



Seek Project 2010:

SEEK

# The Research Use Exemption from Patent Infringement – Boon or Bane?

#### **Motivation**

- Our project is motivated by the ongoing discussion regarding the effects of a research use exemption from patent infringement on the R&D activity of firms.
- Most recently Belgium and Switzerland amended their statutory patent law to include a research use exemption.
- In countries, where a statutory research use exemption does (de facto) not exist, e.g. the U.S., Australia, New Zealand, or where its application is not clearly defined, e.g. U.K., a continuous discussion about the usefulness of the introduction (or extension/clarification) of a research use exemption is taking place.

#### **Research Questions**

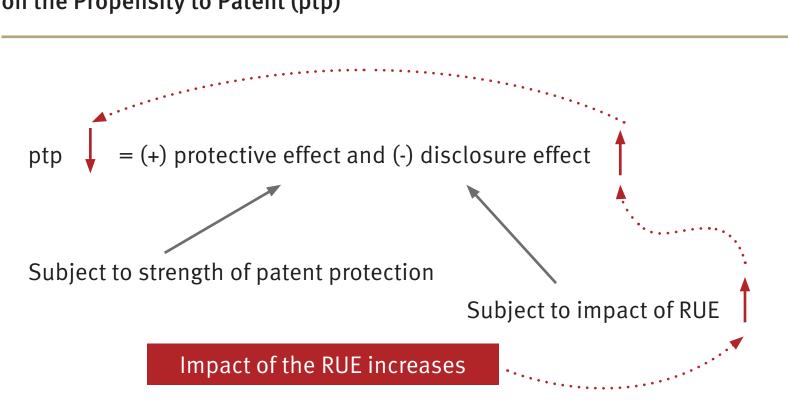
- Does the existence of a research use exemption have a detrimental effect on the propensity to patent pioneer inventions?
  - The introduction of exemptions from patent infringement reduces the protective effect of patents in areas for which the exemption is applicable.
- Does the existence of a research use exemption actually foster technological progress?
  - The lack of a research use exemption reduces the diffusion of innovative knowledge, as patented innovations eventually cannot be used by nonpatentees for research purposes.

### Research Team

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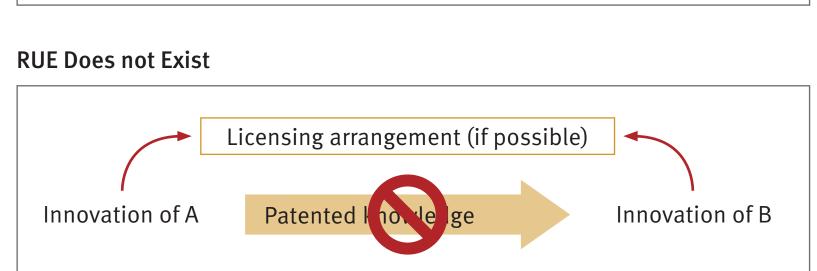
## **Objectives**

The Effect of a Research Use Exemption (RUE) on the Propensity to Patent (ptp)



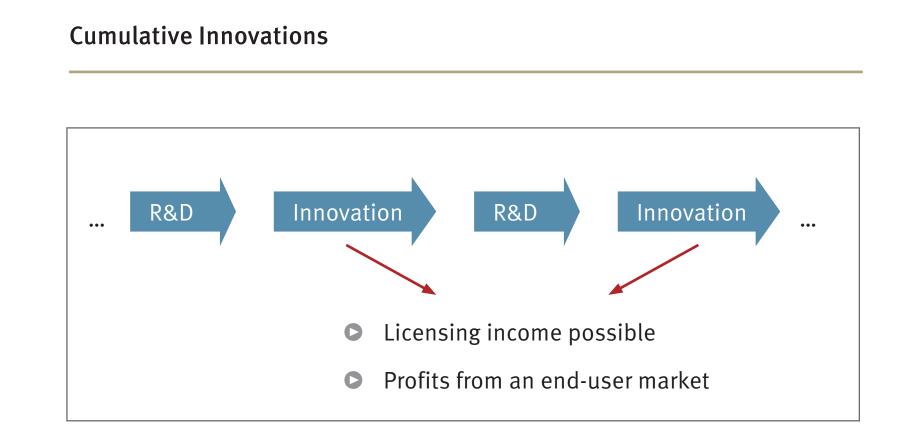
The Effect of a Research Use Exemption on R&D Activity of Follow-up Inventors

**RUE Exists** Patented knowledge Innovation of A Innovation of B



## **Explanatory Note**

**Research Tools** ... R&D Research tool R&D Innovation Licensing income possible



# Research Agenda

- The research project consists of theoretical and empirical analyses.
- The research project's four fields and the respective starting points:

R&D investments of follow-up inventors Propensity to patent pioneer inventions Scotchmer (2004), Research Firm interviews Nagaoka, Aoki (2006) tools **2** Zaby (2009) Cumulative Patent races • Heger, Zaby (2009) **c** Erkal (2005) innovations **2** Zaby, Heger (2009)

# **Project Description**

 $RUE \rightarrow ptp$ **Cumulative innovations** Research tools Adapt own previous work No previous theoretical work exists Pioneer innovation is either horizon-Profitability of research tools: tally or vertically differentiated ver- Input for own further research Theoretical sion of previous innovation analysis Licensing income Differentiation strategies of competi-Effect of RUE: decrease of licensing tors restricted by strength of patent income protection Structured firm interviews in order to Build on own previous work clarify motivation of research entities with German CIS data to patent their research tools Empirical analysis Conduct own survey focusing on life sciences Focus of empirical analysis: ptp of pioneer inventors Country comparison: Germany (broad statutory research use exemption) vs. Australia (no statutory research use exemption)

	Research tools	Cumulative innovations
Theoretical analysis	<ul> <li>Adapt Scotchmer (2004) and Nagaoka/Aoki(2005)         <ul> <li>Modify their assumption that the pioneer inventor realises profits on an end-user market</li> </ul> </li> </ul>	<ul> <li>Adapt Erkal (2005)</li> <li>Two-stage patent race including the stages "research" and "development" – Without RUE: Asymmetric hazard rates</li> <li>With RUE: Symmetric hazard rates</li> </ul>
Empirical analysis	<ul> <li>Build on survey conducted in Australia; two waves available</li> <li>Conduct survey for Germany</li> <li>Focus of empirical analysis         <ul> <li>Inclination to perfom R&amp;D of follow-up innovators</li> </ul> </li> <li>Country comparison: Germany (broad statutory research use exemption) vs. Australia (no statutory research use exemption)</li> </ul>	

# First Results: Impact RUE → ptp

Impact of RUE: Market entry costs with a patent =  $a^*$  market entry costs with secrecy a reflects appropriability of mandatorily disclosed information, 0 < a < 1Easy appropriability = high impact of RUE If a RUE has no impact, the ptp depends solely on the protective effect  $\rightarrow$  inventor only patents if patent breadth exceeds critical value  $\beta^{crit}$ If a RUE has an impact the, ptp depends on the tradeoff between the protective and the disclosure effect  $\rightarrow$  the critical value rises to  $\hat{\beta}$ Patent breadth Patent if RUE has no impact Patent if RUE has impact Data set: Mannheim Innovation Panel (German CIS, 2005) Alternative cases in the theoretical model coexist in reality:  $\sum$ ptp = ptp(RUE strong) + ptp (RUE weak) H1: ptp decreases when market entry costs increase H2: ptp increases when market entry costs increase and appropriability is high

- → Effect of market entry costs on the ptp depends on the level of appropriability
- → The impact of the RUE has a substantial effect on the ptp