

PATENT DATA ANALYSIS

A short course for doctoral students at the Friedrich-Schiller-Universität of Jena - July 5-6, 2010

Francesco Lissoni, DIMI-Università di Brescia & KITES-Università Bocconi, Milan

Programme *

Monday (July 5) – h 9-10.30

1. Putting patents into context: the patent explosion (and the explosion of patents)
 - ➔ Patents for dummies
 - ➔ A short of history of patents
 - ➔ Present-day research agenda

Monday (July 5) – h 11-13

2. Patents as a data source
 - ➔ Applications and claims: scale/scope of inno effort
 - ➔ Classification: tech relatedness
 - ➔ Inventors/Applicants: anagraphic, geographic, and relational data
 - ➔ Citations: patent value and knowledge flows
 - ➔ Overview of main data resources

Monday (July 5) – h 14.30-16.30

3. Application I – Academic patents
 - ➔ University patenting in the US
 - ➔ Academic inventors in Europe

Tuesday (July 6) – h 9-10.30

3. Application I – Academic patents (cont.)
 - ➔ Patenting and scientific progress: individual and systemic effects

Tuesday (July 6) – h 11-13

4. Application II – Collective inventorship
 - ➔ The increasing importance of teams in S&T
 - ➔ Inventorship vs. authorship in patent-publication pairs

Tuesday (July 6) – h 14.30-16

5. Application III – Networks of inventors: three applications
 - ➔ Application IIIa: geography of spillovers
 - ➔ Application IIIb: academics in the network of inventors
 - ➔ Application IIIc: scientific vs technological networks

* all slide sets available at: <http://www.francescolissoni.com>

Readings

General readings on patents (institutions, history, and theory)

- Guellec D., van Pottelsberghe B. (2007), *The Economics of the European Patent System*, Oxford Univ. Press
- Machlup F., Penrose E. (1950), "The Patent Controversy in the Nineteenth Century", *Journal of Economic History* 10/1, pp. 1-29
- Rockett K. (2010), "Property Rights and Invention", in: Rosenberg N., Hall B. (eds.), *Handbook of Economics of Innovation*, North Holland/Elsevier

Monday (July 5) – h 9-10.30

1. Patents as an object of study: the patent explosion (and the explosion of patents)

- Biagioli M. (2006), "Patent Republic: representing inventions, constructing rights and authors", *Social Research*, pp.
- Harhoff D. et al. (2007), *The strategic use of patents and its implications for enterprise and competition policies*, Report ENTR/05/82 for DG Enterprise, European Commission (<http://www.en.inno-tec.bwl.uni-muenchen.de/research/proj/laufendeprojekte/patents/stratpat2007.pdf>)

Monday (July 5) – h 11-12.30

2. Patent data as a source of info

- Griliches, Z. (1990) "Patent statistics as economic indicators: a survey", *Journal of Economic Literature* 28, 1661-1707.
- Hall B.H., Jaffe A., Trajtenberg M (2001) 'The NBER Patent Citations Data File: Lessons, Insights and Methodological Tools', *NBER Working Paper* 8498, National Bureau of Economic Research, Cambridge MA
- Lai R., D'Amour A., Fleming L. (2009), "The careers and co-authorship networks of U.S. patent-holders, since 1975", working paper, Harvard Business School - Harvard Institute for Quantitative Social Science (<http://hdl.handle.net/1902.1/12367>)
- Lissoni F., Maurino A., Pezzoni M., Tarasconi G. (2010), "APE-INV's 'Name Game' Algorithm Challenge: A Guideline for Benchmark Data Analysis & Reporting", mimeo (<http://www.esf-ape-inv.eu/index.php?page=15>)
- Magerman T., van Looy B., Song X. (2006), "Data Production Methods for Harmonized Patent Statistics: Patentee Name Harmonization" KUL Working Paper MSI 0605, Katholieke Universiteit Leuven (http://www.econ.kuleuven.be/eng/fetew/int_reports.aspx?group_id=11)
- Nagaoka S., Motohashi K., Goto A. (2010) in: Hall B.H., Rosenberg N. (eds.), *Handbook of Economics of Innovation*, North Holland/Elsevier, 2010
- Raffo J., Lhuillery S. (2009), "How to play the "Names Game": Patent retrieval comparing different heuristics", *Research Policy* 38(10), pp. 1617-1627
- Thoma G., Torrisi S., Gambardella A., Guellec D., Hall B.H., Harhoff D. (2010), "Harmonizing and Combining Large Datasets: An Application to Firm-Level Patent and Accounting Data", NBER Working Paper No. 15851, National Bureau of Economic Research, Cambridge MA

Monday (July 5) – h 14-16.30 & Tuesday (July 6) – h 9-10.30

3. Application I – Academic patents

- Breschi S., Lissoni F., Montobbio F. (2008) "University patenting and scientific productivity. A quantitative study of Italian academic inventors", *European Management Review* 5(2), pp.91-109
- Della Malva A., Lissoni F., Llerena P. (2010) "Institutional Change and Academic Patenting: French Universities and the Innovation Act of 1999", *KITES Working Paper* 29, Università Bocconi, Milano (http://portale.unibocconi.it/wps/wcm/connect/Centro_KITES/Home/Working+Papers/)
- Foray D., Lissoni F. (2010) "University research and public-private interaction", in: Hall B.H., Rosenberg N. (eds.), *Handbook of Economics of Innovation*, North Holland/Elsevier
- Henderson R., Jaffe A. and Trajtenberg M. (1998), "Universities as a source of commercial technology: a detailed analysis of university patenting 1965-1988", *Review of Economics and Statistics* 80, pp. 199-127
- Lissoni F., Llerena P., McKelvey M., Sanditov B. (2008), "Academic Patenting in Europe: New Evidence from the KEINS Database", *Research Evaluation* 16, pp. 87-102
- Lissoni F., Lotz P., Schovsbo J., Treccani A. (2009) "Academic Patenting and the Professor's Privilege: Evidence on Denmark from the KEINS database", *Science and Public Policy* 36/8, pp. 595-607
- Murray F. (forthcoming) "The Oncomouse that Roared: Resistance & Accomodation to Patenting in Academic Science", *American J. of Sociology* (http://fmurray.scripts.mit.edu/docs/THE_ONCOMOUSE_THAT_ROARED_FINAL.pdf)

- Murray F. , Stern S. (2007) "Do formal intellectual property rights hinder the free flow of scientific knowledge?: An empirical test of the anti-commons hypothesis", *Journal of Economic Behaviour & Organization* 63/4, pp.648-687
- Rosell C., Agrawal A. (2009), "Have university knowledge flows narrowed?: Evidence from patent data", *Research Policy* 38(1), pp. 1-13
- Verspagen B. (2006), "University Research, Intellectual Property Rights and European Innovation Systems", *J. of Econ. Surveys* 20/4, pp. 607-632

Tuesday (July 6) – h 11-13

4. Application II – Collective inventorship

- Colyvas J.A. (2007), "From divergent meanings to common practices: The early institutionalization of technology transfer in the life sciences at Stanford University", *Research Policy* 36, pp. 456-76
- Wuchty S., Jones B.F., Uzzi B. (2007) "The Increasing Dominance of Teams in Production of Knowledge", *ScienceExpress* (www.sciencemag.org/cgi/content/full/1136099/DC1)
- Lissoni F., Montobbio F. (2008), "Inventorship and Authorship in Patent-Publication Pairs: An Enquiry in the Economics of Scientific Credit", *CESPRI Working Paper* 224, Università "L.Bocconi", Milano (revised version: <http://www.francescolissoni.com>)
- Magerman T., van Looy B., Song X. (2010), "Exploring the feasibility and accuracy of Latent Semantic Analysis based text mining techniques to detect similarity between patent documents and scientific publications", *Scientometrics* 82(2), pp. 289-306

Tuesday (July 6) – h 14.30-16

5. Application III – Networks of inventors: three applications

- Balconi M., Breschi S., Lissoni F. (2004) "Networks of inventors and the role of academia: an exploration of Italian patent data", *Research Policy* 33/1, pp. 127-145
- Breschi S., Catalini C. (2010), "Tracing the linkages between science and technology: an exploratory analysis of the research networks among scientists and inventors", *Research Policy* 39(1), pp.14-26
- Breschi S., Lissoni F. (2005) "Cross-Firm Inventors and Social Networks: Localised Knowledge Spillovers Revisited", *Annales d'Economie et de Statistique* 79-80, pp.189-209
- Breschi S., Lissoni F. (2009) "Mobility of skilled workers and co-invention networks: an anatomy of localized knowledge flows", *Journal of Economic Geography* 9, pp. 439 - 468
- Murray F. (2002) "Innovation as overlapping Scientific and Technological trajectories: exploring tissue engineering", *Research Policy* 31(8-9), pp. 1389-1403