

The evolution of agglomeration and co-agglomeration patterns in Italian manufacturing and services

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Extended abstract

Over the last decades, virtually all advanced economies have experienced a systematic decline in the share of manufacturing employment and a parallel rise of the service sector. This common trend has been termed in various ways, such as “tertiarization” or “deindustrialization”, often depending on whether it was being interpreted as an opportunity or a threat. At any rate, some of its spatial effects have been so blatant that they entered common parlance, for instance by transforming what once was called the “Factory Belt” into the present day “Rust Belt”. Aside from these abrupt instances, it is less clear whether the spatial reorganization of the economy might have occurred in more subtle, gradual ways that would require more sophisticated detection tools.

In this scenario, the Great Recession is often regarded as a historical watershed representing the definitive requiem for the manufacturing sector, at least in some regions. Southern European countries by and large were strongly hit, and Italy in particular was traditionally characterized by a relatively strong presence of manufacturing activities often organized as Marshallian industrial districts. This peculiar organization of production is broadly believed to benefit from greater flexibility in adapting to exogenous shocks, as compared to more vertically-integrated alternatives (see Becattini, 2004, Bellandi and De Propriis, 2015). On the other hand, industrial district rely on local specialization, which might entail a lower diversification of risk from external shocks, as compared to places characterized by greater productive variety. How, then, has the spatial structure of production evolved in this type of scenario after the Great Recession?

Answering this question in light of the broader structural change discussed above entails a key empirical challenge. Namely, the relevant geographic transformations of the economic landscape may unfold at different spatial scales, which cannot generally be guessed in advance. As a consequence, the methods by which such transformations are investigated need to be conceived so as to potentially allow for meaningful detection “from neighbors to regions”. In order to cope with this kind of measurement challenge, some of the more recent statistical methods have moved away from evaluating the spatial distribution of economic activity according to pre-defined administrative borders. Instead, they focus on distance-based measures that treat space as continuous, and are thus able to carry out measurement at any spatial scale in a fully comparable way (see Marcon and Puech, 2017, for a review of these methods).

In this paper, we contribute primarily to assessing the spatial concentration of economic activities in Italy since the Great Recession. To do so, we rely on an especially detailed and complete data set, featuring information about location, employment, and other economic variables for every single plant in Italy across a large variety of 3-digit ATECO sectors. In order to capture the behaviour of interest at different spatial scales, we turn to the M function as defined by Marcon and Puech (2010). While allowing for a thorough evaluation of statistical significance, this approach also permits to decompose the aggregate measure of spatial concentration into its local components, as described by Marcon and Puech (2023). Hence, by computing the M function for 2007 and 2021, we can trace how the spatial concentration of economic activities has evolved across various geographic scales and how the different local economies have contributed to such change. In parallel, we use the M function also to provide a fine-grained measure of local productive variety, thus allowing to evaluate in detail where and how variety has evolved in Italy after the Great Recession.

This paper documents the sectoral evolution of spatial concentration in Italy between 2007 and 2021 by means of the M function, which has also been used to produce a fine-grained measure of local productive variety. Moreover, we present for the first time the application of the M index to measure the co-agglomeration of sectors. The results presented here may be seen as an initial step to show how this metric can be applied on large data sets, allowing for sectoral analysis both at the aggregate and local level, both at the sectoral and at the intersectoral level.

By contrast, most applications appeared in the economic literature thus far were limited to rather small samples and did not exploit the local dimension. Our analysis focused both on manufacturing and service sectors by comparing their spatial concentration before the Great Recession and well after the double dip that hit in particular southern European economies. In 2007, spatial concentration was remarkably higher for manufacturing relative to services, especially within a 15 km distance from plants. After the Great Recession, manufacturing sectors typically experienced a considerable absolute contraction both in employment and plants, whereas services typically expanded under both dimensions. The resulting spatial reorganization, however, has increased the gap between manufacturing and services in terms of spatial concentration. On average, by 2021 spatial concentration had further increased for manufacturing sectors, while slightly decreasing for services. In this sense, the contraction of a sector seems to tighten spatial selection, by reducing the number of places where the sector concentrates geographically. Although here it was applied only to a few paradigmatic sectors, our local analysis of M further shows which particular places have been selected in this sectoral process of spatial reorganization. In a similar spirit, our analysis has also shown how productive variety has evolved in space between 2007–2021, thus highlighting the specific areas that were most affected by this form of spatial reorganization.

One particular novelty of this paper is the analysis of spatial concentration via the M function extended at the inter-sectoral level. That is, instead of measuring how many other plants in the same sector are proportionately present within some distance from an establishment, we focus on plants in other sectors from the one in which the establishment operates. The resulting measure then allows to evaluate the co-location of industries, as described by Marcon and Puech (2010, pp. 751–52). When evaluated at the local level, this application allows to identify the locus of spatial interaction for any two sectors.