

Measuring territorial gaps: new theoretical and methodological perspectives

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LONG ABSTRACT

The topic of the persistence of the territorial gaps between Centre-North and South (“Mezzogiorno”) of Italy has characterized the scientific debate for a long time around the effectiveness of development policies, empirically revealing the fragility of convergence paths among the different areas of the Country (Felice, 2007; Istat, 2019a). This is particularly relevant in a perspective that considers goals of social and environmental sustainability in the direction inaugurated by the Stiglitz-Sen-Fitoussi Commission to looking for a suitable measure of economic performance and social progress that goes beyond GDP (CMEPSP, 2009). The theme of what development is or how to understand it is very complex, as it involves different and legitimate points of view (MEF Commission, 2019). For example, human development and social progress are intrinsically connected to the well-being of individuals and to happiness (UNDP, 2019), dimensions, these, typically subjective, of complex definition and complex statistical measurement. In fact, on the empirical field, most of the difficulties of going beyond GDP are due to the scarce availability of adequate statistical information (OECD, 2018). In many cases, researchers are forced to decline own dimensions through data made available in a logic substantially economic that, however, the central statistical institutes themselves are trying to overcome: in this sense, the very interesting BES project of Istat (Istat, 2019b), very useful for a new interpretation of the Italian territorial gaps. In this direction, the contributions of Becchetti *et aliii* (2019) appear very stimulating because they propose measures of well-being of territories taking into account an ethical representation of the relations with/among institutions and with/among individuals, an issue so far neglected in the well-being measures. They propose an overall and general dimension called “well-living” (BenVivere), declined in many sub-dimensions; in this context, it is important to be generative, capable of activating the circuits of well-living and, so, a current or potential “generativity” represents an important condition for an ethical development of a society (Becchetti & Bellucci, 2019a, Becchetti & Bellucci, 2019b; Becchetti *et aliii*, 2017). Therefore, in this contribution, we compare the 107 Italian provinces (as classified by Eurostat in the NUTS3 nomenclature) with particular reference to the “potential generativity” using the same indicators proposed by Becchetti *et aliii* (2019) in their BenVivere report, but modifying the aggregative technique. Here, we use a DEA-BOD algorithm so that the weights of the basic indicators are chosen endogenously by a mathematical procedure based on the “best result” achieved by each single province. In this way, the importance of the component indicators will not necessarily be the same (as in a simple arithmetic mean) or modified by the researcher on the basis of a legitimate but arbitrary

point of view. With this algorithm, the province will choose the weights that maximize its position in the ranking among all the 107 provinces. It is easy to imagine that the final ranks are strongly influenced by the weights given to the basic indicators; in our point of view, the most innocuous choice is to make sure that the data itself chooses its own weight.

So, our index (PI from now on) is obtained by applying a Data Envelopment Analysis method with proportion restrictions on weights calculated in a Benefit-of-Doubt approach (Giambona and Vassallo, 2016). In this way, we avoid subjective opinions by experts and we avoid the use of identical weights (as in the case of a simple arithmetic mean); on the contrary, the weights are determined endogenously by optimizing the position of each province on each of the basic indicators. In particular, to exclude the possibility of zero values that eliminate the contribution of some components, we add restrictions on the minimum weights. In this way, the composite indicator for the province c is compared with the benchmark composite indicator

$$PI_{c,score} = \sum_{i=1}^m w_{i,c} y_{i,c} / \sum_{i=1}^m w_{i,c} y_{i,best}$$

where (1)

$$y_{i,best} \equiv \text{endogenous benchmark}$$

$PI_{c,score}$ is clearly between 0 (the worst performance among the areas under investigation) and 1 (the best performance). The weighting problem can be handled for each unit separately with weights endogenously computed that, thus, can vary among provinces and indicators. These weights may be chosen optimally, for example by ensuring the best combination of the basic indicators to get a PI_j as high as possible with the “benefit-of-the-doubt”, that is

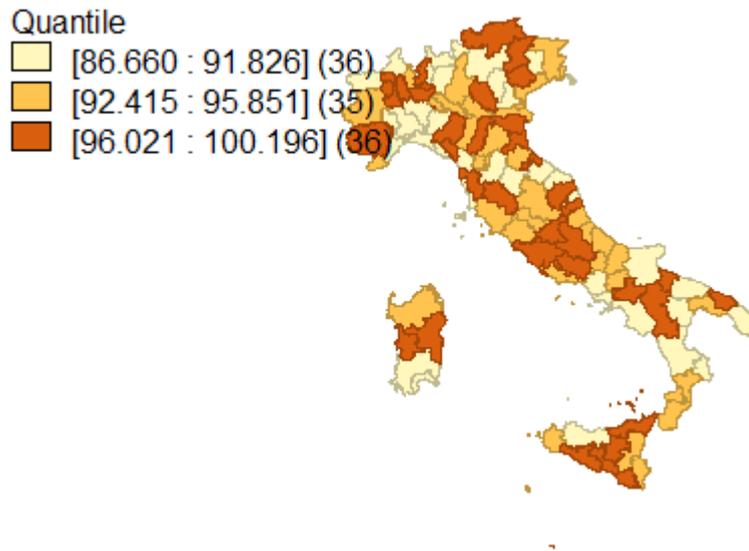
$$PI_{c,score}^* = \max \left(\sum_{i=1}^m w_{i,c} y_{i,c} / \max_{y_{i,j}} \sum_{i=1}^m w_{i,c} y_{i,j} \right)$$
 (2)

In this way, the province c has always the highest possible score in relation to other provinces under investigation. To avoid zero weights, we also add restrictions in terms of proportional share

$$\inf_{i,j} \left(w_{i,j} y_{i,j} / \sum_{i=1}^m w_{i,j} y_{i,j} \right) \leq \sup_{i,j}$$
 (3)

In our case, we assume a lower bound equal to 5% with an upper limit determined accordingly to 1.

For brevity, here we do not present or discuss the basic indicators of the potential generativity listed in BenVivere report. On this point and other we refer to an extended paper, where it is our intention to deepen the methodological aspects highlighting the advantages and disadvantages of the DEA-BOD method; here, now, it is interesting to represent with a map the outcome of the application of the algorithm with the provinces classified by quantiles.



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