Learning to Compete in European Universities
Learning to Compete in European Universities
From Social Institution to Knowledge Business

Edited by
Maureen McKeIvey
Professor, Industrial Management, School of Business, Economics and Law, University of Gothenburg, Sweden

and

Magnus Holmén
Associate Professor, Department of Technology Management and Economics, Chalmers University of Technology, Sweden

Edward Elgar
Cheltenham, UK • Northampton, MA, USA
## Contents

*List of Figures*  
vii  
*List of Tables*  
ix  
*Contributors*  
xi  
*Preface*  
xiii  

1. Introduction  
   *Maureen McKelvey and Magnus Holmén*  
   1  

2. Exploring university alliances and comparable academic cooperation structures  
   *Enrico Deiaco, Ana M. Gren and Goran Melin*  
   19  

3. Strategy to join the elite: merger and the 2015 agenda at the University of Manchester  
   *Luke Georgiou*  
   48  

4. Large-scale international facilities within the organization: MAX lab within Lund University  
   *Olof Hallonsten and Mats Benner*  
   65  

5. Division of academic labour is limited by the size of the market. Strategy and differentiation of European universities in doctoral education  
   *Andrea Bonaccorsi*  
   90  

6. Polarization of the Swedish university sector: structural characteristics and positioning  
   *Daniel Ljungberg, Mattias Johansson and Maureen McKelvey*  
   128  

7. The American experience in university technology transfer  
   *Maryann P. Feldman and Shiri M. Breznitz*  
   161  

8. Academic patenting in Europe: evidence on France, Italy and Sweden from the KEINS database  
   *Francesco Lissoni, Patrick Llerena, Maureen McKelvey and Bulat Sanditov*  
   187  

9. The forgotten individuals: attitudes and skills in academic commercialization in Sweden  
   *Mats Magnusson, Maureen McKelvey and Matteo Versiglioni*  
   219  

10. Elite European universities and the R&D subsidiaries of multinational enterprises  
    *Anders Brostrom, Maureen McKelvey and Christian Sandstrom*  
    251
11. Running the marathon 278
   William Cowan, Robin Cowan and Patrick Llerena

12. What does it mean conceptually that universities compete? 300
   Enrico Deiaco, Magnus Holmén and Maureen McKelvey

13. From social institution to knowledge business 329
   Enrico Deiaco, Magnus Holmén and Maureen McKelvey

Index 357
Figures

2.1 Harman’s continuum of inter-institutional arrangements
2.2 Adapted from Harman’s continuum of inter-institutional arrangements
3.1 World university ranking for papers in nature and science
5.1 Mean value and differentiation in PhD intensity of Finnish universities, 1994–2005
5.2 Mean value and differentiation in PhD intensity of Dutch universities, 1994–2004
5.3 Mean value and differentiation in PhD intensity of Swiss universities, 1994–2003
5.4 Mean value and differentiation in PhD intensity of British universities, 1996–2003
5.5 Mean value and differentiation in PhD intensity of Spanish universities, 1994–2002
5.6 Mean value and differentiation in PhD intensity of Italian universities, 2001–05
5.7 Comparative analysis of PhD intensity, all countries, 1994–2005
5.8 Comparative analysis of the differentiation index in PhD intensity, all countries, 1994–2005
6.1 Research orientation, average 2001–06
6.2 Density across research subjects, average 2001–06
6.3 Research productivity, average 2001–06
7.1 US Universities by sources of R&D funding
7.2 Growth in the establishment of technology transfer offices after Bayh–Dole
7.3 R&D expenditures at universities and colleges funded by industry
7.4 Disclosures received and new US patents filed
7.5 Growth of patents issued before and after Bayh–Dole
7.6 Highly skewed distribution of licensing revenues
7.7 University spinouts per year, 1993–2004
8.1 Academic patent applications, by country, 1978–2002
8.2 Technological distribution of academic patent applications, by country, 1994–2002
8.3a Academic patent applications from France, Italy and Sweden, by technology and year
8.3b University-owned patent applications from USA, by technology and year
8.4 Academic patent applications from France, Italy and Sweden, 1985–99, detail of most relevant classes
8.5 Academic patents as percentage of all patents by domestic inventors, 1985–99, detail of most relevant classes
8.6 Ownership of academic patents by domestic inventors in France, Italy, Sweden, and the USA, 1994–2001 (granted patents only)
8.7 Ownership of academic patents, selected technologies, 1994–2001
8.8 Ownership of academic patents, by year, 1981–2001
8.9 Weight of academic patents by total patents by domestic inventors, by country and type of ownership (1994–2001, granted patents only)
9.1 Conceptual model of the selection environment affecting individual researchers
9.2 Comparison of sample and population based on researcher categories
9.3 Commercialization frequency in different research fields
9.4a Attitude towards commercialization, for individual and research group
9.4b Attitude towards patenting, for individual and research group
9.4c Attitude towards founding a company, for individual and research group
12.1 Four layers within the university: Who’s competing?
12.2 Knowledge-intensive services creating open boundaries in the university
<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Emergent strategy theme</td>
</tr>
<tr>
<td>1.2</td>
<td>Differentiation and specialization theme</td>
</tr>
<tr>
<td>1.3</td>
<td>Rethinking the university–industry theme</td>
</tr>
<tr>
<td>2.1</td>
<td>Selected alliances between universities</td>
</tr>
<tr>
<td>2.2</td>
<td>Summary of alliances’ significant accomplishments</td>
</tr>
<tr>
<td>2.3</td>
<td>Summary of potential motives behind the formation of ten international alliances and partnerships</td>
</tr>
<tr>
<td>2.4</td>
<td>Arguments for and against an alliance</td>
</tr>
<tr>
<td>5.1</td>
<td>The Aquameth dataset</td>
</tr>
<tr>
<td>6.1</td>
<td>Summarizing the variables, metrics and data collection</td>
</tr>
<tr>
<td>6.2</td>
<td>Overview of the Swedish HEIs, 2005</td>
</tr>
<tr>
<td>6.3</td>
<td>Number of research subjects comprising more than a specific number of researchers and professors, average 2001–06</td>
</tr>
<tr>
<td>6.4</td>
<td>External research funding and income from undergraduate education, average 2001–06</td>
</tr>
<tr>
<td>6.5</td>
<td>RCA of external research funding and income from undergraduate education, average 2001–06</td>
</tr>
<tr>
<td>8.1</td>
<td>EPO patent applications, inventors, and professors in France, Italy, and Sweden</td>
</tr>
<tr>
<td>8.2</td>
<td>Academic inventors in France, Italy, and Sweden</td>
</tr>
<tr>
<td>8.3a</td>
<td>Academic inventors as percentage of total professors, by discipline</td>
</tr>
<tr>
<td>8.3b</td>
<td>Academic inventors, percentage distribution by discipline</td>
</tr>
<tr>
<td>8.4</td>
<td>Applicants of more than 10 academic patents, 1978–2001, by country</td>
</tr>
<tr>
<td>8.5</td>
<td>Ownership of academic patents, for selected technologies, 1994–2001</td>
</tr>
<tr>
<td>9.1</td>
<td>Responses from the different research areas</td>
</tr>
<tr>
<td>9.2</td>
<td>Respondents’ view on commercializing their own research</td>
</tr>
<tr>
<td>9.3</td>
<td>Formal training in business and entrepreneurship and perceived ability to start a spin-off company</td>
</tr>
<tr>
<td>9.4</td>
<td>Work experience from private firms and perceived ability to start a spin-off company</td>
</tr>
<tr>
<td>9.5</td>
<td>Interrelationship between training and commercialization of research</td>
</tr>
</tbody>
</table>
9.6 Interrelationship between working experience and commercialization of research
10.1 Firms interviewed, sorted by university
10.2 Responses of the 11 firms stating continuous relationship with university, rationale given
10.3 Organizational forms for collaboration
10.4 Managers’ view on relative importance and types of benefits for collaboration
12.1 University services and beneficiaries: benefit to different types of customers
12.2 Example of metrics used by different customers in the university sector
Contributors

Mats Benner, Associate Professor and Director, Research Policy Institute, Lund University, Sweden

Andrea Bonaccorsi, Professor of Economics and Management, Pisa University, Italy

Shiri M. Breznitz, PhD, University of Cambridge, United Kingdom

Anders Broström, PhD student, Division of Economics, Royal Institute of Technology, Sweden

Robin Cowan, Professor, UNU–MERIT, University of Maastricht, the Netherlands and Professor, BETA, Université Louis Pasteur, Strasbourg, France

William B. Cowan, Associate Professor, David R. Cheriton School of Computer Science, University of Waterloo, Canada

Enrico Deiaco, Managing Director, The Swedish Institute for Studies in Education and Research, Sweden

Maryann P. Feldman, Professor, University of North Carolina, USA

Luke Georgiou, Professor, University of Manchester, United Kingdom

Ana M. Gren, Researcher, The Swedish Institute for Studies in Education and Research, Sweden

Olof Hallonsten, PhD student, Research Policy Institute, Lund University, Sweden

Magnus Holmén, Associate Professor, Department of Technology Management and Economics, Chalmers University of Technology, Sweden

Mattias Johansson, PhD student, Center of Entrepreneurship, University of Oslo, Norway

Francesco Lissoni, Associate Professor, University of Brescia, Italy, and Deputy Director, CESPR1-Bocconi, Italy.

Daniel Ljungberg, PhD student, Department of Technology Management and Economics, Chalmers University of Technology, Sweden
Learning to compete in European universities

Patrick Llerena, Professor, BETA, Université Louis Pasteur, Strasbourg, France

Mats Magnusson, Associate Professor, Department of Technology Management and Economics, Chalmers University of Technology, Sweden

Maureen McKelvey, Professor of Industrial Management, School of Business, Economics and Law, University of Gothenburg, Sweden

Göran Melin, Senior researcher, The Swedish Institute for Studies in Education and Research, Sweden

Bulat Sanditov, Researcher, UNU–MERIT, University of Maastricht, the Netherlands

Christian Sandström, PhD student, Department of Technology Management and Economics, Chalmers University of Technology, Sweden

Matteo Versiglioni, master student, Department of Technology Management and Economics, Chalmers University of Technology, Sweden
Preface

We wrote this book for several reasons. One is simply that we want to understand and explain more about competition and evolutionary economic processes. Our curiosity does not stop solely at the doorstep of firms. Indeed, we wanted to 'test' whether relatively controversial and vague ideas about competition from an evolutionary and innovation perspective can be applied to understand what is happening in European universities. Americans have of course, known about competition and specialization of universities for a very long time. But what about Europe? What is going on here; do universities increasingly behave like firms or are they changing in some other manner? Participants in the workshops, presentations and writings in the project ‘Universities as Knowledge Environments of the Future’ sometimes surprised us by telling us we were dead wrong or sometimes surprised us by telling us we were 'too right, mate', followed up by, they wished we weren’t.

Yet another reason was that we felt that what happens at European universities now and in the near future will affect the future competitiveness of European societies. Now that is a big statement! But we have worked in, talked to researchers, and visited, universities in Australia, the USA, China, Singapore, and many European countries. Many feel that Europe might be falling behind – and yet few seem to have thought seriously about the consequences on firms and society. Or, to put it in EU and OECD language: the question of what is happening, and what can happen to universities – and to their personnel and services – seems particularly urgent to address when more and more European countries argue that they have reached the knowledge society. EU and other national governments have made the argument that despite outsourcing of production and back-office services, ‘knowledge’ production will remain the basis of competitiveness in these countries.

Many writers seem to assume that Europe can continue competing in ‘knowledge’ production. That would suggest that European universities are either doubly important – because they increasingly will be the basis of future competitiveness – or else they could become increasingly irrelevant, if Europe loses out in the global competitive game. Still, wherever the new basis of competition in the knowledge society will be like, Europe has to be part of the game. Most of the leaders of universities know this – but perhaps the stakes are far higher than public policy leaders and firm leaders have so far realized.
A final reason is that academic books like this one provide us editors—whom are active researchers, teachers and societal translators—with an opportunity to work with the larger issues and analysis, rather than the extremely specific and detailed focus of writing journal articles. Many of these chapters will be sharpened, revised, and submitted as journal articles. Still, they have to be based on scientific methods and literature to be included here. This book as a whole—and the underlying meetings and work—does provide us the opportunity to debate, discuss, provoke, confirm and ask questions about larger issues of emergent competition and strategies within universities. Finally, this type of book provides a training ground, so that younger researchers and PhD students can design studies and write in interaction with more senior researchers. They, after all, will create the future and will be the knowledge workers of the future. Thus, despite the metrification of science to journal publications and citations, a book like this offers us the chance to consider how different bits of science link together and form an understanding of a whole, which is not really possible from any of the parts.

This book resulted from the project ‘Universities as Knowledge Environments of the Future’, financed by SISTER (Swedish Institute for Studies in Education and Research www.sister.nu) and their owner-financiers.

Initially, many pieces were written specifically about Sweden, but then it was decided to work on this international book, which kicked-off in December 2005. Its ideas will be further developed through the EU Network of Excellence DIME, Dynamics of Institutions and Markets in Europe (www.dime-org.eu).

A special thanks to Enrico Deiaco for persistently encouraging and arguing for new ways of thinking about what universities do and how they do it. He took the initiative to this work, which involved three Swedish research teams at Sister, RIDE-IMIT and at CIRCLE/Lund.

We wish to express our thank to all the people involved, whom have been authors, discussants, participants or reviewers. In addition, we particularly thank Peter Schilling and Olle Edqvist, both from SISTER. Peter gave many good comments and led much of the Swedish work. Olle on the other hand never stopped asking questions. Indeed, Olle has forever been challenging us to explain what we meant by competition and learning to compete. His comments prompted us to take at least some of these vague concepts, and instead explain and be more specific about if and how they apply to the university sector, which has been extremely valuable for writing the book.

Finally, we wish to thank Daniel Ljungberg for his never-ending enthusiasm and help in finalizing the manuscript! We are much obliged!