

Evaluating the Performance of Standard Setting Organizations with Patent Data

Marc Rysman¹ Tim Simcoe²

¹Department of Economics
Boston University

²J.L Rotman School of Management
University of Toronto

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- SSO's generate very little that “looks like a data set”.
- However, numerous **patents** are disclosed in the process of negotiation.

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 - Previous studies establish a correlation between the number cites and other measures of economic variables
- USPTO patent files are easily available in computerized form.

What We Do:

- 1 Collect lists of U.S. patents disclosed to 4 SSO's
 - ITU, IEEE, IETF, ETSI
- 2 Construct control samples of similar patents that were not disclosed in a standard.
- 3 Compare cites between the two groups to learn about role of SSO's in innovation.

What We Find:

- 1 SSO patents are much more important than average patents.
- 2 SSO patents receive citations over a longer time period.
 - A consequence of network effects and lock-in?
- 3 A significant jump in citations occurs at the time of disclosure.
 - Suggests a causal role for SSO's.
 - About 20% of SSO cites may be causal.

Potential Problems

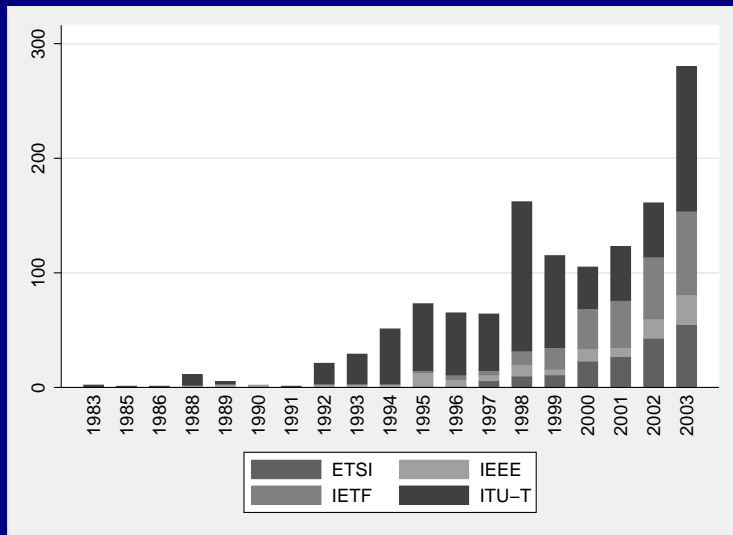
We do not observe:

- disclosures for a random sample of proposals.
- patent numbers for all disclosures.
- whether a proposal became a standard.
- whether a standard requires a patent.
- non-U.S. patents.

Patent Counts

	Disclosures	All patents	U.S. patents
ETSI	262	847	672
IEEE	125	313	252
IETF	314	193	97
ITU	821	339	188

Patent Disclosures by Date



Importance of SSO Patents

	SSO patents	Controls
Int'l family	57.8%	31.4%
Continuation	36.3%	25.4%
Litigated	5.51%	0.64%

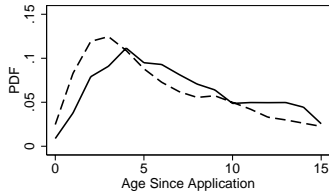
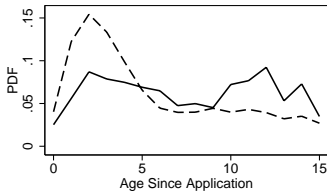
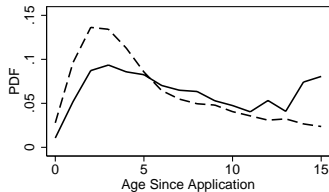
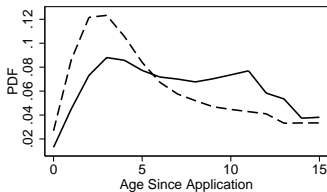
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Cites - IETF	37.03	8.55
Cites - IEEE	28.80	8.24
Cites - ITU	27.77	7.97
Cites - ETSI	31.44	8.53

Average Age of a Citation

	IETF	IEEE	ITU	ETSI
SSO	5.38 (0.063)	7.55 (0.073)	6.34 (0.055)	5.47 (0.023)
Control	3.62 (0.006)	4.20 (0.005)	4.72 (0.005)	4.26 (0.004)
Highly Cited Control	3.69 (0.009)	4.30 (0.007)	4.87 (0.008)	4.26 (0.006)

Age Distribution of Cites



Explanations for Age Pattern

- Embedding an innovation in a standard causes it to have long-lasting importance. (network effects, lock-in)
- Disclosure signals that a patent exists and may be easy to obtain licenses.
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Can we distinguish between causation and selection?

Statistical Methodology

- Poisson regression

$$C_{it} = f(\alpha_y, \alpha_t, \alpha_i^{SSO}, \alpha_i^{DISC}, \epsilon_{it})$$

- α_y application year fixed effects
- α_t citing year fixed effects
- α_i^{SSO} dummy for SSO patent
- α_i^{DISC} dummy for disclosed SSO patent

Disclosure Results

	IETF	IEEE	ITU	ETSI
SSO	0.946 (0.028)	0.860 (0.017)	0.839 (0.026)	0.697 (0.015)
Disclosure	0.310 (0.062)	0.118 (0.035)	0.306 (0.035)	0.056 (0.046)
Cutoff year	1994	1989	1989	1995
obs.	142,175	397,878	411,447	301,050
SSO obs.	499	1,915	1,455	2,934
SSO Impact	25%	12%	27%	7%

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We find that:

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So much more to be done!