

## Abstract 42

### MEASURING REGIONAL INNOVATION AT EUROPEAN LEVEL: A PARTIAL ORDER APPROACH

Academic paper

Damiani F.<sup>[1]</sup>, Muzzioli S.<sup>[1]</sup>, De Baets B.<sup>[2]</sup>

<sup>[1]</sup>Università di Modena e Reggio Emilia ~ Modena ~ Italy, <sup>[2]</sup>Ghent University ~ Ghent ~ Belgium

#### Abstract text:

Innovation is a key subject in development economics, and it has gained greater attention in the economic policies debate, especially at EU level. Regional disparities within countries are often illustrated in scientific research. Therefore, describing and measuring innovation at regional level could be more effective than a study at national level. However, in the literature, several different methodologies have been identified and proposed to measure the regional innovation level, without identifying a common approach or shared conclusions.

The first aim of this study, after having briefly reviewed the methodologies adopted in the literature to measure regional innovation performances, is to perform a cluster analysis between regions based on the data available from the Regional Innovation Scoreboard 2019 to find patterns of comparable regions. The second goal is to propose an alternative methodology for the calculation and the representation of regional innovation at European level, based on the application of Partial Order set (Poset) method to provide a ranking between different clusters of European regions, a method that fully exploits all the information contained in the dataset.

The results obtained with the Poset method are compared with the ones described in the Regional Innovation Scoreboard 2019. Useful insights for policy makers are obtained.

Using the Poset approach it could be assumed that if a cluster is better ranked than another, it means that there are no indicators in which it has a lower score and, thus, that it is truly better performing. The outcome obtained with the Poset method permits to acknowledge nine different categories (three for each performance level), identifying, thus, similarities between different European regions. The comparison with the RIS 2019 highlights that top regions in the Poset are also innovation leaders or strong innovators in the RIS 2019; Poset's middle regions are strong or moderate innovators in the RIS 2019 analysis, and, low innovator regions in the Poset analysis belong to the moderate or modest categories in the RIS 2019.

Only ten regions obtain a very different ranking in the Poset analysis compared to the RIS: most are regions with the capital city of the country and show better results in the Poset analysis compared to the RIS 2019.

The originality of this work relies on a new analysis of regional innovation in 220 regions of the European Union through a complex methodology (Poset) that permits to highlight a ranking in which clusters of similar regions can be compared to create and implement policies in order to sustain the innovation process at different innovation levels.

Future investigation could involve the Poset analysis at a country level by using the available data from the European Innovation Scoreboard and the comparison of the results obtained by using the 220 EU regions and the respective 23 countries.

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