Conference on Law & Economics of Copyright Users’ Rights

Economic Research Design

Sept 26 - 28, 2013
Topics

- Research Questions (Hypotheses)
- Framework (Model)
- Measurement (Copyright Policies, Laws, and Regulations)
- Datasets (Analyses/Inferences)
I. Research Questions

- Impact of Copyright Flexibility/User’s Rights on Creativity, Diffusion, and Access
  - Does it enhance ... or harm?

- Differential Impacts by Sector, Type of Work, and Country Region/Level of Development
  - Effects on consumers and producers, including producer-users, user-innovators, non-profits
II. Framework

- **Canonical Model**

  \[ Y_{\text{int}} = \alpha_i + \alpha_n + \alpha_t + \beta X_{nt} + \gamma Z_{\text{int}} + \varepsilon_{\text{int}} \]

  (need: sources of variation, control factors)

- **Alternative**

  \[ Y_{\text{int}} = \alpha_i + \alpha_n + \alpha_t + \beta X_{nt} + \delta(X_{nt} \cdot R_{\text{int}}) + \gamma Z_{\text{int}} + \varepsilon_{\text{int}} \]
III. Measurement of ‘Regime’

- Information on copyright policy or reforms (regarding owner’s rights, user’s rights)

- Indicator Variable Approach (for Event study, natural experiments, or difference-in-differences analysis):
  \[ X_{nt} = 1 \text{ if reform occurred, zero otherwise} \]

- IP Watch List (of countries)
  - USTR Section 301: Weak copyright enforcements
  - Consumers International: Copyright provisions that are harmful to consumers (2009 – 2012)
III. Measurement of ‘Regime’

‘Counting’ Approach

- Baker & Cunningham (2006)

\[ x_{t}^{\text{Broaden}} = \text{number of judicial decisions & legal acts which broaden copyrights} \]
\[ x_{t}^{\text{Narrow}} = \text{number of judicial decisions & legal acts which narrow copyrights} \]

Independent Variables of Interest:

\[ \Delta x_{t}^{\text{Broaden}}, \Delta x_{t}^{\text{Narrow}} \]
III. Measurement of ‘Regime’

- ‘Index’ Approach
  - Based on statutes, case laws, regulations, enforcement-related aspects, norms, ...

- Method
  I. Select Categories (1, 2, ..., N)
  II. Each category has M (or so) features
  III. Weighted or un-weighted average of categories, each of which has a score

- Construct
  - One for **Creator** (owner) rights
  - Another for **User** rights
  - Or combine, or take difference
IV. Datasets

- **Statistical Databases**
  - Firm-level: Thomson Datastream, Compustat, BEA micro data on Multinationals
  - Examples of Data Available:
    - Sales (local and exports), Valued added
    - Market Entry/Exit
    - Employment, Market Valuations
    - Licensing, R&D, …
  - Producer Perspective (including producers that “use” copyrighted works)
  - Advantage: allows us to assess whether producers benefit from, or are not harmed by copyright flexibilities.
Possible Sectors to examine

Industries identified by USPTO as relying on copyright

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5111</td>
<td>Newspaper, periodical, book, and directory publishers</td>
</tr>
<tr>
<td>5112</td>
<td>Software publishers</td>
</tr>
<tr>
<td>5121</td>
<td>Motion picture and video industries</td>
</tr>
<tr>
<td>5122</td>
<td>Sound recording industries</td>
</tr>
<tr>
<td>5151</td>
<td>Radio and television broadcasting</td>
</tr>
<tr>
<td>5152</td>
<td>Cable and other subscription programming</td>
</tr>
<tr>
<td>5191</td>
<td>Other information services (news syndicates and internet sites)</td>
</tr>
<tr>
<td>5414</td>
<td>Specialized design services (visual and graphic arts)</td>
</tr>
<tr>
<td>5415</td>
<td>Computer systems design and related services (software and databases)</td>
</tr>
<tr>
<td>5418</td>
<td>Advertising, public relations, and related services</td>
</tr>
<tr>
<td>5419</td>
<td>Other professional, scientific, and technical services (photography and translation)</td>
</tr>
<tr>
<td>7111</td>
<td>Performing arts companies</td>
</tr>
<tr>
<td>7115</td>
<td>Independent artists, writers, and performers</td>
</tr>
</tbody>
</table>

(NAICS codes)
### Possible Sectors to examine

Industries identified by CCIA as relying on fair use

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>333315</td>
<td>Photographic and photocopying equipment mfg.</td>
</tr>
<tr>
<td>3341</td>
<td>Computer and peripheral equipment manufacturing</td>
</tr>
<tr>
<td>3343</td>
<td>Audio and video equipment manufacturing</td>
</tr>
<tr>
<td>334413</td>
<td>Semiconductors and related device manufacturing</td>
</tr>
<tr>
<td>3346</td>
<td>Manufacturing and reproducing magnetic and optical media</td>
</tr>
<tr>
<td>454111</td>
<td>Electronic shopping</td>
</tr>
<tr>
<td>454112</td>
<td>Electronic auctions</td>
</tr>
<tr>
<td>51111</td>
<td>Newspaper publishers</td>
</tr>
<tr>
<td>51114</td>
<td>Directory, mailing list and other publishers</td>
</tr>
<tr>
<td>51119</td>
<td>Other publishers</td>
</tr>
<tr>
<td>5112</td>
<td>Software publishers</td>
</tr>
<tr>
<td>5121</td>
<td>Motion picture and video Industries</td>
</tr>
<tr>
<td>5122</td>
<td>Sound recording industries</td>
</tr>
</tbody>
</table>

(NAICS codes)
Possible Sectors to examine

Industries identified by CCIA as relying on fair use, Cont.

5182  Data processing, hosting and related services
519  Other information services
5231  Securities, commodity contracts and investments
5239  Other financial investment activities
5241  Insurance carriers
5259  Other investment pools and funds
53223  Video tape and disc rental
5411  Legal services
5413  Architectural, engineering and related services
54143  Graphic design services
5417  Scientific research and development services
6111-6113  Education services (pt.)
7111  Performing arts companies
7115  Independent artists, writers and performers
811212  Computer & office machine repair and maintenance

(NAICS codes)
Possible Sectors to examine (OVERLAP)

USPTO

5151
5152
5415
5418
5419

5111*
5112
5121
5122
5191*
5414*
7111
7115

CCIA

333315
33341
3341
3343
334413
3346
454111
454112
5182
5231

33346
5241
5259
53223
5411
5413
5417
811212

* Indicates inexact (not four-digit to four-digit) match
IV. Datasets

- **Case Studies**
  - Specific Countries/Regions

- **Specific Type(s) of Work**
  (where “unit of analysis” can be the work or industry)
  - Books, Films, Recorded Music
  - Software, Broadcasting, ...

- **Specific Sectors**
  - Education (Secondary, Higher)
  - Library, Museums, Archives
  - R&D and Science (Journals, Databases, Images)
IV. Datasets

Patent Data

Benefits
- Identifies novel, potentially useful outputs of innovative process
- Large amounts of data freely available over many years
- Understood and used by international policymakers

Drawbacks
- Some patents cover economically insignificant innovations
- Some significant innovations not patented
- Patenting behavior differs among countries and industries

Ways to Address Drawbacks
- Quality control with citations, patent families, etc.
- Compare within very specific fields of technology
- Find most internationally comparable data (PCT/Families)
IV. Datasets

Patent Data: Types of indicators

Filings or Grants at Domestic Patent Offices
- Problematic for cross country comparisons due to home country biases, the influence of finance & trade flows, and differences between countries unrelated to the innovative process

PCT Applications
- Pros: comparable across countries, good coverage of middle income countries, lacks home bias
- Cons: some PCT applications do not lead to actual patent filings

Triadic Patent Families (US, EU, Japan)
- Pros: highest quality patents. Applicants accepted the time and expense of three domestic filings
- Cons: poor timeliness of data. Lag of 3-4 years
IV. Datasets

International Patent Classification (IPC) Scheme

Hierarchical system for identifying patents by field of technology

- Eight top-level Sections divided into 649 Subclasses
  - i.e. - Subclass H04L: “Transmission of digital information”
- Can be further disaggregated into one of approximately 70,000 Subgroups
  - i.e. - Subgroup H04L 9/14: “Arrangements for secret or secure communication using a plurality of keys or algorithms”

Different from standard industry codes (NAICS, ISIC)

- Various concordance systems have been proposed. Smooch (2003) is most cited, but not very disaggregated and perhaps less relevant for new technologies
- Little has been done to date at a very disaggregated level
V. Welfare Analysis (A Sketch)

- Social Welfare = Consumer Welfare + Producer Welfare

  - Consumer Welfare
    - Compensating Variation
    - Equivalent Variation
    - Data needs: price, expenditures
    - Assumptions: lots! (re: demand, utility function)

  - Producer Welfare
    - Change in Profits of Creators, Users, User-Creators