In or Out of the IP System? What Can We Learn from Oxford University Spin-off Companies?

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Introduction

• The discussion of academic entrepreneurship often concentrates on the efforts to commercialize the new inventions that have been appropriated within the formal intellectual property (IP) system (Fini, Lacetera and Shane, 2010).
• There has also been an assumption that academic entrepreneurial activities are reflected through the disclosure of patents via TTO.
• In the US, with the Patent and Trademark Act of 1980 (The Bayh-Dole Act) has formalised university ownership of IP. In the UK, since 1985, each institution has been able to set their own rules on ownership of IP.
• However, a number of studies in the U.S. show that a substantial amount of academic entrepreneurial activities happens outside of the formal IP system (Bekkers and Bodas Freitas, 2008; Link et al., 2007; Martinelli et al. 2008).
• There is a lack of this kind of study in the UK and in European countries.
• This type of research can provide faculties, universities and policy makers with more accurate picture on entrepreneurial activities and parameter than the patents disclosure via formal IP channel.
The Objectives of the Study

• Investigate whether Oxford academics involved in spin-off companies disclose/exploit patents inside or outside the formal university IP system.
Methodology: Sampling Process/ The Key Database

• The research is drawn from the database of 75 companies listed on ISIS Innovation website <www.isis-innovation.com/spinout/>.

• From 75 companies in the database:
  - 1 company is a non-trading company
  - 9 companies are dissolved or in liquidation.
  - 1 company is registered in Belgium (there’s no information registered in UK Companies House)

• The key database used was:
  - The ICC Directory of Companies provided by Nexis <http://www.lexisnexis.com/uk/nexis/search>
  - Companies House <http://wck2.companieshouse.gov.uk>
  - The Oxford Staff Directory <www.ox.ac.uk/applications/contact_search/>
  - Patent searches were done via the free public database ESP@CENET on the European Patent Office website, but are less exhaustive in their contents than the subscription database.
Findings
Companies Characteristics: Number of Years in Operations

- 1-5 years: 21
- 6-10 years: 30
- 11-15 years: 18
- 16-20 years: 3
- 20+ years: 2
Companies Characteristics: Sector

- Pharmaceuticals & Biotechnology: 27%
- Engineering: 25%
- Biotechnology: 19%
- Software: 8%
- Agriculture: 2%
- Chemistry/Biology: 5%
- Consultancy: 3%
- Social and Economics: 1%
- Neuroscience: 1%
- Behavioural Economics: 2%
- Computers & process equipment: 1%
- Physics: 1%
- N/A: 3%
Companies Characteristics: Number of Directors and Academic Directors

<table>
<thead>
<tr>
<th></th>
<th>no. of directors</th>
<th>no. of Oxford academics</th>
<th>fraction</th>
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<tbody>
<tr>
<td>mean</td>
<td>10.7</td>
<td>1.6</td>
<td>1/5</td>
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122 academics from Oxford involved in spin-off companies, of which 114 are male and 8 are female.
Academics Characteristics: Number of Patents

- 31+ patents
- 21-30 patents
- 16-20 patents
- 11-15 patents
- 6-10 patents
- 1-5 patents

Number of academics vs. number of patents.
Academics Characteristics: Number of Patents filed with ISIS Innovation or the University of Oxford as assignee

- Patents filed within University IP System: 47%
- Patents filed with potential academic bypass: 53%

Bar chart showing:
- Male:
  - Patents filed within University IP System: 47.3%
  - Patents filed with potential academic bypass: 52.7%
- Female:
  - Patents filed within University IP System: 38.1%
  - Patents filed with potential academic bypass: 61.9%
Academics involved in spin-off activities are from 40 Departments/colleges
Academics Characteristics: Number of Spin-off Companies vs Number of Academic Staff involved as Company Directors

No of spin-off companies  No. of academics
Conclusions

• The average proportion of academic company directors involved in spin-offs activities is only 1 in 5
  – Academics may be involved other ways i.e. consultants, technical advisors, etc

• Findings appear to be consistent with previous studies which showed that a significant percentage of academics do not engage in the entrepreneurial activities through formal IP channels

• Academics from the department of Engineering Science are more likely to disclose their patents through formal IP system, while academics from Bioscience and Chemistry appear to be more prone to filing patents outside the IP system.
Limitations and Further Research

• This study identifies methodological limitations and can not conclude authoritatively on the academic bypassing of ISIS Innovation/University of Oxford for the disclosure/exploitation of their inventions due to the lack of data on period(s) of employment with Oxford University.

• Further research should explore further the entrepreneurial activities, rationales (may be legitimate) and motivations of academics, who have not disclosed their inventions through formal university IP system.

• A comparative study between the UK and other European countries should be carried out in order to compare and contrast main findings.
Thank you!