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What determines technological hits? Geography and firm competencies in biotechnology vs. “traditional” chemicals

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Abstract

By using data on European patents in five chemical sectors this paper estimates how much of the value of an innovation depends on the characteristics of the organisation to which the inventors are affiliated, and how much it is affected by the characteristics of the location in which it is invented. The results indicate that there are two models of innovation: the “traditional” model (in materials, organic chemicals, pharmaceuticals and polymers) and the “biotech” model. In the former, the probability of developing technological hits critically depends on economies of scale in R&D internal to the firm. By contrast, in the latter, geographically localised spillovers and technological specialisation at the level of the firm heavily influence the probability of producing valuable innovations.