

Opportunities and Risks of Open Innovation

AMAP colloquium
Aachen, August 21, 2014

John Hagedoorn

Professor of Strategy and International Business
Maastricht University (UNU-MERIT) and
Royal Holloway University of London

Introduction

What is open innovation?

“ Open innovation is the use of purposive inflow and outflow of knowledge to accelerate internal innovation, and expand the markets for external use of innovation ...” (Chesbrough, 2006a, p. 1)

However, “... if you share the wrong information with the wrong people it can kill your company.” (Chesbrough, 2006b, p. 41)

Introduction

Following Chesbrough, one can see questions regarding the governance of inter-organizational relationships, possibly through formal contracts and intellectual property rights (IPR), given their strategic importance, as critical topics in the current debate on open innovation.

(Chesbrough, 2003; 2006a,b)

So far, attention for these topics implicit, rather general statements, few empirical studies.

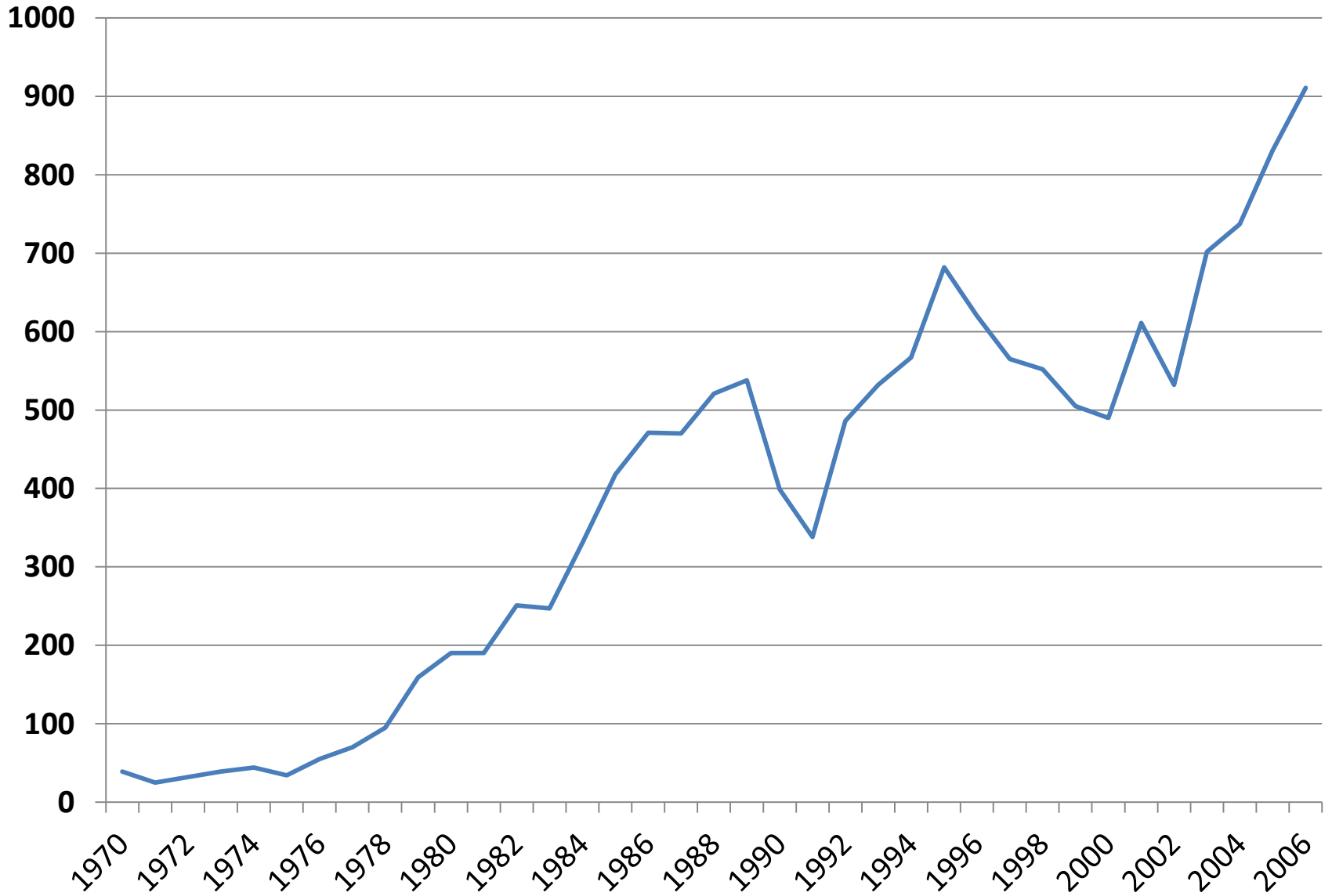
Three topics:

- From the complexity of R&D alliance networks to the complex world of open innovation.
- The governance of open innovation relationships: the role of contracts.
- The role of intellectual property in open innovation.

First topic

From the complexity of R&D alliance networks to the complex world of open innovation

Annual growth in number of R&D alliances



source : CATI

Bio-pharmaceuticals as an example of a
complex R&D alliance network

Networks of inter-firm R&D alliances in bio-pharma, 1975-1979

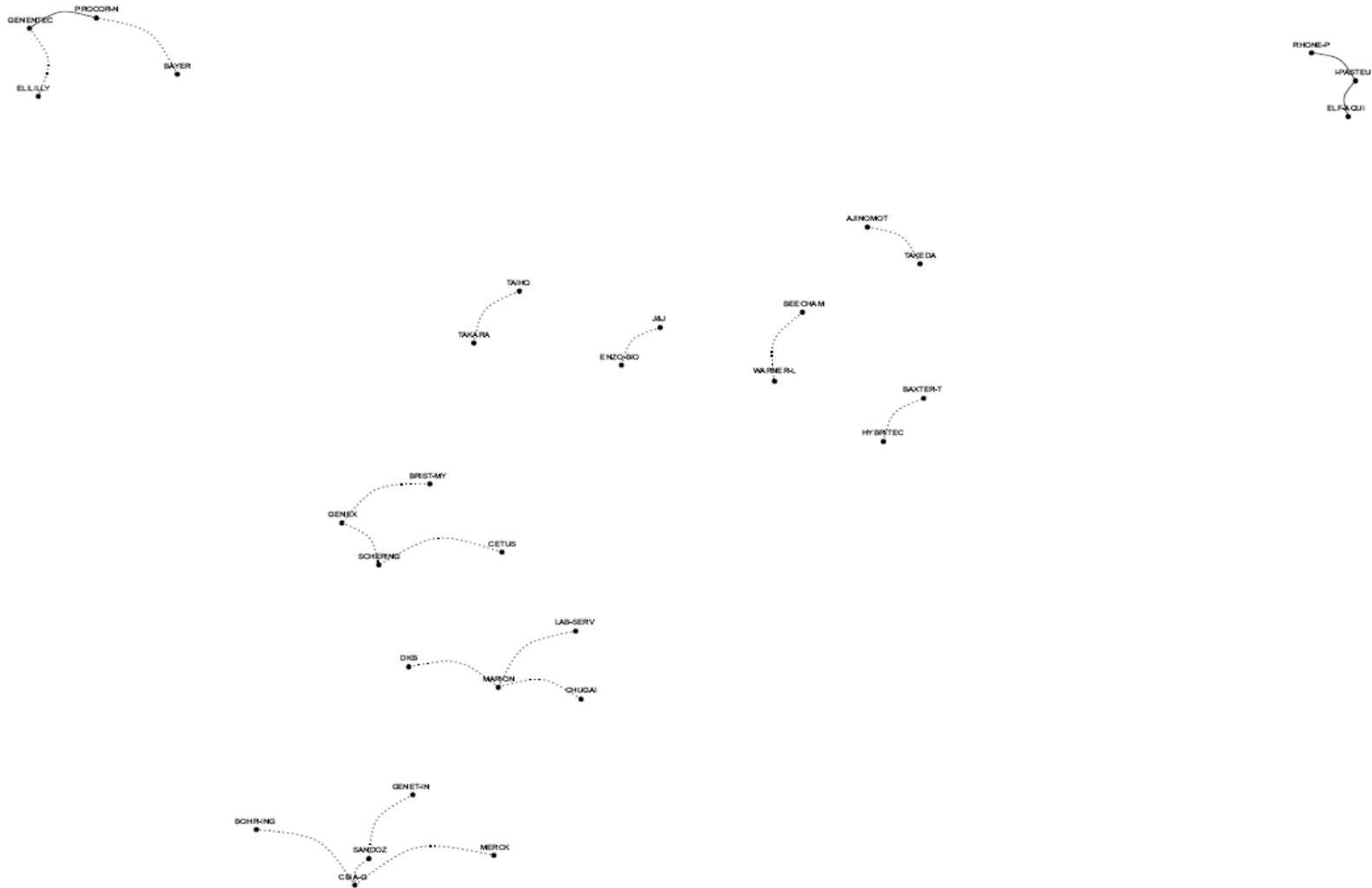


Figure 3. Inter-firm R&D partnerships amongst cooperating companies in pharmaceutical biotechnology, 1975-79; *source*: MERIT-CATI.

Networks of inter-firm R&D alliances in bio-pharma, 1995-1999

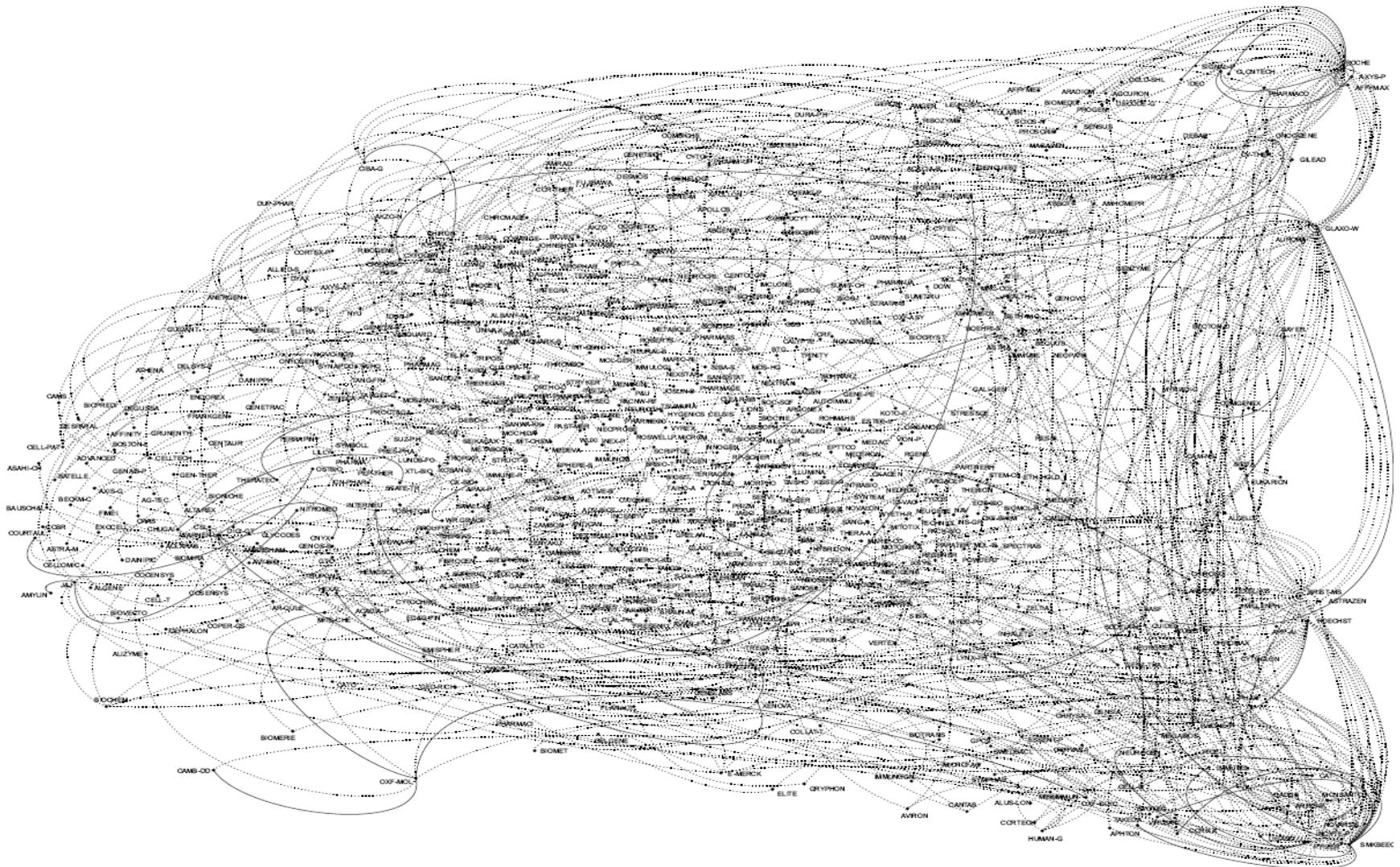


Figure 7. Inter-firm R&D partnerships amongst cooperating companies in pharmaceutical biotechnology, 1995-99; *source*: MERIT-CATI.

The world of open innovation is even much more complex as it deals not only with R&D alliances of firms with:

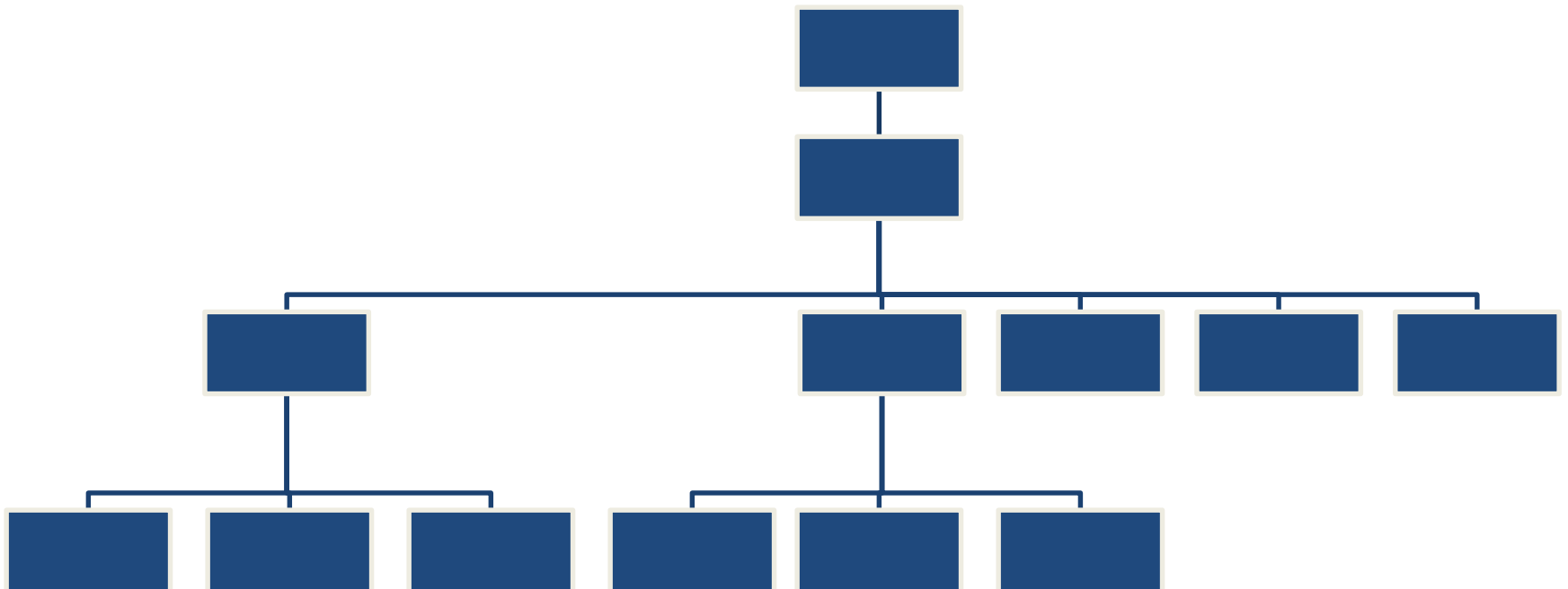
- horizontal partners (competitors) and
- vertical partners (customers, suppliers)

but also with:

- commercial laboratories,
- research institutes and universities,

and a wider range of partnerships (not just R&D alliances).

Who or what initiates, sets-up, controls, manages, and monitors the alliances and OI activities of a firm?



Second topic

The governance of open innovation relationships: the role of contracts

Two confronting perspectives in the open innovation literature:

- Governance, control, risk of appropriation → contracts (flexible private ordering).

(Chesbrough, 2003; 2006a,b; Luoma, Paasi, and Volkokari, 2010; Munsch, 2009)

- Free revealing, innovation to be shared by everyone and available to everyone → public good (no contracts).

(Baldwin and von Hippel, 2011; Pénin, 2011; von Hippel and von Krogh, 2006)

Contracts can be used from a legal perspective to control the progress of collaboration as well as to monitor the progress of collaboration from a process perspective.

(Argyres and Mayer, 2007; Mellewigt, Madhok, and Weibel, 2007; Reuer and Arino, 2007)

Some empirical findings:

- Most firms (95%) seem to prefer formal (incomplete) contracts to govern their open innovation relationships: private ordering through neo-classical contracting (relational contracting)
- Both control and monitoring aspects are perceived by firms as being of somewhat similar high importance.

(Hagedoorn and Zobel, 2014)

Third topic

The role of intellectual property in open
innovation

Somewhat similar divide in the literature:

- IP (patents, trademarks, copyrights, design rights, and technical or commercial information (trade secrets)) ensures capture of innovative rents
→ willingness to share based on strong formal IP.

(Dubiansky, 2006; Graham and Mowery, 2006; Pisano and Teece, 2007; Sandulli and Chesbrough, 2009)

- IP conflicts with openness and sharing of information, in the context of open innovation: broad accessibility of information (copyleft analogy).

(Pénin, 2011; von Hippel and von Krogh, 2003)

Empirical findings suggest IP is relevant to open innovation firms:

- protection
- signaling
- protection slightly more important than signaling

(Hagedoorn and Zobel, 2014)

Recent research suggests some interesting findings when considering the role of:

- radical vs. incremental innovators
- the breadth and depth of OI collaboration

- The more OI firms engage in in-depth partnering and the more they are radical innovators, the more they will use formal IP (patents, copyrights, etc.).
- The more these radical OI innovators engage in broad (shallow) collaboration, the more they will use informal IP (secrecy, speed to market, complexity).
- Incremental OI innovators have a lot to risk so they prefer to use formal IP (patents, copyrights, etc.).
(Hagedoorn, Lokshin, and Zobel, 2014)

Some conclusions:

- OI = complex network configurations → knowledge appropriation concerns → contracts
- contracts: flexible private ordering → control and monitoring → neo-classical/relational contracting
- IP both protection and signaling are relevant
- the nature of OI activities (breadth and depth of OI search) and the innovativeness of firms matter:
 - radical innovators:
 - in-depth collaboration → formal IP
 - broad collaboration → informal IP
 - incremental innovators → formal IP

Thank you for your attention