NEW STRATEGIES AND POLICIES
FOR THE TRANSFER, EXPLOITATION AND COMMERCIALISATION
OF PUBLIC RESEARCH RESULTS

Directorate for Science, Technology and Industry
Daniel Kupka

Geneva 27-28 June 2013
5th meeting of the European TTO Circle
Commercialisation of public research is more than IP

- Public Research Results
  - Invention Disclosure
- Evaluation of Invention
- IP Protection
  - Patents
  - Copyrights
  - Trademarks
  - Trade Secrets
- Market Technology
- Benefits
  - Social
  - Economic
  - Cultural
- Joint Publications
  - Mobility
  - Contract research
  - Facility sharing
  - Consultancy
  - Start-ups by students and graduates
  - Etc.

Environmental factors
- e.g. Country’s industry characteristics, companies absorptive capacities

Institutional characteristics
- e.g. University IP policies, Norms, research quality, university culture

Organizational resources
- e.g. Technology transfer expertise

Researcher incentives/characteristics
- e.g. Motivation to disclose

Local and national S&T policies
WHAT DOES THE DATA TELL US? A SNAPSHOT
Invention disclosures relative stable but slight drop after crisis

Invention disclosures, 2004-2011
Per USD 100m research expenditure

Patents filed by universities, 2001-2005 and 2006-2010
Patent applications under Patent Cooperation Treaty (PCT) per billion GDP (Constant 2005 USD (PPP))

Academic patenting has increased in most countries in the 2000s

1. Patent applicant’s names are allocated to institutional sectors using a methodology developed by Eurostat and Katholieke Universiteit Leuven (KUL). Owing to the significant variation in names recorded in patent documents, applicants are misallocated to sectors, thereby introducing biases in the resulting indicator. Only economies having filed for at least 30 patents over the period 2001-2005 or 2006-2010 are included in the Figures.
2. Data broken down by priority date and residence of the applicants, using fractional counts.
3. Hospitals has been excluded.
No clear pattern for patenting by PRIs

Patents filed by public research institutes, 2001-2005 and 2006-2010
Patent applications under Patent Cooperation Treaty (PCT) per billion GDP (*Constant 2005 USD (PPP))

1. Patent applicant’s names are allocated to institutional sectors using a methodology developed by Eurostat and Katholieke Universiteit Leuven (KUL). Owing to the significant variation in names recorded in patent documents, applicants are misallocated to sectors, thereby introducing biases in the resulting indicator. Only economies having filed for at least 30 patents over the period 2001-2005 or 2006-2010 are included in the Figures.
2. Data broken down by priority date and residence of the applicants, using fractional counts.
3. Hospitals has been excluded.
In Europe, revenue from licensing is low compared to the US and is not increasing.
Spin-off creation is higher in Europe, but little evidence of growth and job effects

Creation of public research spin-offs, 2004-2011
Per USD PPP 100m research expenditure

... commercialisation (at least what we can measure) seems to be levelling off in a number of countries.

- What is holding back the commercialisation of public research?
Why the levelling off?: some suspects
Drop in higher education R&D funded by business (2000-2011)

Source: OECD, Main Science and Technology Indicators (MSTI) Database
Why the levelling off?: some suspects

Drop in PRI-funded R&D by business (2000-2011)

No data for US
Source: OECD, Main Science and Technology Indicators (MSTI) Database
Narrow policy focus on 4 elements:

- the natural/physical sciences,
- patenting & licensing,
- faculty inventors;
- little understanding of the broader determinants (“What should I do with my patents?”)

Limited evidence and metrics: current metrics just the tip of the iceberg; those available most relevant ones?
Mobility of people important for knowledge diffusion and industry’s research productivity

Doctorate holders having changed jobs in the last 10 years, 2009 as %

Source: OECD, Careers of Doctorate Holders Database. www.oecd.org/sti/cdh
Why the levelling off?: some suspects (2)

• Narrow policy focus on 4 elements:
  • the natural/physical sciences,
  • patenting & licensing,
  • faculty inventors;
  • little understanding of the broader determinants ("What should I do with my patents?")

• Limited evidence and and metrics: current metrics just the tip of the iceberg; those available most relevant ones?

• Governance and incentives: Tech-Transfer: “only a 3rd mission”? Do we have right individual incentives? No integrated national policy approach?
Mismatch between supply and demand: Firms not always willing (e.g. low research quality, transaction and search costs) or capable of making use of public research results (e.g. lack of own absorptive capacity)

Less easy financing for new ventures: drop in VC funding, less appetite for risk by bank and equity funds

...
WHAT APPROACHES OR SOLUTIONS? TRENDS IN STRATEGIES AND POLICIES
A practitioner's view
Legislative initiatives related to commercialisation and patenting (selected)

- Increased autonomy (i.e. University by-laws) allows to negotiate different IP arrangements
- Encouraging industry engagement through granting free of charge licenses on IP rights
  - e.g. Easy Access Innovation Partnership (Glasgow, Bristol and King’s College London), University of New South Wales and CERN
- Legislative and administrative procedures targeting research personnel and faculty
  - Patents and commercialisation in tenure and promotion decisions in some US and Canadian universities (16 universities of 64)
  - “Student ownership” - University of Missouri
Intermediaries and bridging institutions

- Technology Transfer Offices (TTOs) have expanded their missions
- Convergence across countries towards a common set of organisational and financial models
- New bridging and intermediation structures
  - e.g. Innovation offices programme in Sweden
- Replacing or improving TTO structures
  - Technology Transfer Alliances (e.g. Innovation Transfer Network (ITN) in the US, SATT in France, cTTO in Ireland)
  - For-profit models
  - Internet-based models (e.g. Flintbox at University of British Columbia)
  - Free Agency model
Collaborative IP tools and funds

• Easing access to patent portfolios for start-ups and SMEs – issue of “sleeping” patents
  – e.g. US DOE’s Next Top Innovator, France’s CNRS PR2 – Enhanced Partnership SME Research

• IP sharing agreements
  – e.g. UK’s Lambert Toolkit, Germany’s Model R&D cooperative Agreements, Denmark’s Schlüter model Agreements

• Patent funds for SMEs and PROs
  – e.g. Japan’s Life Sciences IP Platform Fund, France’s Brevets, Korea’s IP cube partners
Promoting Openness in Science

• Requirement to publish in digital format
  – *National*: e.g. Spain (2011 Science, Technology and Innovation Law), New Zealand, US, Estonia)
  – *Institutional*: e.g. US National Institutes of Health (NIH), Canadian Institutes of Health Research (CIHR)
The research staff whose research activity is financed largely with funds from the State Budget will issue a digital version of the final version of the contents which have been accepted for publication in research journals or periodicals serial as soon as possible but not later than twelve months after the official date of publication.

Expanding Public Access to the Results of Federally Funded Research

Posted by Michael Stebbins on February 22, 2013 at 12:04 PM EDT

The Obama Administration is committed to the proposition that citizens deserve easy access to the results of scientific research their tax dollars have paid for. That's why, in a policy memorandum released today, OSTP Director John Holdren has directed Federal agencies with more than $100M in R&D expenditures to develop plans to make the published results of federally funded research freely available to the public within one year of publication and requiring researchers to better account for and manage the digital data resulting from federally funded scientific research. OSTP has been looking into this issue for some time, soliciting broad public input on
Promoting Openness in Science

• Requirement to publish in digital format
  – *Institutional*: e.g. US National Institutes of Health (NIH), Canadian Institutes of Health Research (CIHR)
  – *National*: e.g. Spain (2011 Science, Technology and Innovation Law), New Zealand, US, Estonia

• Building knowledge repositories
  – e.g. EC: Digital Repository Infrastructure Vision for European Research (DRIVER), Open Access Infrastructure for Research in Europe (OpenAIRE), etc.

• New co-operative models
  – e.g. Lund University, the National Library of Sweden and Nordbib to adopt online guides to open access journals publishing
Financing (institutional level)

• Setting up of proof-of-concept and seed funds (administered in some cases by TTOs)
  – vary in technological and geographical focus, organisational form and target population
  – e.g. Karolinska Development Fund, Imperial Innovation Fund, Gemma Frisius KU Leuven

• Lessening the burdens for spin-offs to license-out university technology
  – equity shares or shares of future revenues; Patent assistance programmes

• Crowd funding – hype or reality?
  – A way to engage students and researchers with society and the economy
  – University of Utah’s TTO entered in 2013 an exclusive agreement with crowdfunding platform RocketHub
(FUTURE) CHALLENGES AND ISSUES
(Future) Challenges and issues: Management of Universities and PRIs

• Allow the potential for commercialisation while retaining the fundamental integrity of the research apparatus

• Rise of open access
  – Does it incur additional costs and time?
  – How does it affect TTOs operation e.g. negotiations with industry?

• How to create a eco-system for student and academic entrepreneurs when favourable local conditions are not present?
  – Smart programme design?
  – Research excellence?
(Future) Challenges and issues: Management of Universities and PRIs (2)

- IP is still the foundation ("grammar") on which new forms of transfer and exchange are happening
  - But how to implement strategies and policies that recognize different pathways and links to commercialisation, and how to support each link?
  - Encouraging consulting and marketing non-patent services?
  - Government-financed industrial PhD programmes? (Denmark, France, Norway)

- Where do get the funding for PoC and seed funds in times of increased competition and diminished research funding?
(Future) Challenges and issues: TTOs

- Alternative models of technology transfer the road to heaven? No one-size-fits-all
  - Tweaking TTO performance?
  - e.g. Patents and commercialisation in tenure and promotion decisions may create perverse incentives

- “Soft IP” (e.g. copyrights) are becoming more prevalent - regulatory issues?
  - e.g. How to protect the various forms of IP associated with a successful app?

- Is the prospect of litigation on the rise in Europe?
Tech company stopped graduate recruitment following patent infringement

From: HR Team Communications [hrteamcommunications@micron.com]
Sent: Monday, January 14, 2013 3:35 PM
To: Multiple-Recipients
Subject: Micron’s student recruitment at the University of Illinois

Dear Professor:

I write to inform you of a change in Micron’s student recruitment at the University of Illinois ("UIUC"). Because Micron remains a defendant in a patent infringement lawsuit that UIUC filed against Micron in Federal court in Illinois on December 5, 2011, effective immediately, Micron will no longer recruit UIUC students for open positions at any of Micron’s world-wide facilities.

When the case was first filed, Micron expressed to UIUC counsel the company’s strong dismay that despite the long-term synergies resulting from collaboration and partnership between Micron and UIUC, UIUC had chosen to file suit against Micron. UIUC counsel continues to refuse to dismiss the case even though the case has now been stayed indefinitely, pending resolution of a Micron petition filed with the Patent & Trademark Office regarding the validity of the three UIUC patents asserted.

As you know, Micron has long enjoyed a close relationship with UIUC. Among other things, Micron has hired numerous UIUC engineering students for both full-time and internship positions. In addition, the Micron Foundation has endowed chairs at the College of Engineering and has sponsored student scholarships and professor research. However, because UIUC’s suit imposes costs and risks on Micron that are inconsistent with collaborative relationships among Micron, UIUC and its students, Micron must regrettably indefinitely suspend its recruitment of UIUC students and likewise suspend participation in other joint activities.

Sincerely,

Michelle Burks
Academic Program Manager
Micron Technology, Inc.

Source: www.patentlyo.com
(Future) Challenges and issues: TTOs (2)

• Developing new metrics to justify third mission to administration and policy makers
  – Taking into account non-traditional impacts of its IP portfolio
  – e.g. University Industry Liaison Office at the University of British Columbia (UBC-UILO)
  – e.g. US DoD: total sales of new products and services resulting from the DoD technology transfer agreements

• Assignment of the student's IP to the university usual practice
  – How to justify given increased student fees e.g. UK?
  – Is the prospect of student litigation on the rise?
Thank you!

Report launch late September 2013

daniel.kupka@oecd.org

www.oecd.org/sti/innovation