

Knowledge Creation and Technology Transfer

An Analysis of Swedish Academics

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AKADEMISK AVHANDLING

som med vederbörligt tillstånd av Handelshögskolans fakultetsnämnd
vid Göteborgs universitet för vinnande av filosofie doktorsexamen
i innovation och entreprenörskap framläggs till offentlig granskning
tisdagen den 17 december 2013, kl 10.15
i sal E44, Handelshögskolan, Vasagatan 1, Göteborg.

Fakultetsopponent: Prof. Bart Van Looy, Faculty of Economics
and Business (FEB), University of Leuven, Belgium.

Göteborg 2013

ABSTRACT

Knowledge Creation and Technology Transfer. An Analysis of Swedish Academics.
Gothenburg Studies in Innovation and Entrepreneurship 1 (2013)
ISBN 978-91-981507-0-4

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Doctoral Dissertation at the Institute of Innovation and Entrepreneurship at the Department of Economy and Society, School of Business, Economics and Law, University of Gothenburg, P.O. Box 625, SE 405 30 Göteborg, Sweden.

Distribution: Department of Economy and Society, School of Business, Economics and Law, University of Gothenburg, P.O. Box 625, SE 405 30 Göteborg, Sweden. (Written in English.)

This PhD thesis examines knowledge creation and transfer from universities into industry with a focus on academic patents. Academic patents are defined as patents with at least one academic inventor. The thesis presents empirical, methodological and theoretical contributions to the literature on research commercialization and university-industry interaction, focusing on academic inventors and knowledge transfer to the industry.

The modern university has been through a transformation to incorporate and expand the third mission in addition to the traditional missions of education and research. The third mission includes interaction with industry and society which will contribute to economic growth. The pressure on the university to adapt to this new role has brought new policies and practices within the areas of commercialization and university-industry interactions. Therefore, it is important to understand this transformation in order to create new public policies and university support structures that will stimulate these positive economic impacts. This thesis is a collection of papers which use quantitative methods. Data related to academic patents has been developed, and multiple quantitative methods used, in order to quantify commercialization and university-industry interaction.

One contribution is the creation of a database and methodology for identifying academic inventors in Sweden, combined with an overview of academic patenting across the Swedish universities. The database is used in combination with other data sources to test hypotheses related to the mechanisms of knowledge creation behind academic patenting as well as the ties academics build with industry.

The thesis investigates the factors affecting commercialization. The study revealed that academics have positive attitudes to commercialization and they have satisfactory commercialization output, measured as patents and start-ups. The results show that publishing is positively correlated with commercialization and that university support structures play an important role through technology transfer offices, courses in entrepreneurship and incubators.

One study focuses on academic scientists within nanoscience, and proposes a novel methodology to study the relation between patenting and publishing at the micro-level. An elaborate matching methodology was used in order to isolate and match author-inventors with "twin" authors who do not invent. The results show positive complementarities and higher number of publications for academic inventors.

A cross-sectional study on firm-owned academic patents provides an analysis of the relation between academic inventors, the technological profiles of firms and patent value. One finding is that academic patents have a short-term disadvantage, which disappears in the long term. The study introduces the technological profile of the patent as a control variable for the value of academic patents. Technological profile has been used before in order to classify patents belonging to the firm's core technologies. Our results show that patents belonging to firms' core technologies have significantly higher value, regardless of whether they are academic or non-academic patents.

Key words: University-Industry interaction, Commercialization, academic patenting, Swedish academics, Nanoscience