



GÖTEBORGS UNIVERSITET  
HANDELSHÖGSKOLAN

A Research Workshop at Institute of Innovation & Entrepreneurship, University  
of Gothenburg (GU)  
[www.handels.gu.se/iie](http://www.handels.gu.se/iie)

**Graduate Education & its Use in Science and Business: European  
Perspectives**

**Tuesday 7<sup>th</sup> May 2019**

**Research on Innovation and Entrepreneurship by PhD students and Post-  
doctoral Scholars**

**Wednesday 8<sup>th</sup> May 2019**

Ågrenska Villan, Högåsplatsen 2 Gothenburg  
<http://www.gu.se/motesservice/konferenspaket/agrenska>  
Mölnlyckerummet

***Organized by:***

Guido Buenstorf, Visiting Professor GU and University of Kassel, Germany

Maureen McKelvey, Professor GU

Mark Bagley, Postdoctoral Scholar, GU

***Sponsored by:***

Swedish Research Council Distinguished Professor's Programme The project  
awarded to Professor McKelvey, for "Knowledge- intensive Entrepreneurial  
Ecosystems: Transforming society through knowledge, innovation and  
entrepreneurship". 2019-2029. VR DNR 2017-03360.

### **Purposes of the workshop & financiers**

The purposes of the workshop are: 1) For research on the topic of *Graduate Education & its use in science and business. European Perspectives*: to bring together a select group of researchers, to discuss and debate current research. 2) For wider research in innovation & entrepreneurship: to provide PhD students and post-doctoral scholars working on a variety of topics the opportunity to present on-going research to a highly qualified scientific audience. Paper presentations are by invitation only, and participants include PhD students as well as senior researchers.

There are no workshop fees. IIE, through the generous support of the Swedish Research Council Distinguished Professor's Programme, covers the cost of the conference, coffees and lunches.

### **Practicalities:**

May 7<sup>th</sup>: There are two types of presentations: papers & future research ideas. Papers are allocated a total of 40 minutes: 20 min for presentation, followed by 5 min for the discussant and 15 min for general discussion and author responses. Future research ideas are allocated a total of 30 minutes: 15 min for presentation, followed by 5 min for discussant and 10 for general.

May 8<sup>th</sup>: Each slot is allocated 30 min. 10 min for presentation, followed by 5 min for each of the 2 discussants and 10 min for general discussion and author responses. The first discussant listed starts the discussion.

***Dropbox:*** Presenters are asked to send their papers or ppts by Monday 29 April. They will only be available to participants, via a joint Dropbox folder. Send to: mark.bagley@gu.se

**Clarification for PhD students:** Discussants play an important role in stimulating discussions. For 7<sup>th</sup> May: you are not assigned as discussants, but each of you must choose a paper to read in more depth, and to ask questions about during the workshop. For 8<sup>th</sup> May: we ask that you start your presentation by pinpointing your view on the 1-2 main contributions (or key points of interest) in your assigned paper before turning to comments to improve and/or move this paper towards publication or a PhD thesis, as relevant.

## **Tuesday 7<sup>th</sup> May**

*8:15 PhD students pick up guests at Park Avenue Hotel, walk to Ågrenska villan*

*8:30 Coffee at Ågrenska Villan*

*Note: 20 min presentations for papers; 15 min presentation for research ideas*

*Chair for morning session until lunch: Guido Buenstorf*

### **9:00-9:10 Opening of Workshop by Guido Buenstorf & Maureen McKelvey**

#### **09:10-9:50 Presentation and Discussion of Paper by Aldo Geuna**

*“International Postdoctoral Mobility and Career Effect in Italian Academia – 1986-2015”*

*by Massimiliano Coda Zabetta (University of Bordeaux) and Aldo Geuna (University of Turin)*

This paper investigates the effect of international postdoctoral mobility on academic career. International postdoctoral appointments may help to expand researchers' scientific and technical human capital while at the same time ensuring career stability. We use duration models on individual data to predict time to first appointment and promotion from assistant professor to associate or full professor positions. Using a panel dataset of 18 thousands Italian academics in all disciplines over 30 years, we find that international postdoctoral appointments, while being weakly related to a slower entry in the academic system, have a positive effect on career outcomes and reduce the waiting time for promotion. This provides evidence that early stage international mobility is beneficial for academics' career in the long-term. We use institution-wise bibliometric indicators to measure different dimensions of social capital which affect researchers' career, namely: localism, home country linkages and expanding the scientific network. The article contributes to a better understanding of the role of meritocratic and non-meritocratic factors in achieving scarce and highly competitive job positions in academia.

*Discussant: Johannes Koenig*

#### **9:50-10:30 Presentation and Discussion of Paper by Maureen McKelvey**

*“Organizational routines and the Growth of Knowledge in Engineering: Evolving modes of academic engagement in biomedical engineering at Chalmers University of Technology, 1948-2018”*

*by Maureen McKelvey (University of Gothenburg) and Rögnvaldur Saemundsson (University of Gothenburg, Halmstad University, University of Iceland)*

This paper further develops the concept of organizational routines in the context of universities. We do so in order to propose an explicitly evolutionary economics approach to conceptualizing changes in academic engagement with industry and society over time. Within the extensive literature on university-industry interactions, the literature on academic engagement focuses upon the variety of

knowledge networks between university and industry for societal impact, and contrasts that with the commercialization of university research results through patents and start-up companies. We have an empirical focus upon the changing micro-level of activities in the university, to further conceptualize what routines are, and how are related to the overall growth of knowledge. Biomedical engineering is relevant to study, because different fields of knowledge must be combined and re-combined to solve new problems and offer new solutions to existing problems. For medical innovation, hospitals are important as well as industrial firms. Drawing on a longitudinal study of biomedical engineering at one university over seven decades, we identify four distinct modes of academic engagement. We propose to conceptualize these modes of academic engagement as composed of sets of distinct routines. In particular, we have identified routines related to interactions with hospitals, both directly and through industrial firms, involving graduate students and their supervisors.

*Discussant: Alan Hughes*

*Short break / coffee*

**10:45-11:15 Presentation and Discussion of research ideas by Martin Kalthaus**

“Opportunities and obstacles of knowledge and technology transfer in Thuringia: the transfer via researcher mobility”

*By Uwe Cantner, Philip Dörr, Lukas Dreier, Maximilian Göthner, Matthias Hügel, Martin Kalthaus, Indira Yarullina (University of Jena)*

Knowledge generated in public research organizations can diffuse and find application in economy and society via different knowledge transfer channels. In the research project “Opportunities and obstacles of knowledge and technology transfer - Empirical evidence on the innovation system in Thuringia”, we plan to make a deep dive into different transfer channels by using ten higher education institution and several non-university research institutes located in the German state of Thuringia as a real-world laboratory. On a micro level, we want to assess potential facilitators and barriers of knowledge transfer across several transfer channels. A core channel is researcher mobility from public research to the private sector. Along a stylized process model of knowledge transfer via mobility, we focus on three central questions: First, we want to understand the matching on the labor market by a detailed assessment of what factors motivate researchers to move into industry and what they perceive as their core competencies and which knowledge from their research they can transfer. On the demand side, we want to assess which skills and what kind of knowledge firms seek by hiring researchers. These two sides will be addressed by questionnaires complemented by additional datasets, such as web-scraped job vacancies data. Second, we want to assess how researchers who moved to the private sector applied their research findings and the skills obtained during their research activity. Therefore, we plan to survey and interview alumni from the Thuringian universities. These data will be complemented by secondary data, such as patents or publications. Third, we want to investigate return migration to public research and how this affects knowledge

transfer. For this question, Universities of Applied Sciences are of core interest, since they usually appoint professors with several years of industry experience. The gained insights will provide a detailed view into the core mechanisms of knowledge transfer via labor mobility and the use of the real-world laboratory of Thuringia allows formulating policy recommendations.

*Discussant: Johan Brink*

### **11:15-11:55 Presentation and Discussion of Paper by Lars Pettersson**

“Tertiary Education, Productivity and Economic Growth: Evidence from Sweden”.

*by Johan Eklund (Swedish Entrepreneurship Forum, BTH, Jönköping University) and Lars Pettersson (Jönköping University)*

Over the last few decades, the capacity for higher education in Sweden has expanded dramatically, in terms of both the number of students and the number of institutions for higher (tertiary) education. We use a simple growth accounting approach to estimate how much tertiary education contributed to Swedish economic growth over the 2001-2010 period. We use a large sample of Swedish firms, including information on employees, to estimate the production functions, covering more than half a million firm-year observations. We differentiate labor input based on educational attainment and whether or not the individual has had some form of tertiary education. From this, we compute the components of economic growth. We find that approximately 50% of the growth in gross value added during the period can be attributed to the growth in higher education, approximately one quarter to the growth in capital and another quarter to the growth in total factor productivity. Furthermore, based on estimations of the technical rate of substitution with respect to education, we find that individuals with a tertiary education and working in the private sector are, on average, 3 times as productive as individuals with less education. Our results have implications for education and for labor market policies in Sweden.

*Discussant: Evangelos Bourellos*

### **12:00 Lunch at Ågrenska**

*Chair for afternoon session until end of day: Olof Zaring*

**13:20-14:00 Presentation and Discussion of Paper by Karin Berg**

**“How Academic Engagement through Graduate Students can affect Firms’ Search Capabilities for Innovation”**

*by Karin Berg and Maureen McKelvey (both University of Gothenburg)*

This paper contributes to the recent stream of literature developing the concept of “academic engagement with industry”, which focuses not on commercialization but on the knowledge networks between university and industry. We do so by exploring the firm side of such interactions, and empirically conduct a study of how firm employed PhD students do micro-level activities, which in turn help develop knowledge networks. A firm employed PhD student is a person who is enrolled at the university as a PhD student while at the same time being employed at the firm. We extend an existing conceptual framework, which suggests that there are two pathways whereby collaborative research between university and industry may impact innovation outcomes within firms. We find that microlevel activities develop and support the indirect pathways of academic engagement, and propose this may be conceptualized as organizational routines underlying search capabilities.

*Discussant: Aldo Geuna*

**14:00-14:40 Presentation and Discussion of Paper by Guido Buenstorf**

**“Foreigners graduating from doctoral studies in Germany: what role do they play in the German innovation system?”**

*by Guido Buenstorf (University of Kassel and University of Gothenburg), Dominik P. Heinisch and Matthias Kapa (both University of Kassel)*

As part of a substantial expansion of doctoral training in Germany, the number and share of international doctoral students has increased rapidly in recent decades. In this paper, we use patent data and a matching approach to study the role of international doctoral graduates from science and engineering disciplines in the German innovation system. We find that international PhDs patent less and later than comparable German peers. There is no evidence suggestive of a home country effect in citing or being cited. However, international PhDs are more likely to patent for international applicants, including ones from their home country. This may indicate barriers to obtaining R&D positions in domestic companies.

*Discussant: Ethan Gifford*

*Short break / coffee*

**15:15-15:45 Presentation and Discussion of research ideas by Alan Hughes**

“Large Scale Panel Surveys of University Industry Interactions in the UK: Some Methodological Reflections, Recent Findings and Future prospects.”

*by Alan Hughes (University of Cambridge, Imperial College, University of Lancaster)*

This paper is based on the results of national UK university- business interaction surveys carried out by the presenter and his colleagues. Two national surveys (in 2009 and 2015) covering all academics in all subjects in all UK universities with a combined sample size of around 40000 individuals and a parallel survey of 2000 businesses in all sectors of the UK economy (carried out in 2009) are used to illustrate some methodological issues in survey method and survey design. Some key findings are also presented and discussed based on the development of a panel connecting the two academic surveys of 2009 and 2015. Finally, some ideas are presented about a new project to update the business survey of 2009 which will be in the field later this year and used to create business a business panel.

*Discussant: Martin Kalthaus*

**15:45-16:20 Presentation and Discussion of Paper by Johannes Koenig**

“Expansion of Doctoral Training and PhDs’ Labor Market Outcomes: Evidence from German Register Data”

*By Guido Buenstorf (University of Kassel and Gothenburg University), Dominik P. Heinisch , Johannes Koenig (both University of Kassel) and Anne Otto (IAB Institute for Employment Research)*

Similar to other countries including Sweden, the number of new PhDs graduating from German universities has grown sharply in the past decades. The expansion of doctoral education coincided with major changes in German higher education, and these may have had a non-negligible impact on new PhDs’ careers. We explore labor market outcomes of more than 97,000 PhDs who graduated between 1995 and 2013. Our analysis employs an original large-scale dataset that we constructed by linking dissertation and labor market data using machine learning techniques. Focusing on differences among 19 annual graduation cohorts, we find that PhDs graduating after 2000 had lower rates of full-time employment as well as lower chances to obtain high incomes. At the same time, rates of inter-regional mobility have declined, and increasing shares of new PhDs are retained in the academic sector of the labor market. Differences across cohorts are robust to disaggregation along gender and disciplinary lines and persist for at least five years after graduation. We relate these findings to increasing employment in research projects as well as in university management and administration, suggesting that universities themselves generate much of the labor market demand for the increasing numbers of PhDs they produce.

*Discussant: Lars Pettersson*

## **Wednesday 8<sup>th</sup> May**

*8:15 PhD students pick up guests at Park Avenue Hotel, to Ågrenska villan*

*8:30 Coffee at Ågrenska Villan*

*Note: 10 min presentations for each slot*

*Chair for morning session until lunch: Maureen McKelvey*

### **8:45-9:30 Discussion of publications in Swedish context by Olof Zaring**

The aim of this session is to introduce the publication system and the different lists (ABS2018 and Cristin) that are used at our School of Business, Economics and Law and specifically at the Department of Economy and Society. These lists are used to evaluate the quality of a researcher's publications. Data from the School and this Department will be used as examples. We will discuss:

- What are the most relevant publication strategies?
- How are publication strategies related to academic careers?
- What can we learn from the experience of other universities and countries?  
What may be emerging international future trends in terms of evaluating publications and careers?

### **09:30-10:10 Presentation of research pilot projects by Tanja Stefanía Rúnarsdóttir and Viktor Ström**

Our most recent PhD students share 30 minutes, where they present their initial research pilot projects.

*Viktor Ström:*

Aim: To better understand how ties between academic and industry researchers are formed by using publication data on academic researchers in Sweden in the field of control engineering. The purpose of the pilot study, which is a part of the overall study, is to contribute to the research aim by analyzing how different academic research roles (broker, gatekeeper, liaison, coordinator) affect research productivity as well as affect after-publication research cooperation and contacts. The pilot study will be based on the same data as the overall study, which more specifically is all publications made by currently employed control engineering researchers on the five largest technology Universities in Sweden (Chalmers, KTH, Linköping, Lund, Uppsala) between 2009-2018.

*Tanja Stefanía Rúnarsdóttir:*

For the pilot project, the aim is to practice qualitative method as being a small part of another, ongoing project with Karin Berg. Collecting empirical material; from booking interviews, shadowing Karin Berg in interviews, transcribing and coding, and then drawing up narratives and summaries from the collected material, as well as displaying the empirical findings.

*Discussants: Hanna Rydehell and Ryan Rumble*



*Short break*

**10:30-11:00 Presentation research ideas / ongoing research by Linus Brunnström**

**“Completing or Competing? – What Factors Explains Differences Between Projects’ Exits at Swedish University Incubators?”**

*By Linus Brunnström (University of Gothenburg)*

This chapter addresses what factors could explain why certain projects complete incubation and why some do not, at Swedish university incubators. Little research has been done on the workings of university incubators; rather the focus has been on the performance and survival of firms after they graduate. In the Swedish context, where researchers have full proprietary ownership of their results, the focus of these types of incubators has been to support researchers but also increasingly students in creating firms, based on their results. Surprisingly they also support other types of founders. This chapter explores what mechanisms and factors explain projects’ chances to complete incubation and become firms in this environment. Survival analysis is applied on a large national dataset, containing 42 incubators and 2,359 projects over a 10-year period. Preliminary findings suggest that projects founded by researchers have a lower chance to complete incubation compared to other founders but researcher-based projects also seem to create spill-over effects that positively affects other projects in the incubator. The chances of firms successfully completing incubation increases if the university incubator has more experience, as measured in age.

*Discussant: Daniel Ljungberg and Martin Kalthaus*

**11:00-11:30 Presentation of research ideas / ongoing research by Mark Bagley**

**“The Autocatalytic Nature of Entrepreneurial Ecosystems”**

*By Mark Bagley (University of Gothenburg)*

An autocatalytic set is a functionally closed and self-sustaining system that is able to sustain its own production without any loss to the system itself. If such systems exist, they are stable and able to survive and maintain themselves. We may view the global economy as a whole, which produces an increasing diversity of goods and services, as a collectively autocatalytic and supercritical set, in which autocatalysis emerges spontaneously with a given level of goods and production functions. An autocatalytic set may be divided into subsets, some of which may be supercritical and some subcritical. National economies may be divided into these two categories. Furthermore, autocatalytic national economies may be further divided into components that may or may not exhibit an autocatalytic nature. Given economic growth is driven by the diversification of goods and services which in-turn is fueled by innovation, we should then focus our attention on identifying entrepreneurial ecosystems. The hypothesis of this paper is that

entrepreneurial ecosystems represent the autocatalytic component of supercritical national economies. The aim of this paper is therefore to create a formal identification system of entrepreneurial ecosystems by measuring their autocatalytic nature. In doing so, we may formally identify the sector of the economy that is responsible for change. If a system is an evolutionary one, it likely has an autocatalytic character. Therefore, if we can map the system, we can then identify the autocatalytic parts.

*Discussant: Linus Brunnström and Alan Hughes*

**11:30-12:00: Presentation research ideas / ongoing research by Daniel Hemberg**

“Absorptive capacity and UIC outcome: The implementation of complex UIC outcome and innovation development”

By Daniel Hemberg (University of Gothenburg)

The universities role for education of the population and the creation of new knowledge is well known. In many countries, universities have developed a goal to stimulate transfer of knowledge and technology to interested parties, also known as the third mission (Etzkowitz et al. 2000; Gulbrandsen and Slipersæter, 2007). The commercialization of academic knowledge thorough patenting, licensing, and academic entrepreneurship are considered to be the leading example for academic impact. This because of its immediate and measurable output of academic research (Markman et al. 2008). The output of academic commercialization is known, but the underlying mechanisms that results in these outputs need further investigation to optimize them and enhance the university-industry collaboration. Therefore, this study investigates a university-industry collaboration (UIC) from an industry perspective, by applying the absorptive capacity construct to illuminate the assimilation of academic knowledge. Eight semi-structured interviews with responsible industrial representatives from different time periods of the UIC have been performed. The results indicate that the UIC academic knowledge outcome influence the firm innovation in processes, organization, and products. The knowledge outcomes closeness to the firm’s existing knowledge base determine the possibility of learning and innovative outcome. Immediate application of academic knowledge is found in process innovation and long-term application in product innovation. Furthermore, specific results demonstrate that academic knowledge that is distanced from the existing knowledgebase have been rejected and the firm lost an opportunity to innovate which later have been absorbed by another firm.

*Discussant: Johannes Koenig and Aldo Geuna*

**12:00-12:15: Wrap up by Guido Buenstorf and Maureen McKelvey**

**12:15: LUNCH**

***End of conference***

## Participants in the Workshop

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