



Book reviews

Small Country Innovation Systems. Globalization, Change and Policy in Asia and Europe, C. Edquist, L. Hommen. Edward Elgar, Cheltenham (2008). ISBN: 1-84542-584-5 (544 pp., £125.00)

Since the seminal work of Freeman (1987), Lundvall (1988, 1992) and Nelson (1993) in the late-eighties and mid-nineties, the innovation systems concept has been widely spread among academics, practitioners and policy makers in developed and developing countries. The rapid diffusion of the concept is not surprising as the innovation systems approach provides a more realistic alternative explanation for innovation and growth than the one suggested by the neo-classical theorists; i.e., one based on learning, social structures and institutions instead of bounded rationality, perfect information and markets.

Scholarly work on innovation systems has increased dramatically¹ in the last two decades. Apart from a few exceptions (Lundvall, 2007; Freeman, 2002; Jensen et al., 2007; Lundvall et al., 2009; Viotti, 2002; Cassiolato and Lastres, 2003), this collective effort has not ended up in a *significant* theoretical development of the innovation system concept. A considerable number of the publications are still of an empirical nature—trying to describe the functioning of a specific system of innovation rather than to refine the theory. This edited volume by Edquist and Hommen aims precisely at making a theoretical contribution to innovation systems research based on empirical results. This is highly welcome.

The main theoretical anchor of the book is the functional approach to innovation systems developed by, among others, Carlsson et al. (2002), Johnson and Jacobsson (2003), Liu and White (2001) and Edquist (2004). Scholars in this line of research have mainly focused on identifying the main functions of an innovation system. Their principal argument is that the performance of an innovation system cannot be explained by its components (organizations, institutions and relationships) but by how those components are organized around certain activities that support the emergence and development of innovations. As most of the scholarly work on the functional approach to innovation systems, this edited volume also focuses on the national level.

Some comparisons with existing books on National Innovation Systems (NIS) are almost inevitable. The way that the book is organized – each chapter is devoted to one country – reminds the reader of Nelson's book (Nelson, 1993) in which countries were classified into three groups according to their size and national income: large and high income, small and high income and low income countries. In this book the focus is on small high-income countries in Asia and Europe. The authors argue that this narrower perspective will make comparisons easier than Nelson's book. While in Nelson's book the purpose was to derive theoretical implications from the empirical

analysis, the objective in Edquist and Hommen's edited volume is to test empirically the analytical framework developed earlier by Edquist for the analysis of activities in NIS (Edquist, 2004). In this respect, it can be considered that the theoretical framework is an input and not an output of the book.

The analytical framework to be tested is presented in the introductory chapter. Following Edquist (2004), the authors propose focusing on 10 activities that support the emergence and dissemination of innovations in a NIS. The 10 activities are the provision of R&D, competence building through education and training, formation of new product markets, articulation of quality requirements emanating from the demand side with regard to new products, creating and changing organizations needed for developing new fields of innovation, networking through markets and other mechanisms, creating and changing institutions, incubation activities, financing of innovation and provision of consultancy services. As the book is constructed around these 10 activities, it would have benefited from a more detailed introductory chapter describing how these 10 activities were selected and the evidence from which they were derived.

The book classifies the 10 European and Asian small countries into two groups according to their growth rates over the last three decades: fast growth countries (Taiwan, Korea, Singapore, Hong-Kong and Ireland) and slow growth countries (Sweden, Norway, Netherlands, Finland and Denmark).

All the country chapters follow the same structure: an introduction to the specific characteristics of the NIS, a brief historical review of the NIS, a section on innovation intensity (propensity to innovate) followed by a description of the main activities in the NIS, an initial assessment on the impact of the NIS on growth, a discussion on globalization and NIS and an account of the main innovation policies.

The use of the same structure for each of the chapters offers the reader a basis for *comparative* analysis, and the individual country chapters contain a very rich description of the *specificities* of the NIS from both qualitative and quantitative perspectives. The book provides the reader with a comprehensive story of how the system evolved in a certain way and of the specificities of the system of innovation. While comparative analysis is one of the main objectives of the book, the specific stories most probably constitute one of its main values.

In this respect, the Taiwan chapter (Balaguer et al.) in this volume illustrates how the government can play a leading role in the performance of the NIS, while Korea (Lim) offers a good example of a large firms-driven NIS. The chapters on Ireland (O'Malley et al.) and Singapore (Wong and Singh) are good examples of the role played by foreign direct investment and multinationals in the development of the NIS, while the chapter on Hong-Kong (Sharif and Baark) points out the importance of linkages with larger markets, such as China, and is a good illustration of a NIS specialized in the coordination of production networks.

¹ As indicated by the authors, "innovation systems" had more than 720,000 Google hits in March 2007.

The Norwegian chapter (Gronning et al.) deploys the challenges of a NIS based on natural resources, while the chapters on Finland (Kaitila and Kotilainen) and Ireland (O'Malley) show the functioning of a NIS based on Information and Communication Technologies (ICT) and knowledge-intensive business services. The specific challenges of some of the most advanced NIS are discussed in detail in the chapters on Sweden (Bitard et al.), Denmark (Christensen et al.) and Netherlands (Verspagen).

In the concluding chapter, Edquist and Hommen make a comparative analysis of the innovation policies in the 10 countries. According to the authors, one of the key characteristics of innovation policies in fast growing countries is the high degree of policy coordination combined with a focus on fast growing high-tech industries such as ICT. A critical question here is whether the fast growth shown by these countries is due to the narrow focus of their innovation policies or to something else. Catch-up economies usually grow faster than advanced economies. How much of that growth can be explained by the performance of the innovation system and how much depends on other factors (e.g. basic infrastructure) remain to be researched.

The inclusion of the impact of globalization on the NIS in each chapter is very welcome and constitutes an advance compared to previous analyses of NIS. However, the issue of globalization is treated separately from the activities in the system of innovation. It would have been interesting to integrate both, for example by discussing the international dimension of all the 10 activities discussed in the description of the NIS.

Although the book supports the idea that one can use the 10 activities to study a NIS, some of the contributors to the book find it difficult to discuss the relevance of some of the activities in their specific NIS context. When reading the country-specific stories, one can think of several other activities that may be more relevant to a description of the technological trajectory of that specific NIS than the 10 initially selected. The 10 activities seem to be more applicable to countries specialized in high-tech industries, and in the generation of innovation rather than in its absorption. Arguably, they respond to a narrow definition of an innovation system, highlighting research-based activities and the generation of radically new knowledge, rather than to a broad one including those activities that are conducive to the absorption and improvement of existing products, like, for example, learning by doing (Lundvall et al., 2009). R&D may be important to provide knowledge inputs in the innovation process if the purpose is to generate radically new products or processes (as in the case of Korea), but it may not be so relevant if the purpose is to adopt, adapt and use knowledge developed somewhere else (like for Taiwan). In this sense, a more critical look at the framework would have been welcome. Ascertaining which activities are more suitable for the analysis of countries and NIS that are more concerned with the absorption of knowledge than with the generation of radically new knowledge remains a challenge for future researchers.

A final note. Leif Hommen passed away a few days before the book was published. His critical mind and his broad knowledge of a great variety of topics (from innovation to music or literature) were always a source of inspiration. We hope that this book will inspire the future work of scholars in the innovation system tradition for many years to come.

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Knowledge Sharing Among Scientist: Why Reputation Matters for R&D in Multinational Firms, P.C. Ensign. Palgrave Macmillan, New York (2009). (220 pp., ISBN 0-230-61173-7)

When do scientists choose to share intangible information (or not)? In particular, what role does reputation play in that decision? These are essentially the main research questions of the new book by Dr. Prescott Ensign based on his original dissertation research into the social practices of sharing knowledge among colleagues within pharmaceutical multinational firms.

The book is required reading for anyone doing research into knowledge sharing activities within firms and knowledge management in general. Although it is written in an academic format, anyone interested in the effects of reputation and social expectations of obligation on knowledge sharing propensity will find it of interest. For example, intriguing effects were found revolving around whether knowledge sharing was greater or less among colleagues who worked closely. Contrary to expectation, sharing was less among closer colleagues perhaps because of issues of competitiveness. Overall, Professor Ensign provides a well laid out examination of the phenomenon of knowledge sharing among scientists in a manner indicative of a large in-depth and detailed research paper—essentially a research monograph.

The first chapter is an introduction to the study where Ensign maps out the conceptual thinking behind his model of when scientists decide to share knowledge. Essentially, this is a reputational model in which the decision of a knowledge source to provide knowledge to a recipient is based on the recipient's past behaviour and the expected future actions or reciprocity of the recipient with respect to the source. Ensign defines the knowledge shared as a