

# Spatial Resilience in Regional Well-Being: Exploring the Impact of EU Cohesion Policy

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## Abstract

In response to recent economic crises, there has been a notable surge in research on resilience, defined as the ability of a local socioeconomic system to recover from external impacts, disruptions, or shocks. When examining the local socioeconomic system, resilience should be seen as a multifaceted concept, revealing potential risks to regional development, including ecological and economic disruptions, along with slow and long-term recovery processes (Pendall, Foster, et al., 2010). For instance, the concept of adaptive resilience, as proposed by Martin (2012), distinguishes between 'resistance' and 'recovery' phases following an economic recession.

Empirical literature has explored regional resilience in terms of employment or vulnerability (Modica & Reggiani, 2014; Sensier et al., 2016; Hudec et al., 2018).

This study contributes to the literature by investigating resilience from the perspective of regional well-being loss and/or recovery. Well-being, recognised as a suitable measure for multifaceted development since the 'Beyond GDP' debate (Andreoni, 2015; SDSN and IEEP, 2019), traces back to Aristotle's concept of eudaimonia, meaning 'doing well.' Seminal works by Sen (1989) and Stiglitz et al. (2009) introduced a multidimensional concept beyond purely economic measures, complementing vulnerability rather than offering an alternative. Given the multidimensional nature of well-being (WB), several dimensions (domains) have been identified in the literature, such as health status, level of education, quality of the environment, social connections, quality of institutions, as well as the subjective perception of WB, according to different societal and policy objectives. The indicators adopted by the scientific literature to measure WB vary according to three main features: a) the domains' selection and their respective elementary indicators; b) the aggregation and weighting methods; and c) their spatial dimension. Starting from the above reflections, we seek to explore the impact of Cohesion Policy (CP) on a regional measure of WB.

To this end, we rely on an extended version of the Human Development Index (HDI) (UNDP, 2019), as also proposed by Marchante and Ortega (2006) and Ferrara and Nisticò (2013), to have a more accurate measure of human development in developed regions. Our Extended Regional Development Index (ERDI) combines the three well-established dimensions of human development included in the HDI (health, education, and economic conditions), thereby enlarging the set of elementary indicators considered given the specific needs that more advanced economies might exhibit.

Concerning the policy perspective, studies focus both on those policies able to affect overall WB and on some specific dimensions. In this field of research, a stream of literature concentrates on how public policies affect WB, highlighting that public spending has a positive effect, albeit different for each WB dimension (Anand and Ravallion, 1993; Paliova et al., 2019); moreover, the relationship between public spending and WB depends on the level of countries' development (Gomanee et al., 2005). In this context, most of the studies analyse public spending as a whole, whereas only a few investigate the role played by specific types of policies on WB, such as those concerning investments. The analyses were mainly carried out at the national level, often neglecting the effect at a lower geographical scale (regional or provincial). To fill this gap, we seek to analyse the impact of the main regional spending program in the European Union (EU), the EU Cohesion Policy (CP), which is aimed at strengthening economic and social cohesion by reducing disparities in the level of development between regions and the backwardness of the least favoured regions (European Union, 1997). In recent years, the Europe 2020 Strategy has further highlighted the multidimensional and well-being-oriented goals of EU CP (European Commission, 2010; Palumbo, 2013). In this perspective, not only we contribute to the literature investigating the broader economic impact of CP on regional WB and its dimensions, but we also show the existence of some heterogeneity among regions.

We explore the adaptive resilience of EU regions to the economic and financial crises that hit the EU in 2008 and 2011. To this end, we map resilient regions using a resistance index calculated during the recession phase (2008-2012) and a recovery index for the subsequent period (2012-2016). This allows us to highlight variations in the extent to which EU regions recover from recessionary shocks.

Furthermore, we investigate the role of EU Cohesion Policy (CP) in countering the crisis and enhancing regional resilience, interpreted in terms of well-being. Using counterfactual distributions, the impact of CP on the dynamics of well-being and its dimensions (economic performance, education level, and health conditions) is estimated. As far as the methodology is concerned, the paper considers CP as a binary treatment, hence identifying the treated regions as those that receive more funds and the control regions as those that receive lower amounts of funds from CP (Becker et al., 2018; European Commission, 2006; European Commission, 2013). Differently from the existing literature, the effect of CP on EU regional WB for the years 2007-2013 is evaluated by implementing the counterfactual inference proposed by Chernozhukov et al. (2013), which allows us to study the distribution of the impact of CP in specified quantiles, thus capturing the heterogeneity of the CP effect across the treated regions. Results show that CP positively influences regional well-being and, consequently, the absorption of the shock. Notably, the impact is more significant in low-performing areas, while its effect diminishes when focusing on EU15 Member States, confirming the regional variation in the policy's impact.

Finally, we account for spatial spill-over effects across regions by using the spatial extension of the Blinder (1973) and Oaxaca (1973) decomposition. This way, we are able to disentangle the nuanced impact of regional characteristics on well-being dynamics during and after the crisis. The spirit of the spatial extension of the Oaxaca-Blinder decomposition lies in not only considering initial regional differences in well-being between

high and low-performing areas but also in acknowledging potential spill-over effects between neighbouring regions.

This spatial extension allows us to explore how the characteristics of one region may influence the well-being reactions to the crisis in nearby regions. The interconnectedness of neighbouring areas plays a crucial role in understanding the broader impact of economic shocks on regional well-being. Analysing these spatial dynamics provides insights into the ripple effects of the crisis and how policy interventions, such as the EU Cohesion Policy, may affect not only the treated regions but also their neighbouring counterparts.

In summary, our study contributes not only to the understanding of the direct impact of the EU Cohesion Policy on regional well-being but also sheds light on the intricate spatial dynamics that shape the resilience and recovery patterns across European regions during times of economic upheaval.