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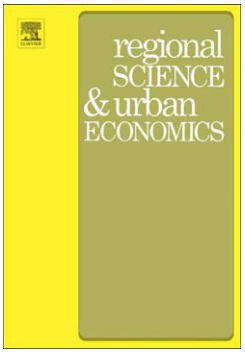

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Spatio-temporal Clustering in the Pharmaceutical and Medical Device Manufacturing Industry: A Geographical Micro-level Analysis

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Abstract
The study of the geographical distribution of firms and of the dynamic pattern of firm entry and firm exits is a particularly relevant issue in regional health economics especially in the view of policy intervention to geographically balance health service supply and demand. The current state of the art in the study of new firm formation and firm exit (see, e.g., Armington and Acs, 2002; Folta et al., 2006; Andersson and Koster, 2011; Raspe and van Oort, 2011) collects a comprehensive set of empirical methodologies for data aggregated at the macro (national) or meso (e.g. regional) territorial levels, in which observations typically consist of the administrative units (such as regions, counties and municipalities). The lack of a systematic approach to the analysis of data at the micro-territorial level - where the observations refer to the geographical coordinates of each individual firm - has dramatically limited the possibility to obtain robust evidences about firm demography phenomenon mainly due to a problem of data scarcity and reliability. To overcome such limitations, in this article we propose an approach to the analysis of the spatial dynamics of firm formation/exit based on micro-geographic data. In particular, we illustrate the use the space-time inhomogeneous *K*-function (Gabriel and Diggle, 2009) to detect the spatio-temporal clustering of firm entries and firm exits generated by the interaction between economic agents while controlling for common (locally varying) factors, spatial and temporal heterogeneity. In view of our aim the present paper shosw the results of an empirical application of the methodology to the case of new firms entry and firm exit in the pharmaceutical and medical device manufacturing industry during the years 2004-2009 in an Italian region (Veneto).

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Keywords: *Agglomeration, Non-parametric measures, STIK functions, spatio-temporal clustering, Spatial health econometrics.*
JEL classification codes: *C21 · D92 · L60 · O18 · R12*

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