face of periods of economic shock, a weak economic growth, a weak evolution of the indicator and a high variability. The positive values represent the resilient regions with a strong upward trend of the indicator and respectively

resilient behavior to economic shocks. The regions that present us with positive values demonstrate the stability and low impact of the crisis of 2008, as well as they even registered economic growth compared to the crisis period. It should be noted that the values of approximately zero, negative and positive represent a stagnation of the GDP indicator per capita. Regions with negative values show a decrease in the indicator and instability in shock.

Fig. 1. Regional economic resilience period 2005-2018 NUTS 2 classification  
 Graphical representations with available data: <https://public.tableau.com/profile/alex6628#!/>



Source: Own representation

## Conclusions

From the graphical representations, we observe a categorization between the regions that through the modified average percentage provide an image of the shock response. The series of data used takes into account all time variations and their deviations. Depending on the fluctuations in time with percentage increase of the deviation of the three consecutive years respectively, 2008, 2009 and 2010 the average shows us the regional success or failure in the conditions of the 2008 crisis for the tested period. Placing on this scale "- 1,625 and 1,399" allows us to categorize and form a vision for regional resilience at NUTS 2 level. Thus, regions that presented positive values could be considered economically resilient and the model for implementing regional decisions could be considered appropriate and consultative for regions with destabilizing and fluctuating values.

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