

R&D knowledge spillovers and employment through entrepreneurship

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Since the seminal work of Birch (1979; 1987) witnessing the importance of firm entry for employment creation, both scholars and policy makers put increased attention to entrepreneurship and its determinants. Entrepreneurship is in fact recognised to represent the main source of job creation, but also the main source of job destruction (Decker et al., 2014; Criscuolo et al., 2014). This paper seeks to explore the social return of R&D knowledge stock on entrepreneurship, measured in terms of entry size (i.e. employment entry).

Grounding on the knowledge spillover theory of entrepreneurship (Audretsch and Keilbach, 2007) and on the literature on agglomeration economies (Rosenthal and Strange, 2003), this work investigates the geographical patterns of the relationship between R&D knowledge stock and entrepreneurship. The starting point is the recognition that agglomeration externalities are associated to entrepreneurship only in the very proximity of agglomerations, and decay rapidly with distance (Rosenthal and Strange, 2003; 2005). Building on these premises, we empirically explore the geographical distance at which (private) R&D spillovers are associated to new venture entry size.

The empirical framework is based on an original dataset referred to the Emilia-Romagna region of Italy from 2008 to 2014, obtained merging the ASIA-Istat database (population of Italian businesses) with information from AIDA-Bureau-van-Dijk (balance sheets of Italian companies). Emilia-Romagna is among the richest and most innovative regions of Europe: it is populated by over 400 thousands active companies and 4.5 million inhabitants (Norway, Finland and Denmark have a population of roughly 5 millions) distributed in 334 municipalities.

The empirical analysis is at the firm level (cf. Cainelli et al., 2018). After having geolocalized regional businesses that were constituted within our time interval of analysis (about 100.000 firms) and all regional companies conducting R&D, we put in relation entry size of new ventures (measured in terms of number of employees in the first year after constitution) with the R&D expenditure conducted in the surrounding areas. We construct concentric rings of 1, 2 and 5 kilometres of ray around the just-born firm and construct an R&D stock in each of these rings (cf. Rosenthal and Strange, 2003; Freedman et al., 2018). The analysis explores if entry size is influenced by the level of R&D expenditure (constructed in stock) in the 1km, 2km and 5km surrounding areas. Results provide evidence that: (i) R&D positively influence entry size in all economic activities, although difference in magnitude of the coefficients are evident for different sectors and for different and legal forms; (ii) the positive association between R&D and entry size decreases with distance, to become non-significant or even negative already 2 and 5 kilometres away from its sources. These results corroborate the findings of Rosenthal and

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Strange (2003, 2005) relative to agglomeration externalities in the US. Important research and policy implications derive on the relationship between R&D and entrepreneurship.

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