

# Exploring the economic impact of science: The foundation of high-tech start-up companies at the *Sciences et Techniques de l'Ingenieur* faculty at EPFL

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# Background to the study

- focus on the foundation of high-tech start-up companies as one technology transfer mechanism that has received significant political and academic attention
- at the same time, one of the more controversial transfer mechanisms, where economic impact...
  - is partly indirect,
  - depends on existing economic structure,
  - materialises only after relatively long time horizons
- investigation of start-ups at EPFL's engineering faculty (STI) as part of the recently launched «ExTra» project

# STI start-ups 1995-2004 - a look at the data:

- STI is the largest EPFL faculty
    - 58 laboratories, 681 scientific staff (plus post-docs and PhDs)
    - 1869 peer-reviewed publications 2000-2004
    - 243 inventions (375 patents) disclosed to TTO 1995-2004
  - with 66 start-ups identified, STI accounts for majority of the 100+ companies founded at EPFL 1995-2004
    - 29 start ups with a formal licensing arrangement with the TTO
    - virtually all involving inventors (PhDs) moving to the company
    - over 90 percent located in Suisse Romande
- relatively large absolute number of new start-ups founded each year, but overall limited growth performance

# Research questions:

- Investigation of the STI/EPFL -specific factors based on a general theoretical approach to entrepreneurship in high-technology industries (Witt & Zellner 2005)

- Working hypothesis:

*The viability of a start-up venture, and hence its early growth performance, are substantially shaped by the way in which technology transfer is organised at the laboratory of origin.*

- 1) contextualisation of start-ups in other transfer activities
- 2) exploration of the links among start-ups and their laboratories of origin, and of the role played by professors

# Research design:

- identification of STI-associated start-ups based on public information, EPFL-based data, Swiss commercial register
- matching start-ups with STI laboratories and subsequent selection of 20 professors for interview; criteria based on
  - scientific discipline (according to clustering of labs in «Institutes»)
  - number of inventions the lab so far disclosed to TTO (1995-2004)
  - number of start-ups associated with the lab
- semi-structured interviews with 20 professors (heads of laboratories); due to skewed distribution of founding activity, the majority of the start-ups identified is covered

# The perceived significance of start-ups in STI technology transfer – emerging issues:

- generally, start-ups are *not* seen as the most effective transfer mechanism (assessed from the perspective of the value created by new knowledge/technology in industry)
- the availability of entrepreneurially motivated people at the lab is the most important determinant for choosing the start-up route in commercialising technology
- effective evaluation of new business conceptions (Witt 1998) in the context of the lab seems to be limited - who provides the relevant expertise? → relates to development of the entrepreneurial infrastructure in the region!

# Further development of the project:

- contextualisation of start-up foundation activity with quantitative data on other technology transfer («ExTra»)
- systematic account of (initial and ongoing) knowledge transfer from the laboratory into the start-up -- classification of start-ups in terms of their background?
- linking results to institutionalised EPFL start-up support

## Definition of an «EPFL start-up»:

*A start-up is considered to be associated with EPFL if the foundation of the company is based on the commercialisation of intellectual property owned by EPFL and / or if a transfer of EPFL personnel involved in the development of the technology has taken place. In the latter case, there should be no more than two years between leaving EPFL and the foundation of the company.*