1. Introduction

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1. INTRODUCTION

This book, Learning to Compete in European Universities: From Social Institution to Knowledge Business will challenge the reader by asking how and why European universities are changing and learning to compete. Anglo-Saxon universities, particularly in USA, UK and Australia, have been subject to, and responded to market-based competition in higher education for a long time. We will argue that Continental and Nordic universities and higher education institutes (HEI) are now facing similar pressures that are leading to structural transformation of the university sector. Thus, one of the major societal institutions in Europe is undergoing transformation, and becoming a knowledge business. Regardless of whether one believes that this increasing competition has positive or negative effects, the transformation will affect academics and students, as well as the ability of firms and nations to compete in the global knowledge society. This book provides some steps towards explaining what is going on; towards analysing how individuals, groups and organizations are responding; and towards discussing the implications for society and universities.

This book is designed to raise debates and stimulate new research agendas about this transformation of the university sector and about the underlying need to learn and develop new types of organizational forms and behaviour, as well as strategic action. Our research shows that European universities are moving from a national institution providing a public good, to a business delivering services to students and various other stakeholders. In this conceptualization, universities are delivering knowledge-based services such as education, research and different types of societal interactions like commercialization of scientific results. Later chapters review relevant academic literature in relation to specific changes within universities and higher education. As a whole, this book contributes to new debates because it focuses upon new issues such as strategy, learning, diversification, and because some empirical results challenge ‘accepted wisdom’ about Europe.
Empirically, the evidence suggests that European universities have not yet learnt to compete globally, with the possible exception of the universities in the UK. The Economist (26 February 2005, p. 63) framed the debates about European universities, in comparison with American universities and those further afield. ‘There used to be three near-certainties about higher education [in Europe]. It was supplied on a national basis, mostly to local students. It was government-regulated. And competition and profit were almost unknown concepts. . . . How that has changed.’ Newsweek (August 2006) stresses instead that universities must become global, in order to compete. However, not all universities will be able to be ‘globally competitive’. Indeed, globalization of research and education is only one of several strategies available for universities. Instead, we interpret the changes in a broader way that universities need to learn and change how they compete, and understand their role in relation to global collaborators and competitors.

This conceptualization of ‘learning to compete’ reflects the relative position of European universities, especially compared to Anglo-Saxon universities but also in relation to the rapid development of universities in India and China. This phenomenon of a new competitive regime has been visible in the USA, Australia and UK for a number of decades but is now more strongly felt within Continental and Nordic Europe. So this book addresses the formal and informal roles of universities and university staff and what they can and should do in this new selection environment. Certainly, one can argue whether these shifts necessarily move universities closer towards a more market oriented mode in a traditional economics sense but this book explores broader issues of learning, strategies, and competencies, during this period of transformation towards a more competition based mode within Europe. The argument of the book is that significant changes are underway and that these universities and higher education institutes must learn to compete – or to react to reverse the current trend towards ‘knowledge based businesses’ by better articulating and protecting the traditional values and contributions of universities to society.

The new competitive regime for universities in Europe and Asia depends upon the following factors: (a) Increased globalization of students, resources and faculty; (b) Changes in national public policy for education, science and innovation; and (c) Changes in business R&D strategies, which are attempting to make university research linked to firms’ R&D strategies (Slaughter and Leslie, 1997; Geuna, 1999; Chesbrough, 2003; Lawton Smith, 2006). At the moment, the sense is that these economic and political changes will lead to new societal rules and institutions, which fundamentally will change higher education (Fuller, 2000; Reichert, 2006).
This view affects the present and has implications for the future. Regardless of whether colleges, universities and institutes are publicly or privately owned, they are facing new pressures within a more business-oriented environment, or what we call the new competitive regime of universities. These pressures are placing high demands on the organizations to learn to develop strategies and react. Relevant examples are numerous. They include, but are not limited to:

- Expansion from elite to mass education;
- Bologna process to reform and unify degrees in Europe;
- Reforms of research through the European Research Area;
- New national mechanisms for managing the flow of national resources to teaching and education;
- Increasing emphasis on university–industry relations, especially commercialization through patents and academic entrepreneurship.

European universities should deliver knowledge-based services. Moreover, European universities and their financiers are increasingly demanding not only that these services are performed, but also that they are excellent and address relevant societal problems, as formulated in the political and policy domains. These empirical changes demand new ways to conceptualize and explain universities as actors, where strategic processes may be driven ‘top-down’ through leadership and ‘bottom-up’ through research groups and individuals.

In this new situation, universities will have to be ‘knowledge businesses’ rather than ‘societal institutions’, and this has implications not only for the future of universities but also the ‘knowledge economies’. Some organizations will never enter (or ‘lose’) the global race and instead find new positions and missions at the local and national levels. Clearly, the race up the ladder is already happening, because we can clearly see that many universities and colleges are already trying to position themselves globally, and to raise their standings in the rankings. National rankings and effects are also predicted.

The Americans – followed by the very top British universities – have impressive leads over Europe and the rest of the world. In 2006, for example, seven of the top ten universities in the Financial Times survey were American, and the other three were British. The first Continental European university was at 18th place in 2006, and it had dropped seven rankings since 2005. Another recently widely cited ranking is the Shanghai Jiao Tong University Rankings. While the rankings are measured through somewhat different metrics the Chinese survey shows similar results at the national level as the FT survey.
European leaders in politics, science and universities have noticed the American lead and the European lag, and they are responding in different ways. European leaders in most countries are increasingly focused upon the need to compete for the top faculty, top students and staff internationally (Ramsden 1998; Neave et al. 2006). Ireland and Germany, for example, have had explicit strategies for repatriating leading scientists active elsewhere and for promoting excellence. Some countries try to focus upon more specialized niches to promote excellence. For example, the Nordic countries are focusing on large-scale and focused research environments and the benefits of regional colleges when interacting with local industry (Bauer et al., 1999; Schilling, 2005; Melander, 2006; Benner and Sörlin, 2007).

Of course, Anglo-Saxon countries moved towards a competitive model much earlier than Continental and Nordic countries. As compared to the general European picture, the United Kingdom is in some ways similar to Australia (Clark 1998, 2004; Marginson and Considine 2000). Their relatively favorable position in attracting international students, for example, could be due to an early move into a competitive regime for research funding and students, but it can also be due to less imitable aspects such as the inherent advantage of the English language. Hence, the fact that the Continental and Nordic countries are ‘latecomers’ raises interesting strategic issues about the extent to which these universities and countries should imitate given strategies or develop new ways of developing competencies and attracting resources. This book therefore concentrates on those countries, but will make some comparisons with the Anglo-Saxon countries.

This book differs from much of the existing literature reviewed in its various chapters as it proposes a new line of research on the strategic action and economic transformation of universities per se. Such topics are just beginning to be addressed, as demonstrated by projects at the international forefront. Several books recently published on related topics include Geuna (1999), Bonaccorsi and Daraio (2007), and Lawton Smith (2006).

The book has thirteen chapters, and the analysis is structured around four themes, namely ‘Emergent Strategy’, ‘Differentiation and Specialization’, ‘Rethinking University–Industry Relations’ and ‘Reflections’.

Section 2 provides detailed information about each of the chapters, as each contributes to a specific theme and to the overall analysis put forward in the book. Relevant literature can be found within each chapter, which may include evolutionary economics, higher education, innovation and strategic management, innovation systems, science policy and triple helix. Some chapters also address specific topics of relevance to public policy, such as the effects of the search for excellence, new interpretations of university–industry relationships, and how universities evolve strategies to survive. This multidisciplinary approach is necessary because this
book addresses a problem area that crosses several boundaries. Section 3 then goes further in discussing the four themes and also provides a comparison across chapters. This section helps explain why and how the book introduces a series of more general ideas, analytical tools and theoretical approaches by which we can analyse universities as competing within knowledge-based services. Thus, Sections 2 and 3 provide a useful ‘roadmap’ of the book for the reader.

### 2. DETAILED INFORMATION ON CHAPTERS

This section provides detailed information on the chapters. It also provides an abstract for each chapter. They are in turn organized within four horizontal themes, which represent broad ideas and research questions of relevance to this book:

1. Emergent strategy
2. Differentiation and specialization
3. Rethinking university–industry relations
4. Reflections

The first theme is ‘emergent strategy’, which includes Chapters 2 to 4.

Chapter 2, ‘Exploring university alliances and comparable academic cooperation structures’ is written by Enrico Deiaco, Ana M. Gren and Göran Melin. The main emphasis is to explore the creation of alliances and collaboration between universities. Ten major alliances are analysed in terms of motives and outcomes, with particular emphasis on the rationale of university leaders. These are mostly European cases, although several of them include partners from the USA and Asia. The chapter provides a framework for analysing the benefits and risks of this strategic option. The authors recommend that if alliances are to provide positive benefits, alliances should open up opportunities for interaction at many levels between the universities, and also facilitate large-scale research grants. This chapter thus explores an option to ‘going it alone’, which many European organizations are pursuing to gain excellence and resources on the global scene.

Chapter 3, ‘Strategy to join the elite: merger and the 2015 agenda at the University of Manchester’ is written by Luke Georghiou. Two of the UK’s research universities with a shared history, the Victoria University of Manchester and UMIST, merged in October 2004 to form the country’s largest university. The rationale for this merger was that world-class universities drive economic development yet the UK’s world class universities
– Oxford, Cambridge, Imperial, UCL, and LSE are all in one region – the prosperous South East. There was a perceived need for a world-class university in the North of England and Manchester was the obvious base. This chapter analyses the motivations and process of the merger and reviews the strategy of the new University of Manchester as set out in its Vision Document *Manchester 2015*: ‘To make the University of Manchester, already an internationally distinguished centre of research, innovation learning and scholarly inquiry, one of the leading universities in the world by 2015.’ The nine-part strategy is defined in terms of key performance indicators, which are assessed in an annual planning and accountability cycle. The strategy has several distinctive features including a policy of ‘iconic appointments’ and a desire to make the university distinctive from other UK leaders in its social inclusivity and engagement with the community. Substantial challenges are faced in achieving these goals. Hence, this chapter focuses on how the university as an organization can introduce a major change to reach strategic goals.

Chapter 4, ‘Large-scale international facilities within the organization: MAX lab within Lund University’ is written by Olof Hallonsten and Mats Benner. This chapter analyses how and where specialized labs as part of international ‘big science’ fit within the strategic processes of universities in Sweden. Following de Solla Price’s seminal book *Little Science, Big Science* (1963), many studies have focused upon characteristics of scientific endeavour becoming international, large-scale and with personal relationships as boundaries amongst the ‘invisible college’ of scientists. This chapter provides a detailed case study, which juxtaposes the ‘big science’ carried out within the MAX lab on synchrotron lights with the university strategy process of its host, Lund University, and of the peculiarities of Swedish science policy. This chapter therefore raises interesting questions about how the workings and notions of big science lie within the strategy process carried out within universities. It also addresses where the responsibilities for initiating and running large facilities should lie, when there is a broad constituency, including public, private, multiple disciplines, and national and international stakeholders. This chapter mainly focuses on the lab, as an arena within which research groups, universities and science policymakers interact.

The second horizontal theme is ‘differentiation and specialization’, which includes Chapters 5 and 6.

Chapter 5, ‘Division of academic labour is limited by the size of the market: strategy and differentiation of universities in doctoral education’ is written by Andrea Bonaccorsi. A key notion for competition is differentiation and performance. The chapter explores the notion of differentiation of higher education institutions, from a quantitative point of view. Faced
with waves of increase in participation rates (the ratio between young cohorts attending universities and young population in the same age class), universities in Western countries have progressively differentiated their structure, following a process of specialization in terms of offering profile and resource mixes used. Following Smith, Young and Stigler, the author argues that following increases in student numbers and deregulation, universities find it increasingly difficult to procure funding and high-quality space while competing on all dimensions in output space as decisions become too slow and resources are spread too thin. This necessitates a reorientation towards differentiation in their strategic profile. The chapter introduces an economic analysis of the notion of differentiation of universities and proposes a quantitative measure. The general notion of differentiation is applied to the activity of universities in doctoral education and the empirical observations are on emergent strategies, not deliberate strategic decisions. The measure is based on the availability of the large dataset created by the project Aquameth that, for the first time, has integrated census microdata on all universities in several European countries for a decade. This chapter explores these issues following an original approach, based on quantitative indicators built upon a large dataset of comparable microdata. Data refer to all universities in Finland, the Netherlands, Switzerland, the United Kingdom, Spain, and Italy. A way of developing an overall measurement of institutional differentiation is built using information theory and entropy measures. The variation of this metrics over time and across countries is observed. The chapter organizes the analysed countries into (a) institutional inertia, (b) dynamic differentiation, (c) institutional abundance, and (d) consolidated differentiation.

Chapter 6, ‘Polarization of the Swedish university sector: structural characteristics and positioning’ is written by Daniel Ljungberg, Mattias Johansson and Maureen McKelvey. It relates the structural characteristics of Swedish universities, to the propensity of different categories of university to attract external research funding, including industry financing. Existing literature about the ability of universities to obtain research grants in general, and to obtain industrial funding for research in particular, have focused on questions such as the quality of the research performed, the impact of informal networks in creating constructed communities, and the ‘Matthew effect’ for individual researchers. While these streams of literature raise interesting relevant issues about the quality and orientation of research, this chapter takes a different angle. By addressing structural characteristics, it is related to debates about the need for critical mass and excellence, not only within research groups but also within universities. These notions leads first to a categorization of the Swedish university sector, and second to the ability of the different universities to obtain external research
funding. The chapter draws upon a national database of statistical material reported to the government and additional sources to test these ideas. It thus addresses the university sector in Sweden, based on time-scale data at the micro-level of specific universities.

The third horizontal theme is ‘rethinking university–industry relations’, which includes Chapters 7 to 10.

Chapter 7, ‘The American experience in university technology transfer’ is written by Maryann Feldman and Shiri Breznitz. This chapter examines the American experience with technology transfer, recounting the history of university involvement with industry in the search for additional sources of revenue. American universities have been more active in formal university tech transfer and for longer than other countries. American research universities entered a new era in 1980 with the passage of the Bayh–Dole Act. Moving beyond publication and teaching, the traditional modes of disseminating academic inventions, universities now actively manage their discoveries in a process known as technology transfer. All American research universities now have operations dedicated to securing invention disclosures from campus research and establishing intellectual property rights over them. These offices then work to license the rights to use the intellectual property, either to existing firms or encouraging the formation of new firms for this purpose. This chapter documents the formal establishment of university technology transfer offices and other entities such as arm’s-length foundations to manage commercial relationships. Finally, the chapter analyses the growth in litigation over university IP ownership and licensing agreements.

Chapter 8, ‘Academic patenting in Europe: evidence on France, Italy from the KEINS database’ is written by Francesco Lissoni, Patrick Llerena, Maureen McKelvey, and Bulat Sanditov. It asks whether national institutions determine patenting behaviour of academics located in three different European countries. Cleaned patent data drawn from the CESPRI database on EPO patents, was gathered by the researchers, for each of the three countries over the period 1978 to 2004. We would expect differing national institutions to affect propensity to the patent. However, the results indicate that the patenting patterns are similar across the countries, and also within scientific disciplines across countries. Comparisons are made with evidence from the USA, indicating similar levels of academic patenting and firm involvement. The chapter thus focuses upon the patenting of academics at the individual level, and uses that data to describe the patenting behaviour in terms of countries and disciplines.

Chapter 9, ‘The Forgotten individuals: attitudes and skills in academic commercialization in Sweden’ is written by Mats Magnusson, Maureen McKelvey, and Matteo Versiglioni. It addresses whether and why individual researchers have the skills and attitudes necessary for
commercialization in Sweden, and place this in relation to the services provided by the university for commercialization. The Swedish innovation system has been focused upon explicitly organizing the support structure of an individual university, and includes services such as technology transfer offices, access to patent attorneys, localities of science parks, consultancy for business plans and setting up companies, etc. Much current public policy and also the strategy documents of specific universities stress the need to build such large-scale systems. This chapter analyses commercialization and patenting, through a questionnaire to 1200 Swedish university researchers, with a 24 per cent response rate. The researchers work within six research fields, namely fluid mechanics, wood technology, biotechnology, computer science, automatic control and inorganic chemistry. The questionnaire of Swedish academics also includes research groups at different universities within these fields. All research centres financed by the strategic research grants had a mission to both develop ‘high quality science’ and to ‘promote interaction with industry’ within their field. This chapter thus turns the question from the national innovation system towards skills and attitudes of the individual researcher.

Chapter 10, ‘Elite European universities and the R&D subsidiaries of MNEs’ by Anders Broström, Maureen McKelvey, and Christian Sandström. It analyses why large multinational firms are willing to invest resources in long-term collaboration with leading universities. This chapter is based on interviews with the multinationals at universities in Sweden, Switzerland, and the United Kingdom. The issue of how and why multinational corporations are willing to invest in longer-term collaboration with universities relates back to the core of the ‘positive’ interpretation of the knowledge society for Europe – namely how to remain an attraction node for R&D. This chapter thus moves to the perspective of the firm, in their interactions with university-based researchers active in top universities in different fields.

The fourth horizontal theme is ‘reflections’, which includes Chapters 11 to 13.

Chapter 11, ‘Running the marathon’ is written by William Cowan, Robin Cowan and Patrick Llerena. It raises issues and implications about the rate of change and the unintended consequences of introducing competition mechanisms into European universities. It provides ideas and thoughts, thereby providing room for reflection at a time when university leaders are quick to proclaim they are ‘competing’ and economists are increasingly giving advice about productivity and efficiency. The authors argue that this is deeply problematic. In particular, the chapter differentiates between the ‘university of culture’ and the ‘university of innovation’ where too much focus on the latter may lead to dire, unintended consequences. Much recent
policy making, the authors argue, is based upon a flawed view of what the university is for. The focus on competition in straightforward metrics misses the point that universities should be much more long-term in their focus. Consequently, the chapter discusses the overarching goal of the university in relation to the speed of change of this societal institution and in relation to university–industry relations.

Chapter 12, ‘What does it mean conceptually that universities compete?’ is written by Enrico Deiaco, Magnus Holmén and Maureen McKelvey. The modern rhetoric states that universities compete but is hardly very precise in formulating what this entails. This chapter asks what competition may mean for universities and other HEIs. It describes an evolutionary economics and innovation management perspective for understanding international trends and the responses of specific universities, but also comments upon the limits to such competition as regulated by government, laws, etc. The chapter portrays universities as knowledge-based service providers with a set of different stakeholders (students, firms, governments). From a selection perspective, the chapter analyses what type of outputs these stakeholders are interested in and what metrics there are in terms of assessing these outputs. This analysis is conducted in terms of characteristics of the university sectors in terms of value, resources and appropriation for education, research and ‘innovation’. This chapter thus addresses what competition and transformation mean for universities, focusing on universities within a global sector providing knowledge-based services.

Chapter 13, ‘From social institution to knowledge business’ is written by Enrico Deiaco, Magnus Holmén, and Maureen McKelvey. It analyses the main results, in terms of the four horizontal themes introduced above, focusing on what we have learnt theoretically and empirically about European universities learning to compete. It concentrates on the implications for the future, of this new competitive regime, as universities, institutes of technologies and colleges move from social institutions to knowledge businesses. The future implications are presented in terms of restructuring the university sector at the macro level and in terms of strategies at the micro level. Hence, these conclusions are particularly relevant both for public policy and for decision-makers within universities, at all levels ranging from heads of research groups to vice chancellors and presidents.

3. LEARNING TO COMPETE: THEMES AND COMPARISONS

This section provides an overview of the themes. Subsequent chapters are summarized for a detailed comparison in terms of specific issue, main level
of analysing the university, which countries are included, and the main methodology and data. After this comparison, each horizontal theme is described.

The first theme is ‘emergent strategy’ and includes Chapters 2 to 4. The chapters can be summarized in terms of main issues, countries and data as found in Table 1.1.

‘Emergent Strategy’ is the horizontal theme that describes strategy as an emergent result of an on-going, interactive process from the bottom-up as well as top-down. These chapters provide empirical evidence that European universities are responding to pressures to transform. They ask different questions about emergent strategy, in the sense of how and why universities as organizations and research groups are active in creating their new positions, within institutional contexts. These chapters raise different questions about how well different organizations are able to obtain resources, students, prestige, industrial funding, etc. in relation to internal and external pressures for change.

The second theme is ‘differentiation and specialization’, which includes Chapters 5 to 6, which are compared and contrasted in Table 1.2.

The historical development of the universities, research institutes and higher educational system in European innovation systems has generally been tied to societal goals such as general education and welfare state ideals. In line with this, the European Union Lisbon Strategy of 2000 will rely upon science and education to boost competitiveness, sustainability and social cohesion. Despite these national and European goals, the current trend is that market-based mechanisms and different types of competition are increasingly differentiating the population of universities. These chapters provide empirical evidence and conceptual discussion that suggest that European universities are already facing significant new competitive regimes, and in particular, they identify more pronounced patterns of differentiation and niche specializations, in ways similar to Anglo-Saxon countries. Implications of these new patterns of globally competitive, nationally useful, and regional focus are discussed in relation to differentiation.

The third theme is ‘rethinking university–industry relations’, which includes Chapters 7 to 10, with details in Table 1.3.

This theme of ‘Rethinking University–Industry’ asks what is going on in the USA as well as how well Europe is doing in terms of university–industry relations, given the widespread belief that Europe greatly lags the USA. According to Dosi et al. (2006), belief in the European paradox has focused attention upon the role of the universities in commercialization, despite the fact that economic growth is generally driven by other forces. Europe supposedly faces a paradox of investing a great deal of money into R&D but
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<th>Chapter</th>
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<tr>
<td>Ch.2, ‘Exploring University alliances and comparable academic cooperation structures’ is written by Enrico Deiaco, Ana M. Gren and Göran Melin</td>
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<td>Ch.3, ‘Strategy to Join the Elite’ is written by Luke Georghiou</td>
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<td>Ch.4, ‘Large-scale international facilities within the organization’ is written by Olof Hallonsten and Mats Benner</td>
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<th>Specific issue, relevant to European universities learning to compete</th>
<th>Main level of analysis: interaction</th>
<th>Universities located in country/countries</th>
<th>Methodology and data</th>
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<td>Explores the creation of alliances and collaboration between universities</td>
<td>University as an organization Interactions with global competitors</td>
<td>Australia, Canada, China, Denmark France, Germany, Japan, Netherlands, Singapore, Sweden, Switzerland, USA, United Kingdom</td>
<td>Illustrative case studies Strategy documents Evaluation studies Interviews</td>
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<td>Examines the merger of Victoria University of Manchester and UMIST, as a strategy to become a world leading university</td>
<td>University as an organization Interactions with national system</td>
<td>United Kingdom</td>
<td>In-depth case study Participant observer, as researcher and university leader Strategy process, including diverse empirical material</td>
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<td>Analyses how and where specialized labs as part of international ‘big science’ fit within the strategic processes of universities in Sweden</td>
<td>Research group Interactions with individuals, other research groups, and national context</td>
<td>Sweden</td>
<td>University lab at Lund University, case study</td>
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### Table 1.2  Differentiation and specialization theme

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<td><strong>Ch.5, ‘Division of academic labour is limited by the size of the market’ is written by Andrea Bonaccorsi</strong></td>
<td>Identifies the existence and effects of differentiation (specialization) in doctoral education, in different European countries</td>
<td>University as organization Interactions with national system</td>
<td>Finland, Italy, Netherlands, Spain, Switzerland, United Kingdom</td>
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<td><strong>Ch.6, ‘Polarization of the Swedish university sector’ is written by Daniel Ljungberg, Mattias Johansson and Maureen McKelvey</strong></td>
<td>Relates the structural characteristics of Swedish universities, to the propensity to attract external research funding, including industry financing</td>
<td>Universities as organizations Interactions with national context</td>
<td>Sweden</td>
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<td>Universities located in country/countries</td>
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<td>Ch.7, ‘The American experience in university technology transfer’ is written by Maryann Feldman and Shiri M. Breznitz</td>
<td>Reassesses American experiences with technology transfer</td>
<td>University as organization Interactions with individuals and with national context</td>
<td>USA</td>
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<td>Ch.8, ‘Academic patenting in Europe’ is written by Francesco Lissoni, Patrick Llerena, Maureen McKelvey, and Bulat Sanditov</td>
<td>Asks whether national institutions determine patenting behaviour of academics located in three different European countries, or whether disciplinary differences</td>
<td>Individuals Interaction with national systems</td>
<td>France, Italy, Sweden</td>
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<td>Ch.9, ‘The Forgotten Individuals’ is written by Mats Magnusson, Maureen McKelvey, and Matteo Versiglioni</td>
<td>Addresses whether and why individual researchers have the skills and attitudes necessary for commercialization in Sweden, and place this</td>
<td>Individuals Interactions with research group and with universities as organizations</td>
<td>Sweden</td>
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<td>Ch. 10, 'Elite European universities and R&amp;D subsidiaries of multinational enterprises' is written by Anders Broström, Maureen McKelvey and Christian Sandström</td>
<td>Analyses when R&amp;D subsidiaries of multinational firms are 'customers' of the research service that universities provide, in terms of motivations and modes of collaboration</td>
<td>Research groups</td>
<td>Sweden, Switzerland, United Kingdom</td>
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receiving little in terms of commercialization and innovation. The argument is usually that ‘something is wrong with the universities’ in Europe because they are not performing as ‘optimally’ as they could. These chapters provide insights into American technology transfer as well as questioning the existing view of European academic inventors and university–industry relations, based on novel data. They ask questions about how often researchers patent in different countries and disciplines and their attitudes towards commercialization and also investigate the reasons for firms interacting with universities. These chapters thus question ‘accepted wisdom’ about Europe and about the traditional policy implications of promoting patenting and start-up companies.

The final theme is ‘Reflections’, which includes Chapters 11 to 13, but no table is included because they are more conceptual and theoretical. This theme thus addresses the positive and negative consequences of introducing a competition-based paradigm for universities within Europe. These chapters are intended to stimulate debate and raise questions about how the identified competition and transformation is fundamentally changing the behaviour and goals of universities. These chapters thus raise questions about whether and how universities are indeed competing – despite all the rhetoric – and if so, whether and how unintended consequences arise.

We have written this book partly because we believe that EU and national policy-makers have begun to discuss the relative merits of the ‘entrepreneurial university’ as opposed to the ‘Humboldtian university’ – but without sufficiently understanding and debating the implications. Aspects of these debates are evident within this book. Some authors argue that universities are not competing, or should not compete, because they represent different values and roles in society than businesses. Other authors argue that European universities are acting as if they are competing, and therefore, in this context, it is useful to explore the limits of concepts from strategy, industrial dynamics, modularity and other fields. Such developments may help us understand why and how the conception of the ‘usefulness’ and ‘value-added’ of the European university is slowly changing from a primarily national institution serving the public good to a population of diverse actors trying to attract resources and competencies in order to grow and survive. Hence, this book should provide insight and debates about what happens now and in the future, when European universities learn to compete, as well as stimulate future research.
NOTES

1. ‘University’ as a concept tends to have different meanings. Some chapters in this book refer to ‘higher education institution’ including universities, higher educational institution, technical universities, and colleges. Some chapters refer to examples of the larger, global research universities.

2. A public good refers to a good that is non-rival and non-excludable. Non-rival means that the consumption of the good by one individual does not reduce the amount available for others. Non-excludable means that it is not possible to exclude individuals from consumption.


REFERENCES


Bonaccorsi, Andrea and Cinzia Darai (2007), Universities and Strategic Knowledge Creation, Cheltenham, UK and Northampton, MA, USA: Edward Elgar.


Geuna, Aldo (1999), The Economics of Knowledge Production: Funding and the Structure of University Research, Cheltenham, UK and Northampton, MA, USA: Edward Elgar.


de Solla Price, Derek (1963), Big Science, Little Science, New York: Columbia University Press.