

## **"Spatial Agglomeration, innovation and firms survival for Italian manufacture firms: a spatial analysis on Aida Data 2006-2010"**

**Arnab Batthacharjee, Anna Maria Ferragina & Fernanda Mazzotta**

The issue of this paper lays in the topic of the indirect impact of innovation on local firms. Crucial in the literature which has investigated this issue is the idea that it's relevant to consider spatial spillovers determined by firm closeness in the Italian Manufactured System which create externalities by different channels of interaction with the local context, both within the same sector and with interrelated sectors. The channels of transmission investigated refer to both competition/crowding out effects and to spillovers, through pecuniary and knowledge externalities. The large and overwhelming strand of literature on these issues has focused on examining the spillovers effects on local firms productivity, able to catch the externalities induced by innovativeness of firms. The nexus between spatial agglomeration and knowledge spillovers has been largely emphasized within the "geography of innovation" literature, which concentrates on measuring localized spillovers from R&D spending (Jaffe, 1986, Griliches, 1979; Audretsch and Feldman, 2004; Bottazzi and Peri, 2003; Breschi and Malerba, 2001). Hence, proximity matters for information to circulate. The private technology of individual firms spills over to other firms and becomes public knowledge increasing the productivity of all firms and several studies have found that knowledge spillovers tend to vanish rapidly as distance increases (Audretsch and Feldman, 1996; Keller, 2002).

One crucial feature of spatial analysis is that it takes into account the spatial arrangement of the observational units (locations). This spatial arrangement is represented by a spatial weights matrix  $W$  whose nonzero off-elements  $w_{ij}$  express the presence or absence (binary weights matrix) or the degree (non-binary weights matrix) of potential spatial interaction between each  $i$ th and  $j$ th possible pair of locations. There are several different spatial link matrices available to measure the contiguity between locations. These matrices strongly depend on the definitions of the neighbourhood. One possible definition of proximity is the spatial geographic proximity i.e. considering the distance in kilometre among each firms. Moreover another way to consider the spatial proximity defined by a measure of firms' industry distance based on trade intensity between sectors using the symmetric matrix provided from Istat for calculating the trade flows statistics at sectorial level (the share of intermediate goods and services used in the  $k$  sector produced by sector  $j$  - down - and supplied to sector  $j$  (used in  $j$ ) by sector  $k$  (produced by  $k$ ) - up).

The empirical analysis is based on an unbalanced data panel of 742,939 observations for the manufacturing sector disaggregated by firm, sector and province, covering 9 years (from 2002 to 2010) and including both new and incumbent firms built by the authors (Ferragina and Mazzotta, 2015). The sample collects balance sheet data for 98,839 firms and allows a wide coverage of Italian manufacturing corporate enterprises, representative of firm distribution by size, geographical area and sector and we extract the firms from 2006 - 2010. We used a Spatial Econometrics models (*spatial lag of  $X$  model – SLX*) in which we construct a spatial average neighbouring innovation characteristics ( $WI$ ) where  $W$  is the spatial weight matrix and  $I$  is the vector of dummy equal to 1 if the firms make an innovation (considering investment in intangible assets, license, patent and research and advertisement) 0 if not. In this way we can keep the direct role of the innovation of the neighbouring firms on the survival of themselves. We estimate a survival continuous survival model (Cox model), for testing if the survival of the firms is positive influenced by its innovation and the innovation of closeness firms in geographic and sectorial sense.

**JEL classification: L20, O3, D22, C21, C41, R15**

**Keywords: Firm survival, spatial models, Innovation, Input – Output models**

**Heriot-Watt University of Edinburgh, & Salerno University**

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