

Book review

Thomas Brenner (2004): Local industrial clusters. Existence, emergence and evolution. Routledge, London New York, ISBN 0 415334691

The geographical clustering of firms is an omnipresent phenomenon. The notion that regional policy should enhance clustering is also widespread. In particular, regional policy makers attempt to create clusters in emerging industries. However, dynamic theories of clustering are still scarce. One of the reasons behind the lack of theorizing is probably its difficulty: clusters come in many forms. Case study evidence by geographers has shown that the structure of clusters varies significantly, as do the causes that explain the emergence of new clusters. However, few people ask the opposite question: what are the similarities among clusters, and, more particularly, is there a common evolutionary logic behind their emergence and development?

Among others (Swann and Prevezer, 1996; Swann and Baptista, 1999; Klepper, 2002; Maggioni, 2002), Thomas Brenner has been able to provide a set of formal ideas that address the emergence and evolution of clusters in an evolutionary perspective. In his book, he approaches the issue from all possible angles, as reflected in the five chapters of the book: there is an introductory chapter, a theory chapter, an empirical chapter, a simulation chapter, and a policy chapter.

The theoretical chapter does not attempt to review the enormous and heterogeneous literature on clustering. Rather, it starts from basic questions of definition, emergence and evolution. Brenner's definition of a cluster as "an industrial agglomeration that is caused by local self-augmenting processes" (p. 15) is rather peculiar, because the definition implicitly assumes the explanation. However, it is clear that Brenner's approach is not intended to capture all varieties of clusters (some of which are simply caused by characteristics of the location) but instead focuses on the evolutionary, self-augmenting processes that give rise to clusters. Importantly, he also takes into account the interdependence between regions to explain to what extent the emergence of one cluster in a particular industry inhibits the emergence of a cluster in the same industry but in another region (a question with obvious policy relevance).

The basic argument, which is well integrated in the subsequent chapters, holds that the evolution of clusters in a particular industry follows four stages (pp. 33–41). The first stage is characterized by the massive entry of new firms in many regions that satisfy some general exogenous conditions. In the second stage, the endogenous factors (local spillovers, spin-off and human capital accumulation) take over according to a self-reinforcing, success-breeds-success mechanism. In

this stage, a rapid divergence in the number of firms per region occurs, with only a few regions developing a true industrial cluster. In the third stage, the spatial distribution of firms across region settles down and remains stable in the face of disturbances. In the fourth stage, the industry declines, and so a general fall in the number of firms is expected, leading some or all of the clusters to disappear again. By expressing clustering solely in terms of changes in the spatial distribution of firms across regions, Brenner can formally model the effect of exogenous and endogenous conditions in a straightforward manner. At the same time, focusing on firm population renders his framework conceptually and mathematically compatible with firm demography (Carroll and Hannan, 2000) and industry lifecycle models (Klepper, 2002).

The theoretical chapter nicely links to the empirical chapter, which stands out as the most original chapter. To construct his dependent variables, he uses a theoretical model, which allows him to derive an unambiguous measure technique to detect which industries are in a process of clustering (stage 2) and which are in a process of stabilization (stage 3). Using data for the period 1995-2000 on the number of firms in 71 manufacturing industries and 22 service sectors for 440 German districts, logistic regressions are applied to estimate the determinants of emergent clustering (stage 2) or stabilizing clustering (stage 3). Interestingly, a large number of independent variables were available from other data sources, including innovation characteristics of each sector, spillover characteristics, and collaboration characteristics. The results show that process innovations, intra-industry spillovers and collaborations with suppliers and universities explain emergent clustering. The finding on process innovation seems to reflect the fact that clustering sectors are those that are in the second stage of the product lifecycle when process innovation overtakes product innovation. It is also only in this phase that a critical mass of firms within the same industry become spatially proximate leading to intra-industry spillovers. The importance of regional collaboration provides support for those theories that stress the notion that geographical proximity facilitates networking. Unfortunately, concerning the stage of stabilizing clustering, Brenner did not find statistically significant determinants.

The level of coherence of the book drops slightly in the following chapter on simulation. The simulation model attempts to analyze causal mechanisms between all variables more closely. Brenner introduces a number of new variables that were previously not taken into account. The incorporation of these variables leads him to develop a model with 31 parameters, which becomes rather difficult to appreciate. Although the simulation model is methodologically well explained, the interpretation of its results in the light of the empirical analysis, or empirical evidence from other scholars, remains less clear. Since Brenner opts not to favor certain parameter settings over others (which is perfectly sensible when precise data are lacking), the discrepancy between simulation data and empirical results can be attributable to either the mis-specification of the model, or to the possibility that some parameter ranges occur more often in reality than other parameter ranges. Brenner acknowledges this problem (p. 171), but does not provide the reader with lessons for further research. Perhaps a model with fewer parameters could be analyzed more

systematically and exhaustively, even without precise data on particular parameter values.

The final chapter brings us back to one of the main motivations of the book, that is, theoretically to inform regional cluster policies. There are three lessons to be learned (see also Fornahl and Brenner 2002). First, policy can improve the general exogenous conditions for clusters to emerge. Second, policy can improve the conditions for entrepreneurs who start new businesses. Third, once some new firms are present, government can stimulate self-reinforcing mechanisms to create a cluster, including spin-offs, spillovers and the accumulation of human capital. The first and second policies are more generic and hardly contested. The third policy, however, can make all the difference as it may tip the regions into a self-augmenting process. The crucial problem to be solved for policy makers is how to recognize such an embryonic cluster of young, small firms, and how to deal with newly risen opportunities and threats effectively and quickly.

References

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