

## Innovation, Territorial Networks and K-economy

Prof. Daniela-Luminița CONSTANTIN, PhD  
Academy of Economic Studies of Bucharest, România  
[dconstan@hotmail.com](mailto:dconstan@hotmail.com)

The emergence of the global knowledge-driven economy has induced a new model of scientific knowledge production, tightly related to the learning process by the users and producers. The use of knowledge and, further on, the introduction of innovation implies the gradual development of the technological capabilities of the users whereas the producers of knowledge focus mainly on the interactive process of learning by means of innovation. This creates close relationships between the processes of diffusion and production of knowledge that makes the new innovation model to be better understood as “*integrated processes, where different functions, pieces of knowledge, individuals and organizations continuously interact with each other*” (Cappellin, 2002, p.36).

**T**he interactive nature of innovation and the adoption of network relationships by and among firms place the firm at the very centre of contemporary changes. Within this context the innovation process at the firm level may be viewed as “*a set of activities that are linked to one another through complex feedback loops*” (Fischer, 2002, p.17). This process can be conceived as a chain that starts with the perception of a new market opportunity and/or a new invention based on the advances of scientific and technological knowledge followed by the analytical design of the new product or process and testing, redesign and production, distribution and marketing. The model presented is well known in the literature as the “*chain-linked model of innovation process*” (Kline and Rosenberg, 1986) and combines two types of interaction: processes occurring through new forms of product development practice within the firm, which create corresponding feedback relationships external to the firm, concerning its links with customers, suppliers, research institutions and even competitors.

Accordingly, besides the role of internal factors, the success of a firm’s innovation efforts depends upon a series of local determinants, envisaging the factors which are external to the firm and can have an important influence on its

production decision, being characterized by a specific spatial orientation (Davelaar and Nijkamp, 1997). Four driving forces have been identified in this respect, namely the composition and spatial size distribution of sectors, the demography and population structure of a certain area, the information infrastructure and the physical and institutional infrastructure.

As regards the *composition and the spatial size distribution of the economic sectors*, it has been demonstrated that a high concentration of innovative sectors within a region results in a big number of innovations produced in that region. The innovative firms may belong to the same sector – that creates the possibility to lower production costs (especially by sharing certain overhead costs) and to act for getting a share of the market in their field – or to various sectors – in this case the diversity of buyers and suppliers can increase the capacity of the innovative firms to react easier to the risk induced by the innovation changes in the so-called “*introduction phase*”. The second case also emphasizes the importance of spatial clusters of R&D departments of different firms and public R&D institutions.

The *firm’s size* also influences the spatial distribution of innovation. Thus, big firms seem to spend more on innovation and produce the

highest number of innovations, whereas small firms have higher productivity in innovation production.

The role of *demography and population structure* has to be addressed in relation with the agglomeration economies, which play an important role in promoting technical progress and higher productivity. Agglomeration economies are divided into localization economies – when the advantages result from the spatial concentration of firms in the same sector – and urbanization economies – when the advantages result from the spatial concentration of firms belonging to different sectors.

The *information infrastructure* distinguishes various sources of information, such as: inter-firm contact patterns, which deal with a mutual private information exchange between firms; public research institutes, universities, institutes of technology and knowledge transfer centres that positively influence the innovation potential of the regions in which they are located; demographic and spatial interaction patterns (e.g. intensive flows of customers to a certain region, leading to a higher intensity of personal interaction).

*Physical and institutional infrastructure* mainly refer to cultural and educational amenities (theaters, cinemas, libraries, art galleries, etc.), physical climate and environmental qualities, the availability of public (physical) infrastructure, the institutional arrangements, regulations that may stimulate the production of innovation.

Over time the spatial interactions in the innovation process presented above have led to the creation of *innovation networks* at national and regional (territorial) level. In general terms, territorial networking is defined as “*co-operation between (small and medium-sized) businesses, government agencies, educational and research institutions, intermediary institutions and other groups. Inter-firm networks and networks of public and other institutions are, therefore, integral components of the whole system of “regional networks”, which is the structure of relations between all private*

*and public sector and other participants”* (Sprenger, 2001, p. 12). If the cluster typology based on relations between firms within the cluster is considered, territorial networks represent a step forward compared with pure agglomeration and industrial complex. Whereas these two types are localization-oriented, *territorial networks are organizationally oriented*, leading to creation of a local business environment of confidence, risk-taking and co-operation (McCann, 2001, Cappellin and Steiner, 2002).

The *networking model*, based on *partnership*, locally bounded *spill-overs*, *flexibility* and *knowledge* is able to create and nurture the so-called “*sense of belonging*” (Cappellin and Steiner, 2002). This assertion stresses another important idea: the local dynamism does not result from the action of separate firms but from their *overall* behaviour. This phenomenon is illustrated by the notion of *milieu* or local environment-based approach that is concerned with understanding the firm in its local and regional context. As described by Aydalot and Keeble (1988, quoted by Maillat, 1990, p.345), “the firm, and the innovating firm, are not viewed as pre-existing in or separate from the local environment, but as being a product of it. Local milieus are regarded the nurseries, the incubators of innovation and innovative firms... The historical evolution and characteristics of particular areas, their economic and social organization, their collective behaviour, the degree of consensus or conflict which characterizes local society and economy, these are major components of innovative behaviour... This approach implies that innovative behaviour is as much dependent on variables defined at the local and regional level as on national scale influences. Access to technological know-how, the availability of local industrial linkages and inputs, the impact of close market proximity, the existence of a pool of qualified labour – these are the innovation factors which will determine areas of greater or lesser innovative activity within the national space”.

The milieu is composed of material and non-material elements, connected with hard/soft location factors acting within a given territory (Kowalski and Rottengather, 1998). The material elements are organised around the territorial production system, the local labour market and the territorial scientific system, closely interrelated. The non-material elements refer especially to the technical culture, but other aspects like the creative climate, the identification of local citizens with their location – city or region – based on historical and cultural motivation and future aspirations (Funck and Kowalski, 1996) should also be considered\*.

In particular, *the innovative milieu concept*\*\* has as central components “*Smithian processes of division of labour among production units; Arrowian processes of learning-by-doing and by-using, amplified beyond the limits of each firm by the high labour mobility within local area; externalities à la Marshall or à la Allyn Young, generated by a common industrial culture and by dense input-output exchanges; Schumpeterian entrepreneurship enhanced by long standing and specific skills and by wide imitation possibilities; and cross-fertilization processes à la Chris Freeman, generation systems of integrated and incremental innovations*” (Camagni, 1995, p.319).

The innovative milieu approach does not propose a specific model of local development but it rather suggests a “meta-model” highlighting common sources of single - necessary differentiated – development patterns of each

territory. The determining elements of the advantage and the innovativeness of the single milieu refer to the efficiency, the competence and the flexibility of the local production system, the synergies internal to the innovative milieu and the relevant external linkages. These elements can be addressed at micro, meso and sectoral level, at the macro and aggregate level and at the socio-political and cultural level (Camagni, 1995).

The research undertaken in this field reveals that the concept of innovative milieu can be applied not only to the developed regions but also to the lagging regions. In this case the approach is mainly normative, focusing on four main strategies, namely: integration of policy interventions dealing with entrepreneurship, infrastructure, training, etc. (aspects specific to local environment); sites selectivity; turning to good account the existing local know-how (even if it is weak) and local productive vocation; establishment of cooperation agreements and partnerships in order to capture flows of external energy (know-how) from external firms and public institutions.

These reflections can be regarded as a modest contribution of this paper to bringing into the public debate the idea of including the concepts of territorial innovative networks in the Romanian regional development policy. So far, it has been only indirectly, partially envisaged, that makes it necessary to be integrated in the next National Development Plan (2007 – 2013), considering that the regional policy of the European Union will concentrate in the forthcoming years on convergence – competitiveness – cooperation and a comprehensive, coherent framework for innovative networks support can contribute to an important extent to reaching these goals by the Romanian economy.

## References

Camagni, R. (1995), “The Concept of *Innovative Milieu* and its Relevance for Public Policies in European Lagging Regions”, in *Papres in Regional Science. The Journal of Regional*

\* Such a background can create the basis for expanding a new, recent approach to business networks – *netwinning* - which brings together concepts related to territory, networks and businesses and the links between them. It has been developed within a project funded by the EC’s Directorate-General for Regional Policy under Recite II programme, aiming at examining how partnerships between companies in the same geographic zone could be developed to enhance innovation and competitiveness (*Innovation and Technology Transfer* 2002).

\*\* developed by the GREMI group with contributions of Aydalot (1986), Perrin (1988), Aydalot and Keeble (1988), Maillat (1992), Gordon (1981, 1991), Camagni (1991), Quevit (1991).

- Science Association International*, Vol. 74, No.4
- Cappellin, R. (2002), "Regional Industrial Policy and the New Economy", in M. Fischer, G. Atalik (eds), *Regional Development Reconsidered*, Springer Verlag
- Cappellin, R. and Steiner, M. (2002), "Enlarging the scale of knowledge in innovation networks: theoretical perspectives and policy issues", *42<sup>nd</sup> Congress of the European Regional Science Association (ERSA)*, Dortmund, Germany, August 2002
- Davellar, E.J., Nijkamp, P. (1997), "Spatial Dispersion of Technological Innovation: A Review", in C.S. Bertuglia, S. Lombardo, P. Nijkamp, *Innovative Behaviour in Space and Time*, Springer Verlag, 1997
- Fischer, M. (2002), "A Systemic Approach to Innovation", in M. Fischer, G. Atalik (eds), *Regional Development Reconsidered*, Springer Verlag, 2002
- Funck, R.H. and Kowalski, J.S. (1997), "Innovative Behaviour, R&D Development Activities and Technology Policies in Countries in Transition: The Case of Central Europe", in Bertuglia, C.S., Lombardo, S., Nijkamp, P. (eds), *Innovative Behaviour in Space and Time*, Springer-Verlag
- Kowalski, J. and Rothengatter, W. (1998), "Introduction to Soft Factors in Spatial Dynamics", *Scientific Seminar in Honour of Rolf Funck*, University of Karlsruhe, Germany, February 1998
- Maillat, D. (1990), "SMEs, innovation and territorial development", in Cappellin, R., Nijkamp, P. (eds), *The Spatial Context of Technological Development*, Avebury
- McCann, P. (2001), *Regional and Urban Economics*, Oxford University Press
- Sprenger, R.U. (2001), *Inter-firm Networks and Regional Networks*, NSS **ADAPT**, Bonn