

Innovation commercialization: a literature review

[Commercialization of Patents and External Financing during the R&D-Phase](#)

Using a unique database on individual Swedish patents, a survival model estimates how different factors influence the time it takes until commercialization starts. The empirical results show that the larger share of the patent-owners' costs during the R&D-phase that are covered by government financial support, the longer time it takes until the patents are commercialized. It seems like the government financing creates a pool of patents with bad perspectives of commercialization.

Sweden / Roger Svensson – The Research Institute of industrial Economics/ June 2004 / 28 p.

[Product Innovation, Prisoner's Dilemma and Welfare](#)

It is usually believed that innovation increases profits of the firms and also social welfare. In a duopoly model with product innovation, Arijit Mukherjee shows that both these beliefs may go wrong. The author shows that if the cost of innovation is not very large, prisoner's dilemma occurs under product innovation, i.e., each firm earns lower profit when all the firms do innovation compared to the situation when neither firm does innovation. The author also shows that innovation is welfare reducing if the cost of innovation is not very small.

UK / University of Nottingham and The Leverhulme Centre for Research in Globalisation and Economic Policy / June 2005 / 15 p.

[Is Silence Golden? Patents versus Secrecy at the Firm Level](#)

In the 1990s, patenting schemes changed in many respects: upcoming new technologies accelerated the shift from price competition towards competition based on technical inventions, a worldwide surge in patenting took place, and the 'patent thicket' arose as a consequence of strategic patenting. This study analyzes the importance of patenting versus secrecy as an effective alternative to protect intellectual property in the inventions' market phase. The sales figure with new products is introduced as a new measure for the importance of tools to protect IP among product innovating firms. Focusing on German manufacturing in 2000, it turns out that patents are important to protect intellectual property in the market, whereas secrecy seems to be rather important for inventions that are not commercialized yet.

Germany / Katrin Hussinger, GESY, Governance and the Efficiency of Economic Systems/March 2005/29 p.

[From Regional Development Coalitions to Commercial Innovations](#)

This report is a comparative study of the Nordic innovation systems as they pertain to the business sector. Important national varieties in styles and modes of innovation are described and analysed. These differences are then related to different geographical, historical and political preconditions to deepen the understanding of why national innovation systems differ.

Sweden / Åge Mariussen, Nordregio / September 2005 / 107 p.

[Technology Licensing to a Rival](#)

Licensing a new technology implies introducing competition into the market. This has a negative effect on the profit of the incumbent if the demand remains unchanged. However, because of the novel content of an innovation, consumers may have different perceptions of the value of a good depending on the market structure. Thus, the introduction of a competitor into the market may enhance demand, and consequently have a positive effect on the profit of the incumbent. In a simple setting, Caroline Boivin and Corinne Langinier show that the incumbent may decide to license her technology even in the absence of a royalty when the positive effect outweighs the negative one.

USA / Economics Bulletin / September 2005 / 8 p.

[Market conditions - promoting effective science-industry collaboration](#)

The nature of the commercial relationship between the science base and industry is changing. This document highlights the traditional commercial approaches adopted and highlights new collaborative approaches and initiatives that have developed across Europe. The commercialisation activities adopted by universities have to be balanced with the priorities of teaching and fundamental research according to this document. It has been recognized that universities can make a significant contribution to commercialisation but unless

sufficient funds are provided attempts to promote knowledge transfer such activities may have a negative impact on universities while having little or no impact on business and industry.

EUR / Innovating Regions in Europe / 2005 / 7 p.

[Innovative Channels for Commercialization](#)

Many universities are seeking innovative channels for commercializing technology developed on campus. Here, RTI TechVentures, a bimonthly newsletter of RTI International's Center for Technology Applications, highlights three models: Auburn University/Aetos Technologies; Southeast TechInventures, and University of Virginia/Spinner Technologies.

USA / RTI TechVentures / June 2005 /

[Commercializing Generic Technology: The Case of Advanced Materials Ventures](#)

Generic, radical technology is of interest because of its potential for value creation across a broad range of industries and applications. This paper by Elicia Maine & Elizabeth Garnsey build on Freeman's concept of technological innovation as a technological and market matching process to develop a new model of the variables influencing value creation by advanced materials ventures. From the literature, the model, and the case study observation, the authors construct four propositions concerning the success of advanced materials ventures in commercializing radical technology.

UK /Elicia Maine & Elizabeth Garnsey, Institute for Manufacturing, University of Cambridge Engineering Department, UK / August 2005 / 48 p.

[The National Code of Practice for Managing and Commercialising Intellectual Property \(IP\) from Public-Private Collaborative Research](#)

This Code of practice developed by the Advisory Council for Science, Technology and Innovation in Ireland presents the national policy position regarding Intellectual Property (IP) arising from collaborative research. It provides guidance on IP related issues to be considered by collaborating partners and an overarching framework under which parties to an IP agreement may negotiate. This Code complements the National Code of Practice for Managing Intellectual Property from Publicly Funded Research, published in 2004. Together, these Codes form an integral part of the commercialisation infrastructure in Ireland.

Ireland / Advisory Council for Science, Technology and Innovation / November 2005 / 60 p.

[Intellectual Property Rights and Biotechnology: How to Improve the Present Patent System](#)

This paper by Ignazio Musu discusses the problems related to assigning or denying intellectual property rights to biotechnological innovation, with particular reference to agro-biotechnologies and the relations between developed and developing countries.

Italy / Ignazio Musu, Department of Economics, Ca' Foscari University of Venice / June 2005 / 30 p.

[Product cycles, innovation and export](#)

This paper sheds light on the product cycle and neotechnology theories of trade in the context of generic pharmaceuticals. The paper studies the export performance of 177 Indian pharmaceutical firms for the post-liberalization period 1991-2004. The results indicate that technology proxied by foreign patent rights has a positive impact on exports. This suggests that developing countries with innovation skills for process innovations are capable of penetrating international markets in the later stages of the product cycle by using patents, which were the barriers to trade in the early stages of the product cycle. Thus, Indian pharmaceutical firms adept at reverse-engineering of brandname drugs have an opportunity to enter the global generic market for off-patent drugs.

Singapore / Alka Chadha / 2005 / 29 p.

[The logic of invention](#)

In this essay W. Brian Arthur wants to explore how novel technologies come into being. He wants to ask how radically new technologies—ones such as radar, the polymerase chain reaction, the turbojet, or the laser printer—come to exist as entities that depart in some deep sense from what went before.

USA / W. Brian Arthur - Santa Fe Institute / December 2005 / 20 p.

[Accelerating Growth: Fostering environmental technology innovation & commercialization](#)

ÆGIS Management Consulting Group was engaged by the Atlantic Environmental Technology Advancement Network (AETAN) in the fall of 2004 to provide a report on Fostering Environmental Technology Innovation and Commercialization in Atlantic Canadian SMEs. The following pages reflect the research, analysis and interpretation of the findings. The overall purpose of the project is defined in the following sentence – Identify a model and/or mechanism that would effectively engage and support Atlantic Canadian firms, particularly SMEs, in environmental technology innovation and commercialization.
Canada / ÆGIS Management Consulting Group / August 2005 / 109 p.

[Commercializing licensing](#)

This paper by Maryann Feldman, Alessandra Colaianni and Kang Liu examines the history of the licensing and subsequent commercialization of the Cohen-Boyer Patents. These licenses are considered among the most successful examples of university technology transfer in terms of generating revenue and creating a range of new products. Stanford was negotiating new ground with their licensing program and they consulted widely in the design and implementation their program. The paper begins by providing the context for Stanford's approach to licensing and then examines the implementation of the licensing practices and procedures. The final section of the paper examines the commercial products that companies developed using the technology and the resulting licensing revenues.
USA / Maryann Feldman, Alessandra Colaianni and Kang Liu – Danish Research Unit for Industrial Dynamics / December 2005 / 42 p.

[The spread of innovation through social learning](#)

Innovations often spread by the communication of information among potential adopters. In the marketing literature, the standard model of new product diffusion is generated by information contagion: agents adopt once they hear about the existence of the product from someone else. In social learning models, by contrast, an agent adopts only when the perceived advantage of the innovation -- as revealed by the actions and experience of prior adopters -- exceeds a threshold determined by the agent's prior beliefs. H. Peyton Young demonstrates that learning with heterogeneous priors generates adoption curves that have an analytically tractable, closed-form solution.

USA / H. Peyton Young - The Brookings Institution / December 2005 / 34 p.

[New approaches to intellectual property](#)

The authors analyse the question of intellectual property in computer software, showing that both copyright and patents do not fit to the specificities and needs of this industry. The alternative model of Open Source Software, based on a very new juridical concept called GPL "General Public Licence", tends to take a growing importance. They explain its main characteristics, which consist in imposing the producers to disclose of both the source-code of the concerned programmes and any further improvement if they are re-distributed/re-sold. They show that by this process a totally different approach of intellectual property within industrial strategies is introduced, based on a weaker intellectual protection. They discuss the consequences of such a movement in institutional and public policy terms and they enlarge the approach to understand its exemplarity, in the context of a knowledge-based economy, for a growing number of industrial activities.

France - Nicolas Jullien and Jean-Benoît Zimmermann - Groupement de Recherche en Economie Quantitative d'Aix-Marseille / August 2005 / 25 p.

[Policy framework for intellectual property derived from state-funded research](#)

California should develop a set of policies consistent with the federal Bayh-Dole Act to manage patents and other intellectual property (IP) resulting from state-funded research, the California Council on Science and Technology (CCST) said in this report. The study group urged that state IP policies be consistent across agencies and increase opportunities for the development of new products services. Key goals in creating a California set of policies would be to ensure consistency with the federal Bayh-Dole Act, streamline contracting processes, preserve state's rights, and minimize the costs of doing so. The study group notes that although state funding is important, clearly non-state funding drives the research conducted in the state's academic and non-profit research institutions.

USA / California Council on Science and Technology / August 2005 / 118 p

[Intellectual property](#)

This paper by Christine Greenhalgh and Mark Rogers provides evidence from a newly constructed database

of UK firms about the extent of their intellectual property acquisition activities over five years. The authors focus on service sector firms, which have not previously been studied, with comparisons for firms in manufacturing and other sectors, such as agriculture. The measures of IP include both trade marks, which are most important in services, and patents, which are predominantly sought by manufacturing firms. The analysis includes patents and trade marks applied for via both the UK and European routes. *UK / Christine Greenhalgh and Mark Rogers - Oxford IP Research Centre / December 2005 / 21 p.*

[From innovation development to implementation](#)

Innovation surveys provide a broad measure of the successful commercial introduction of new product and process innovations. The dual purposes of this paper by the OECD are to establish whether survey-based measures of innovation are related to more widely used intermediate measures, such as R&D and patents, and to identify the principal factors that affect the probability of successful innovation.

International / OECD / December 2005 / 55 p.

[Licensing survey](#)

The Association of University Technology Managers, the premier nonprofit group for academic technology transfer professionals, announces the release of the summary report of the AUTM U.S. Licensing Survey: FY 2004. Now in its 14th year of publication, the AUTM Licensing Survey is the most comprehensive report of its kind, providing quantitative information about licensing activities at universities, hospitals and research institutions across North America.

USA / The Association of University Technology Managers / 2005 / 71 p.

[University research, intellectual property rights and European innovation systems](#)

This paper surveys the literature on university patenting. The first part of the paper addresses two major questions. First, what is the economic logic of Bayh-Dole, and, second, what were the effects on universities and the knowledge they develop. In the second part, the paper addresses the issue of whether “Bayh-Dole-like” legislation would be beneficial for European countries.

Europe / Bart Verspagen - Eindhoven Centre for Innovation Studies / February 2006 / 22p.

[Innovation Performance and Government Intervention](#)

External financing is important when inventors and small technology-based firms wish to commercialize their inventions. Using a unique database on Swedish patents owned by individuals and small firms, this paper by Roger Svensson analyzes how different forms of external financing influence the outcome when patents are commercialized. It suggests that government institutions should make their loans more market-oriented already in the R&D-phase.

Sweden / Roger Svensson – The Research Institute of industrial Economics / March 2006 / 35p.

[People and Excellence: The Heart of Successful Commercialization](#)

This report covers a comprehensive package of 11 recommendations to provide a strong starting point for Canada to achieve its full potential. At the core of these recommendations is the development of a business-led Commercialization Partnership Board (CPB). The CPB would create a new role for the private sector as a full partner in charting the course for, and developing policy related to, commercialization.

Canada / Expert Panel on Commercialization / April 2006 / 40p.

[Accelerating Economic Development Through University Technology Transfer](#)

This report highlights models of university technology transfer and commercialization, related efforts such as entrepreneurship programs, and the infrastructure and environment needed to support commercialization efforts.

USA – Innovation Associates Inc./ February 2006 / 155p.

[Pre-commercial procurement of innovation: A missing link in the European innovative cycle](#)

This report shows how a first-buyer function can be built up in a European single market that aims at being competitive, fair and transparent. The report introduces the concept of Pre-commercial Procurement of Innovation, to address a generally missing link in the European innovation cycle, the public procurer that is prepared to share benefits and risks with industry in order to exploit the results of research, moving research developments from their early stages to tested pre-commercial products ready for commercialisation.

Europe / European commission / March 2006 / 33p.

[Product cycles, innovation and exports: A study of Indian pharmaceuticals](#)

This paper sheds light on the product cycle and neotechnology theories of trade in the context of generic pharmaceuticals. The

paper studies the export performance of 177 Indian pharmaceutical firms for the post-liberalization period 1991-2004. The results indicate that technology proxied by foreign patent rights has a positive impact on exports. This suggests that developing countries with innovation skills for process innovations are capable of penetrating international markets in the later stages of the product cycle by using patents, which were the barriers to trade in the early stages of the product cycle. Thus, Indian pharmaceutical firms adept at reverse-engineering of brandname drugs have an opportunity to enter the global generic market for off-patent drugs.
Singapore / Alka Chadha –National University of Singapore / 2005 / 29p.

[Finding the Balance in Innovation and Commercialization](#)

This paper, authored by Dr. Alan Cornford and edited by Dr. Richard Lipsey discusses the importance to Canada's innovative capacity and, in turn, international competitiveness, of establishing the optimal balance of investments among public research and development (R&D), private R&D, highly qualified personnel and risk capital. The paper observes that these key drivers of innovative capacity interact with each other, making the balance among them at least as important as the investment levels in each.
Canada / Alan Cornford – Atlantic Canada Opportunities Agency / January 2006 / 3p.

[From ideas to development: the determinants of R&D and patenting](#)

This paper uses panel regressions to investigate the effects of innovation policies and framework factors on business R&D intensity and patenting for a sample of 20 OECD countries over the period 1982-2001. Both sets of factors are found to matter; the main determinants of innovativeness appear to be the availability of scientists and engineers, research conducted in the public sector (including universities), business-academic links, the degree of product market competition, a high level of financial development and access to foreign inventions. The effect of direct public financial support for business R&D is generally positive but modest, though it may larger for cash-constrained firms.
International / OECD / December 2005 / 59p.

[Networks of Small Producers for Technological Innovation: Some Models](#)

Small producers face a variety of challenges – some related to markets and others related to capabilities. Inability to develop technological capabilities has often restricted small firms from growing large. In this paper, Panjak Chandra presents learning from three global networks, i.e., TAMA in Japan, Wenzhou in China and Rajkot in India, that have adopted a variety of mechanisms of coordination between small producers and has led to both capability enhancement and demand enhancement. The author proposes distinctive determinants of a collaborative model for engaging SMEs in technological innovation over a period of time.
India / Pankaj Chandra - Indian Institute of Management / March 2006 / 27p.

[Decision-Making and Quality in the Patent Examination Process: An Australian Exploration](#)

The quality of patents granted by national patent offices is currently the focus of significant investigation worldwide. The vast majority of this work examines the quality of the end-product of the examination process – the patents themselves. This Working Paper is founded upon the perception that it is equally important to explore the quality of the process that precedes the patent grant – the examination of patent applications by patent office examiners.
Australia / Chris Dent - Intellectual Property Research Institute of Australia / January 2006 / 35p.

[Technical Change Theory and Learning Curves: Patterns of Progress in Energy Technologies](#)

This paper presents a comparative analysis of energy technology learning and progress within the framework of Schumpeter's invention-innovation-diffusion paradigm. The results point to relative importance of R&D in the process of technological progress.
UK / Tooraj Jamasb - Faculty of Economics, University of Cambridge / March 2006 / 27p.