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Cooperation, Clusters, and Knowledge Transfer

Universities and Firms Towards Regional Competitiveness

Springer

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Foreword

Is capitalism in crisis? Since the major financial crisis of 2007–2009 a number of people have wondered whether capitalism has outlived its usefulness and reached a fundamental dead end. What are the alternatives to a world dominated by large global corporations, many with greedy and manipulative senior managers who reward themselves with salaries, bonuses and payoffs, which are often widely perceived to be unfair and indeed nothing short of obscene? It is all too clear that shareholders lack the power to control these organisations and sovereign governments have lost the nerve and wit to regulate them. Maybe the politicians have wittingly or unwittingly colluded with big business, partly in a desire to generate economic growth and employment, and partly, let it be said, some are advancing their own pecuniary interests. Whatever the reasons, we need to seek alternative solutions to an economic system which is frankly failing billions of people across the world. Never was there a more critical time to provide workable economic and business solutions at the regional level.

These are big questions which people across the world are anxiously pondering but the answers to which are largely beyond the abilities and resources of ordinary people to resolve and, it appears, are largely beyond the abilities of politicians to resolve in any coherent and purposeful way. It is no small wonder then that many people are turning to small and medium-sized enterprises (SMEs) as a more logical and attractive answer to the age-old problems of how to not only generate growth and employment but also make businesses more accountable at the local and regional levels. As the great European Union and Eurozone experiment appears to be unravelling, it is natural for people to be thinking about economic and business solutions at the regional and local levels, and in particular, the development of small social enterprises and cooperatives, each controlled by local people and accountable to local people. If the nation state has shown itself largely incapable of promoting sustainable economic growth, then perhaps the regional context for promoting businesses may prove more successful. That SMEs are the small acorns from which big economic rewards will flow seems self-evident but despite decades of SME and entrepreneurial research we appear to be no further forward in ensuring that economic growth results in a more equitable distribution of wealth.

We need to untangle and forcefully demonstrate the tangible benefits of cooperation and competition between SMEs at the level of the region, the city and the village. We need to understand how information flows between small and medium-sized businesses and the regional state, how knowledge is transferred from universities, science parks and scientific research institutes to businesses enterprises and vice versa. But above all, we need to raise awareness of current developments, best networking practices and the development of all-important explanatory and predictive theories, which can spark much-needed innovations in the SME world, and help ensure a much healthier competition among enterprises than we have seen to date.

The authors of the chapters in this very timely book are to be congratulated in bringing to our attention the important issues of cooperation, competition, networking, knowledge transfers and innovation within the regional SME context. Having brought these issues to our attention is it too unreasonable not to expect our regional and national politicians to stop prevaricating and actually do something tangible and long-lasting in the generation of wealth and its more equitable distribution, for all our sakes?

Gary Akehurst

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Introduction

One of the key factors, if not the most determinant, of every private sector entity is its respective level of competitiveness. Traditionally, efforts to explain this competitiveness have been based on an aggregated perspective concentrating on the characteristics of its components, on macroeconomic indicators and on government policies.

There is a wide evidence that small and medium-sized enterprises (SMEs) play a wide role in sustaining growth and employment in Europe and in particular in regions eligible for the new regional competitiveness and employment objectives. Regional competitiveness may be defined as the capability of the region to attract and maintain firms with stable or increasing market shares in their respective activities while maintaining stable or increasing standards of living for those engaging in them (Malmberg and Maskell 1999). This draws attention to the region as institutional environment for SMEs. Although many SMEs are nowadays exposed to global competition, the regional institutional environment has a very substantial impact on their ability to network in order to access and create knowledge. Consequently, the regional level of analysis has lost nothing of its relevance, in spite of claims to the contrary by, for example, Shearmur (2011). Regional competitiveness is shaped by a combination of the competitiveness of regional firms and the institutional environment in which they are embedded. For SMEs in particular, the region remains the key context (Boschma 2004). Consequently, it is important to study how the regional institutional context affects innovation in SMEs. According to Malmberg and Maskell (1995), for example, the institutional endowment of a region or a country should be defined broadly and include not only all institutions related to the following factors: production; the efficiency level of goods and services markets; the quality of demand; governmental institutions and practices; and entrepreneurship but also soft institutions such as trust and social capital (Lorentzen 2008). This institutional network approach encapsulates the functioning and development of Regional Innovation System (RIS) designed to embrace all regional key players. In today's modern society, regional competitiveness and inter-firm cooperation are two crucially important fields of studies.

In business networks, the actions one firm takes also affect the wider extent of the network and thus also each individually networked firm. Regional cooperation between firms and between firms and universities may correspondingly be perceived as the foundation of regional competitiveness. Furthermore, cooperation and clusters have now become the guiding paradigms for explaining and promoting regional competitiveness (Cooke 2001; Ferreira et al. 2012). Vertical linkages among related industries and proximate regions represent important spillover forces influencing the economic performance of regions, especially within and across clusters related by either technology or linkages and across clusters common to proximate and adjoining regions (Delgado et al. 2007; Titze et al. 2011). Since linkages between SMEs and universities are not in many cases self-evident, regional clusters may function as important channels for university knowledge to flow to regional SMEs. University knowledge flows into a cluster through linkages between larger firms and more innovative SMEs on the one hand and universities on the other hand. Once in the cluster, other SMEs may also benefit from this knowledge (Harding et al. 2007).

Despite the advances made in the literature, the cooperation process between firms and universities, clusters and the transfer of knowledge in guiding and nurturing regional competitiveness has received relatively little attention.

This book strives to overcome this gap. This is achieved by bringing together new contributions from established scholars in the fields of management and economics as well as from the regional competitiveness literature. The three parts of the book are specifically designed to highlight the connection between inter-firm cooperation in regional clusters, innovation and regional networks and the role of universities in this all.

The book intends to bring about a very comprehensive international exchange of scientific perspectives within the scope of boosting awareness about current developments, case studies, best practices and new integrated theoretical approaches and applications. We believe such approaches open up some new directions in thinking on these issues. This is important within the context outlined here with these first steps serving to differentiate this publication from others on the subject. The book reaches beyond the traditional economic approach to clusters to incorporate “soft factors” in the explanation of regional competitiveness and thereby interweaving the literature on clusters into the literature on learning and knowledge creation as sources of regional competitiveness.

Overview of Book Contents

The book gathers the most recent developments from interlocking fields of knowledge, in particular from business and economics. In this sense, the book is composed of three mutually linked sections. Part I contains several contributions about cooperation processes and clusters in both the theoretical and empirical dimensions. Part II reports different approaches to entrepreneurial activities, innovation and

regional networks. Furthermore, the transfer of knowledge between university and industry is developed in Part III.

Part I: Inter-Firm Cooperation and (Regional) Clusters

This section includes five chapters. The first, *The startup location decision and regional determinants*, by F. Lasch, F. Robert, F. Le Roy and R. Thurik. Addressing the importance of small business and new firm formation for economic growth, a considerable outpouring of literature puts forward empirical evidence criticizing or confirming the "job generation process" theory that resulted in putting entrepreneurship rising to the forefront of research into that perceived as an "entrepreneurial" economy. Founding new firms represents a strategic asset to an entrepreneurial economy and many economic policies strive to craft and implement measures able to foster and stimulate entrepreneurship.

However, contrasting empirical evidence resulting from measuring the regional determinants of entrepreneurship leaves many questions about economic actors and their actions unanswered and the valuation and application of research results to practices and policies remains complex. This is precisely the situation this chapter intends to contribute towards resolving. For this purpose, the authors identify and measure regional factors for cross-sectional new firm formation activities that we compare with the already obtained results for high-tech firms).

The authorial conclusions report how the new high-tech venture development process is promoted and facilitated by support from government departments, universities and high-tech research institutes throughout their entrepreneurial process in recognizing the opportunities, collecting the resources and struggling to growth. Furthermore, they also found that start-up capital, technological support and human capital are the critical resources those institutes strive to provide in accordance with potential entrepreneur needs. And entrepreneurial networks built up through the institutional network structure are also important to new ventures gaining the resources necessary.

The second chapter undertaken by J. Jimenez-Moreno, R. Martínez-Cañas, P. Ruiz-Palomino and F. Sáez-Martínez, *The role of science and technology parks in the generation of firm level social capital through university-firm relations: An empirical study in Spain*, states that Science and Technology Parks (STPs) are artificial infrastructures playing a key role in regional innovation systems fostering the transference of academic research findings and generating knowledge spillovers. The main contribution of this chapter is to focus analysis on the value generated through relationships between universities and tenant firms. Therefore, the application of social capital theory enhances our understanding about the dynamism that is often a consequence of strong interactions between these actors. This chapter also contributes to extending previous studies that have tended to measure the value of STPs for firms using traditional economic indicators (mainly at the park level of analysis), such as annual growth, profitability, employment rate or the number of new companies launched. The main results obtained in this chapter are not only that

social capital can be generated by building and maintaining relationships with universities but also that the social capital generated actually does have positive and significant effects on knowledge acquisition and reputation.

The third chapter, *Knowledge transfer in or through clusters: outline of a situated approach*, by J. Hermans, aims to outline a research approach that would enable the study of clusters and inter-organizational knowledge transfers as a situated, political process. Such an approach rests on three basic assumptions: What research objects are of interest when exploring knowledge transfers through a situated approach? Which conceptual and methodological tools are deemed most appropriate? Why study knowledge transfers in innovation clusters through a situated approach? Or, alternatively: who are the stakeholders in such studies? The main conclusion points out how we need a deeper understanding of the mechanisms favouring R&D cooperation. The role of "spinning-out" in providing alternative paths and new insights into this cooperation would result from greater research. As a generator of norms for collaborative individuals, we need greater depth to our understanding of the actual means that government and administrative actors may deploy to provide such norms and how they guide cluster participants.

The fourth chapter, *How does a researcher become an entrepreneur in high-tech industrial clusters? A case study of Leuven high-tech cluster,* by R. Liu, H. Zhang and Z. Yang, states that high-tech entrepreneurship performed by researchers themselves is particularly prominent in high-tech industries where new ideas generated from advanced knowledge are of great importance. This chapter also seeks to explore how high-tech entrepreneurial activities are fostered in high-tech clusters. The authors chose one specific location, the Leuven high-tech region in Belgium, as the research case study. The high-tech industrial cluster in Leuven had played an important role in enhancing high-tech entrepreneurial activities in the local region and boosting regional development in the past few decades.

The final chapter in Section I, *Inter-firm cross border cooperation for entrepreneurial opportunities: a regional experience*, developed by J. Ferreira, M. Raposo and C. Fernandes, focuses on inter-firm crossborder cooperation and entrepreneurial opportunities. In this chapter, regional competitiveness is viewed as an outcome of these concepts. This is due to how successful entrepreneurship generates material benefits not only for the firm itself but also for the benefit of the whole territory in which it operates. The research undertaken aims to determine how SMEs in the crossborder regions of Castilla y Leon (Spain) and Centro Region (Portugal) might increase their levels of cooperation and identify the best operational practices through which the firms would be able to improve their competitiveness. Two research questions are correspondingly highlighted: why and how do firms share knowledge and innovation with respect to cross border cooperation and how does the regional dimension affect cooperation processes.

Part II: Entrepreneurial Activities, Innovation and Regional Networks

The sixth chapter by P. Cooke, *Transition regions: green innovation and economic development*, proposes the idea of "transition regions" as spaces where clusters of innovation emerge to exploit public and niche market demand for innovation, specifically in this case eco-innovation. Accordingly, the author discusses and critiques the main spatial and non-spatial theories that address methods by which societies may transition from a hydrocarbon to a post-hydrocarbon technological regime. Furthermore, the chapter seeks to demonstrate how a more theoretically informed framework based on regional innovation systems thinking, allied to evolutionary economic geography and development analysis, produces a superior transition model; and how his concept has the following powerful theoretical implications for inter alia externalities, endogeneity, networks, labour mobility and entrepreneurship as sources of innovative knowledge exchange.

The seventh chapter, *Clusters, learning, and regional development: Theory and Cases* by R. Rutten and D. Irawati, seeks to understand why some regional clusters perform better than others. The answer to this question must be sought along two related but distinct lines of inquiry. Firstly, the characteristics of regional clusters are important with regard to their success or failure in the global economy. Secondly, the regional characteristics wherein a cluster is embedded must also be considered. This chapter addresses both lines of inquiry based on the assumption that economic performance is fundamentally driven by innovation, learning and knowledge creation.

The importance of entrepreneurship and female entrepreneurship, in particular, has been considered an important and increasing factor in economic development. In Chap. 8, Socio-cultural factors and female entrepreneurship in the innovative sector in Catalonia: a qualitative analysis, authors M. Noguera, C. Alvarez, D. Ribeiro and D. Urbano analyse the main socio-cultural factors and their impact on female entrepreneurship in the innovative service sector in Catalonia (Spain) and establish differences with male initiatives using the institutional approach as a theoretical framework. Based on a comparative case study, the principal findings suggest that social networks, role models, entrepreneurial attitudes and family contexts are important determinants of female entrepreneurship. Family context is, in particular, a crucial factor, which might have a larger impact on women than men. The research contributes both theoretically, through the creation of knowledge in a less researched field such as female entrepreneurship in Spain, and practically, through the development of sustainable support policies for female entrepreneurial activities.

Many scientific publications and government reports quite clearly point to the potential impact that using knowledge generated in universities may play in the economy of a region or country. The ninth chapter, *Academic entrepreneurship and entrepreneurial learning: the best practice of IPB*, by J. Adriano, P. Fernandes, H. Sampaio, and J. Lopes, is concerned with the issue of cooperation in higher education at the regional development level mainly as regards the role that this type of educational institution must adopt in order to contribute efficiently to this purpose. The strategies and best practices adopted by the

Innovation and Entrepreneurship Office at a higher education institution, during its short existence, have been the target of ongoing reflections by participant actors within the framework of driving continuous improvement and maximizing results. This chapter presents a conceptual framework for successful entrepreneurial learning in terms of how higher education institutions may facilitate growth in knowledge about this area and thereby become more entrepreneurial.

Part III: Knowledge Transfers Between University and Industry

The academic and policy literatures have increasingly acknowledged that university engagement with the economy extends well beyond the private sector and includes the public and third (or not-for-profit) sectors. Chapter 10, *Academic interactions with private, public and not-for-profit organisations: the known unknowns,* by M. Abreu and V. Grinevich, is based on a recently completed survey of UK academics, providing micro-data on over 22,000 academics in the sciences, social sciences, arts and humanities and studies the interface between the university and external organizations by exploring the extent and determinants of academic interactions across all sectors, including private, public and third sector organizations. They find that the involvement of academics with private firms is substantial but less widespread than that with public and third sector organizations. Furthermore, they empirically demonstrate that the contributions of universities to the economy and innovation processes should be conceptualized within a wider context of private, public and social innovation.

Even though there seem to be some risks associated with the involvement of university scientists in spin-off processes, their importance is unquestionable. Chapter 11, *The role of academic spin-off founders' motivation in the Hungarian Biotechnology Sector,* by K. Erdős and A. Varga, finds that science- and business-related motivations break down into four types of academic entrepreneurs: (1) the "classical" academic entrepreneurs, driven by academic motivations while founding and running companies; (2) the "unbalanced" academic entrepreneurs, attributing absolute priority to either academia or business but never both; (3) the "impeded" academic entrepreneurs, very similar to "classical" academic entrepreneurs in their actual motivations but impeded from acting mostly by departmental factors and (4) the "externally motivated" academic entrepreneurs who strongly identify themselves with scientific norms whilst also realising the pressures from their university's leadership which does not always positively impact spin-off processes. Erdős and Varga shed light on the motivations behind Hungarian biotechnology spin-off founders and establish a corresponding typology. This research project focuses on a continental European system with both Germanic roots and the effects of the Soviet experience that clearly shape the environment unfolding around academic entrepreneurs. Nevertheless, biotechnology has come in for significant support in Hungary and that might enhance spin-off activities.

Chapter 12, *Hirschman mobility among academics of highly ranked EU research universities,* by E.M. Bergman, analyses the mobility of European university academics by recourse to data resulting from a large web-survey. Two mobility models are explored; one considers the factors contributing to an academic's decision to relocate to another university while the other examines whether that relocation would occur within the European research area (ERA) or elsewhere. Both models draw heavily upon Hirschman's seminal work that conceives career relocation as an "exit" decision and comparable to the main rationales for remaining (being "loyal" or having "voice") in the same post. The results clearly indicate that academics exercising either "loyalty" or "voice" are significantly less likely to be mobile. Moreover, those who do engage in mobility refuse to restrict potential destinations to within the ERA whenever placing value on either better material conditions, better quality colleagues, students or university reputation.

The question of how action-based entrepreneurial programs shape the role of entrepreneurial students is addressed in Chap. 13, *Action-based education in academic entrepreneurship: A new role of the student?* by L. Foss, E. Oftedal and T. Iakovleva. The scope of entrepreneurship programs offered by academia has expanded significantly. Examining the literature, more economic oriented studies with ex-ante and ex-post survey responses find that students do learn about their entrepreneurial aptitudes through entrepreneurship education. The role of entrepreneurial students is a crucial component to knowledge-based economies within the framework of which universities need to contribute towards regional innovation by helping to commercialize research-based ideas. Thus, universities need to educate students on how to get ideas to the market, interact and cooperate with inventors and technology transfer specialists and develop the skills and self-esteem that enable and empower them in terms of technology transfer and launching university spin-off ventures. The contribution of these authors includes theorizing and illustrating, with real life student and inventor examples, an action-based entrepreneurial program as well as setting out a (theoretical) framework with propositions for future testing.

We believe this book bridges academic research and draws on practitioner experience to provide a detailed understanding of how and why cooperation, clusters and the transfer of knowledge represent not only essential fields of study but also the very foundations for regional competitiveness.

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