Trends in University Technology Transfer

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Trends in University Technology Transfer

Topic Outline

- Technology Transfer Overview
- TREND #1: Rethink the TTO
- TREND #2: Corporate Relationships
- TREND #3: Start-ups

What is Technology Transfer?

The transfer (dissemination) of intellectual assets (knowledge) generated by research activities inside the university to intermediaries or the general public outside the university.

What is Technology Transfer?

What are the “intellectual assets” generated from research activities?

- Discoveries
- Data/ Results
- Know-How
- Technology/ Inventions (may or may not be Patents)
- Software and other Copyrights

What is Technology Transfer?

How are these “intellectual assets” traditionally transferred?

- Graduates/ Students
- Publications
- Lectures/ Conferences
- Reports to Sponsors/ Donors
- Public Domain

What is Technology Transfer?

How are these “intellectual assets” tranferred institutionally?

- Material Transfer Agreements
- Sponsored Research Agreements
- Consortium Agreements
- License Agreements
- Spin-off Companies

What is Technology Transfer?

- Prior to the enactment of the Bayh-Dole Act (1980), the federal government took title to all inventions created under federal contracts (and had 28,000 unlicensed patents).
- The Bayh-Dole Act allowed universities (and other small business and non-profits) to elect title to inventions created under federal contracts provided:
  - The government was issued reports and a license
  - The university patented the invention
  - The university actively promoted and attempted to commercialize the invention
  - Licensing preference is given to US small business

What is Technology Transfer?

Premise of the Bayh-Dole Act

- To promote **the utilization of inventions** arising from federally supported research or development
- To encourage **maximum participation of small business** firms in federally supported research and development efforts
- To promote **collaboration between commercial concerns and** nonprofit organizations, including **universities**
- To ensure that inventions made by nonprofit organizations and small business firms are used in a manner to **promote free competition and enterprise without unduly encumbering future research and discovery**
- To **promote the commercialization and public availability of inventions** made in the United States by United States industry and labor

TREND 1: Rethinking the Role of the TTO

- What is the mission of the TTO program?
- Are the TTO's objectives/ metrics aligned with the strategies/ mission of the university and its research partners?

[to promote the progress of science; to advance the national health, prosperity, and welfare;

To create and disseminate knowledge and art through research and creative inquiry, teaching, and learning, and to transfer our intellectual and artistic products to enhance society in meaningful and sustainable ways…

…to enrich the mind by stimulating and sustaining a spirit of free inquiry directed to understanding the nature of the universe and the role of mankind in it. Activities designed to …record, preserve, and disseminate the results of intellectual discovery and creative endeavor serve this purpose.]

Rethinking the Role of the TTO

Where in the Mission Statement does it say maximize income through licensing?

- Can we replace research dollars?
- Can we “pick the winners”?
- Should we look for the “big hit”?

Rethinking the Role of the TTO

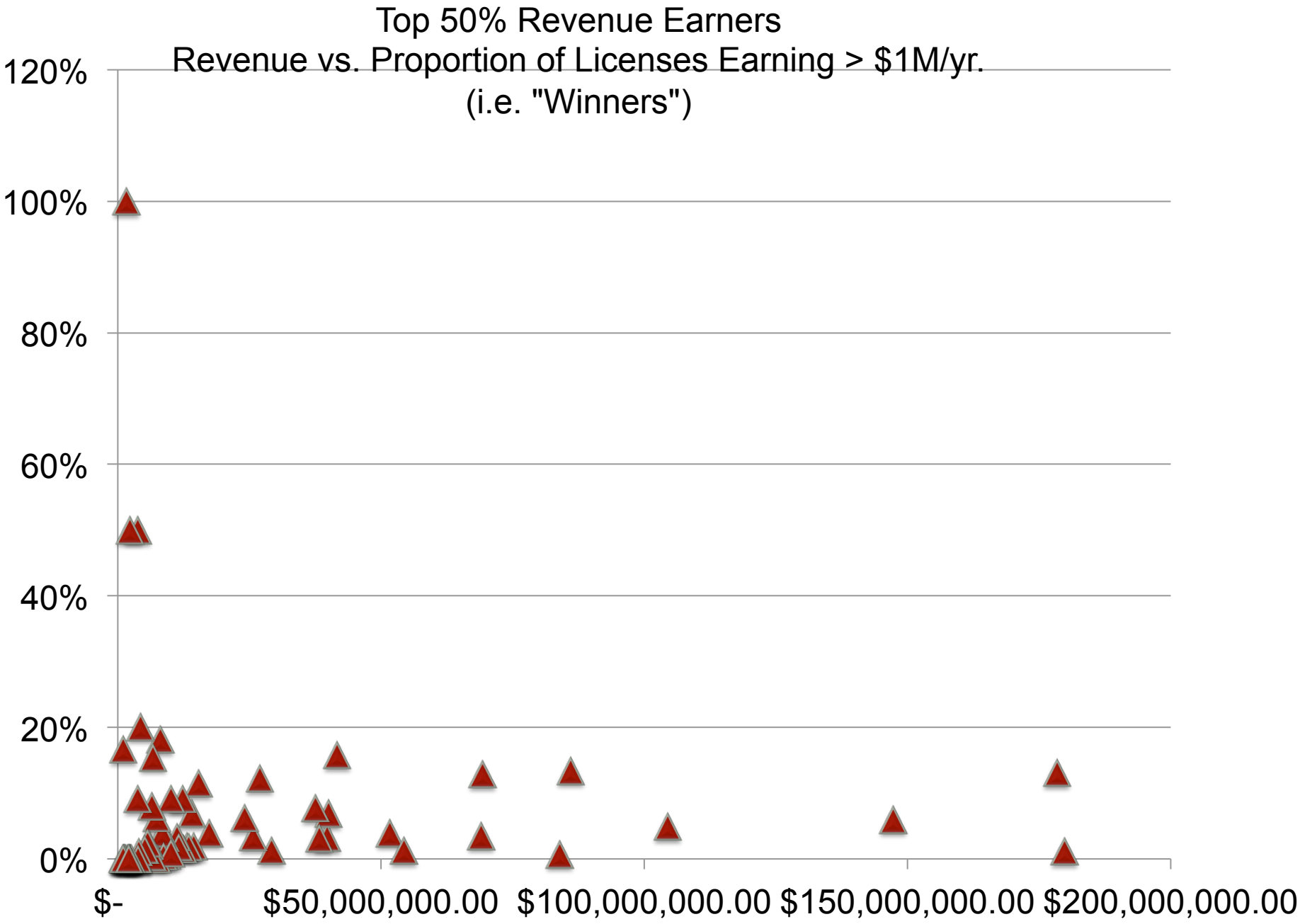
Some Data…(from AUTM, 2010)

- On average, universities returned 3.36% of their research base in revenues from technology transfer.
- On average, 2% of Licenses have running royalties of $1M or greater per year, but...
- 20% of schools account for 86% of total revenues for all universities
- 2 schools account for 20% of total revenues

Rethinking the Role of the TTO

Top Schools (those that generate high revenues) must be really good at picking winners…right?

- Hypothesis: Schools with high overall revenues from tech transfer are picking winners and will have a high proportion of licenses that generate over $1M a year in revenues.


Top 50% Revenue Earners
Revenue vs. Proportion of Licenses Earning > $1M/yr.
(i.e. "Winners")
120%
100%
80%
60%
40%
20%
0%
$-
$50,000,000.00
$100,000,000.00
$150,000,000.00
$200,000,000.00

Rethinking the Role of the TTO

TTO Realities

- 20% of TTO's do not cover the costs of their patents
- The addition of staff and a mandate to share revenues (at CMU it is 75% off the top) makes it even more difficult
- Tech transfer does not generally make money…and
- TTOs are not "picking winners"
- Big hits are a function of capitalizing on good luck

New Model: TTO's are faculty service organizations with a focus on dissemination of new technologies consistent with the missions of their funders and institutions.

Corporate Relationships

What Relationships do Companies Have with Universities?

- Employers/ Recruiters
- Gifts/ Sponsorships/ Student Fellowships
- Sponsored Research
- Consortiums
- Incubation
- Licensees

Corporate Relationships

What do Companies want from Universities?

- Recruit students
- Awareness of cutting edge research
- Access to faculty
- Technology
  - New solutions to broad industry problems
  - Incremental improvements to existing products
  - Patents for freedom to operate
  - Disruptive/ platform for development into new products/ markets (?)

Corporate Relationships

Why do Companies Want Technology from Universities?

- The technology is not their primary motivation
- The technology is not available either internally or “work for hire”
- The university is the lowest cost contractor

TREND #2: Pre-set License Terms for Corporate Sponsors

Corporate Sponsors – Traditional Terms

- Sponsored research with full overhead
- Notification of any IP developed during the project
- Evaluation/ Non-commercial License
- Non-exclusive, royalty-free License (NERF)
- Option for Exclusive License
- No rights to Background IP; Option if available and paid for

Pre-set License Terms

Commercial Sponsored Research – New Deal

- % of total research contract amount due upfront (minimum amount is set)
- Pre-set royalty
- Patent reimbursement/ directed by Sponsor
- Background IP not included
- Government subcontracts not eligible
- Consortiums not eligible
- Penn State Univ./ Univ. of Minnesota

Pre-set License Terms

Do Pre-set License Terms meet the Needs of the Company and the University?

- Is it work for hire? Is that ok in certain circumstances?
- Will it interfere with research (publication, freedom)?
- Is it academically interesting? What about students?
- Will it interfere with the research of others (patent trolling, infringement, patent invalidation, work around)
- Is it legal (revenue procedure 07-57)?
- Will it work in all instances? When?

University Start-ups

- Increase in the expectations of universities to provide regional economic development through start-ups
- Increase in start-up activity and focus at universities
- Increase interest of faculty in entrepreneurship
- Increasing interest in entrepreneurship by students

Trend #3: Use of start-ups to fill the "gap"

- Gap between technology invention, proof of concept, and
- Product development/ scale up/ commercial adoption

Companies formerly filled this gap through licensing…however,

Companies are increasingly focused on existing products, and incremental improvements…so

Filling the gap with start-ups

- Where will the next products/ markets come from?
- Companies are outsourcing product development and market development directly or accessing through acquisition.
- The university start-up is well positioned to develop new products and new markets

New Model: Company funds research through gifts with no IP license. Company invests in/ acquires start-up.

Filling the gap with Start-ups

Standard Deals for Faculty Start-ups

- CMU, UNC, among others
- Royalties, equity, payments standard terms
- Include milestones, patent reimbursement

- CMU Greenlighting Startups
  - 6% equity – exclusive (5% non-exclusive)
  - 2% royalty – exclusive (1% non-exclusive)
  - Patent deferral +1%
  - Incubation +1%

Other Trends in Technology Transfer

- America Invents Act
- Faculty Free Agency
- The Independent TTO
- Start-up Act
- Internationalization of Technology Transfer