

Used and Unused patents

Salvatore Torrìsi
Department of Management
University of Bologna
torrisi@unibo.it

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Aims

1. To understand the role of patents in the EU digital market we need to know how patents are used and what are the characteristics of non-used patents
2. ICT-related patents form the backbone of the digital market. Is it important then to know whether their patterns of use are different

Background paper:

Torrise, Gambardella, Giuri, Harhoff, Hoisl, Mariani (2014), Used, blocking and sleeping patents: empirical evidence from a large-scale inventor survey

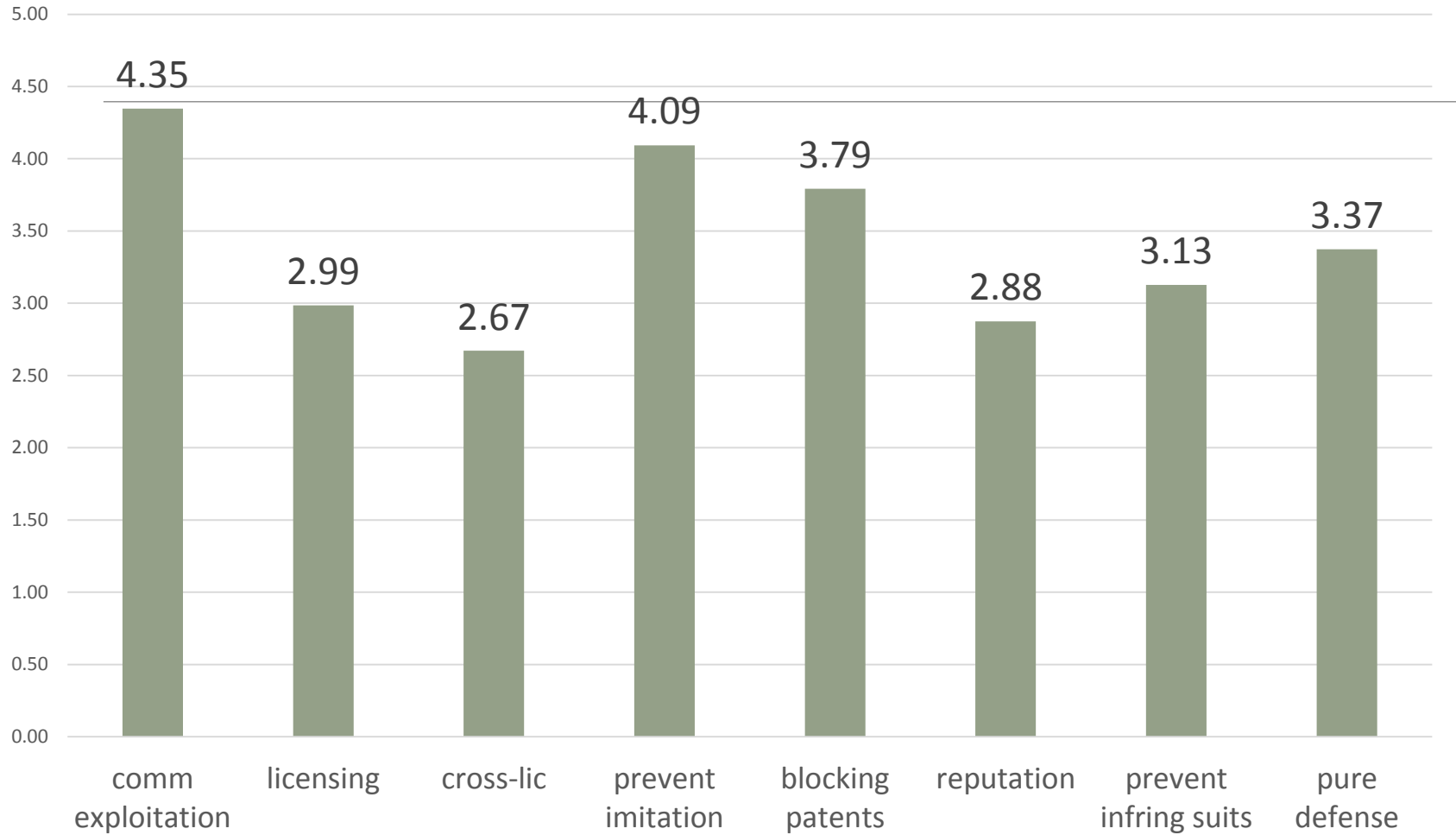
Patents and technology use / transfer: controversial views

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- ❖ An increasingly stronger patent regime has led to the explosion of patent applications (Grindley and Teece, 1997; Hall and Ziedonis, 2001)
 - ❖ many low quality patents taken for purely strategic reasons (Bessen and Meurer, 2008; Boldrin and Levine, 2013)
 - ❖ The distribution of patent value is very skewed (Schankerman and Pakes, 1986; Harhoff et al. 1999; Scherer and Harhoff, 2000; Gambardella et al. 2008)
 - ❖ A strong patent regime can restrict diffusion but can also reduce transaction costs and favor the market for technology (Teece, 1988 and 1998; Arora et al 2001; Serrano, 2008)
 - ❖ IP fragmentation, patent portfolio races and patent thickets hamper technology transactions and innovation especially in cumulative technology field (Mazzoleni&Nelson, 1990; Heller & Eisenberg, 1998)

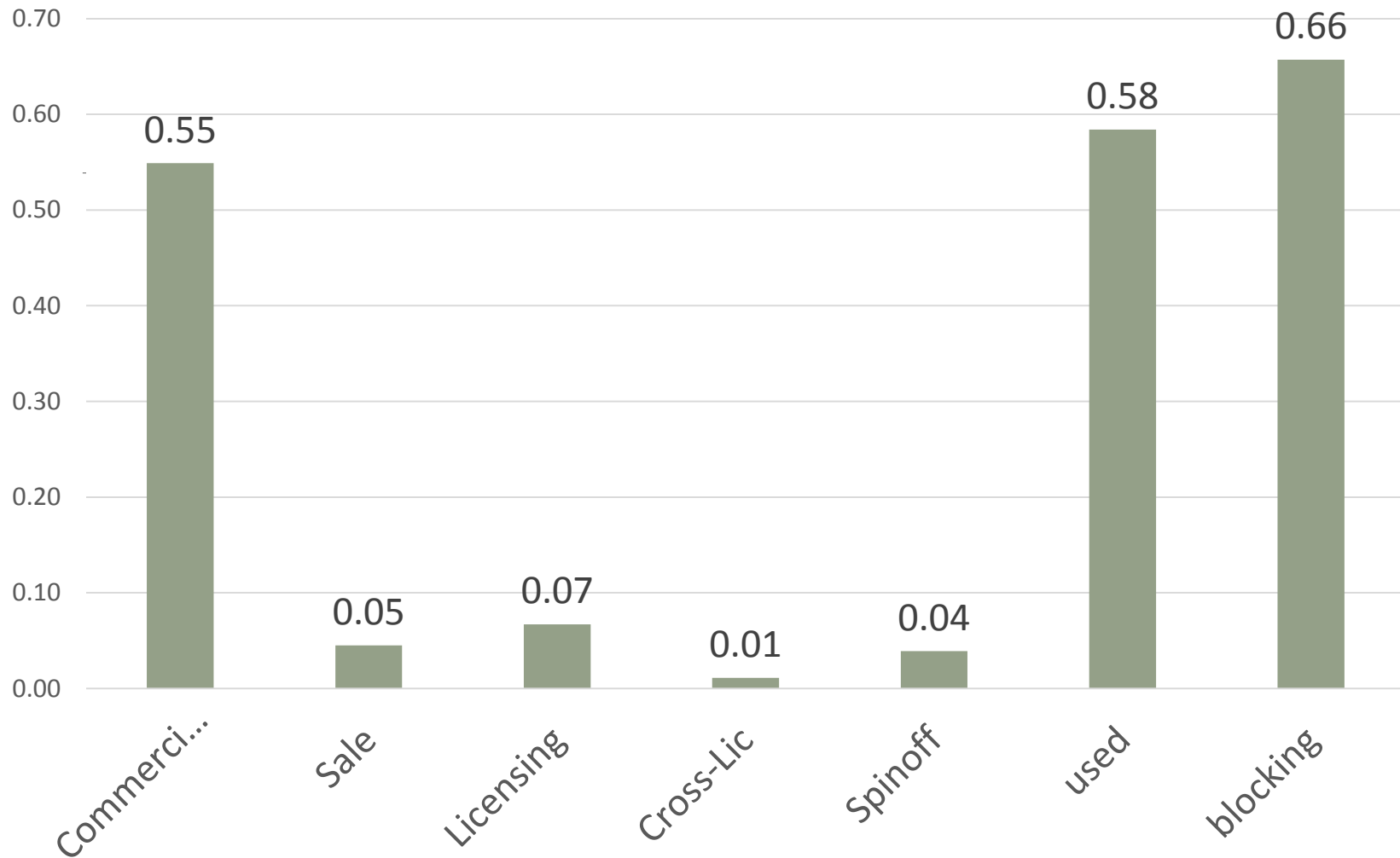
What we do

- ❖ 7 FP InnoST Project
- ❖ Patval EU-II, US, Japan and Israel
- ❖ EPO patent applications with priority 2003-2005
- ❖ 124,134 questionnaires to inventors of EPO patents located in 20 European countries (Patval EU-I+ Switzerland, Sweden, Finland, Belgium, Austria, Norway, Ireland, Greece, Slovenia, Czech Republic, Poland, and Luxembourg), US, Japan and Israel.
- ❖ Survey period: November 2010- Sept 2011
- ❖ 23,044 responses (19% response rate)
- ❖ For the purposes here: only business applicants

Reasons for patenting - mean values scale:1-5



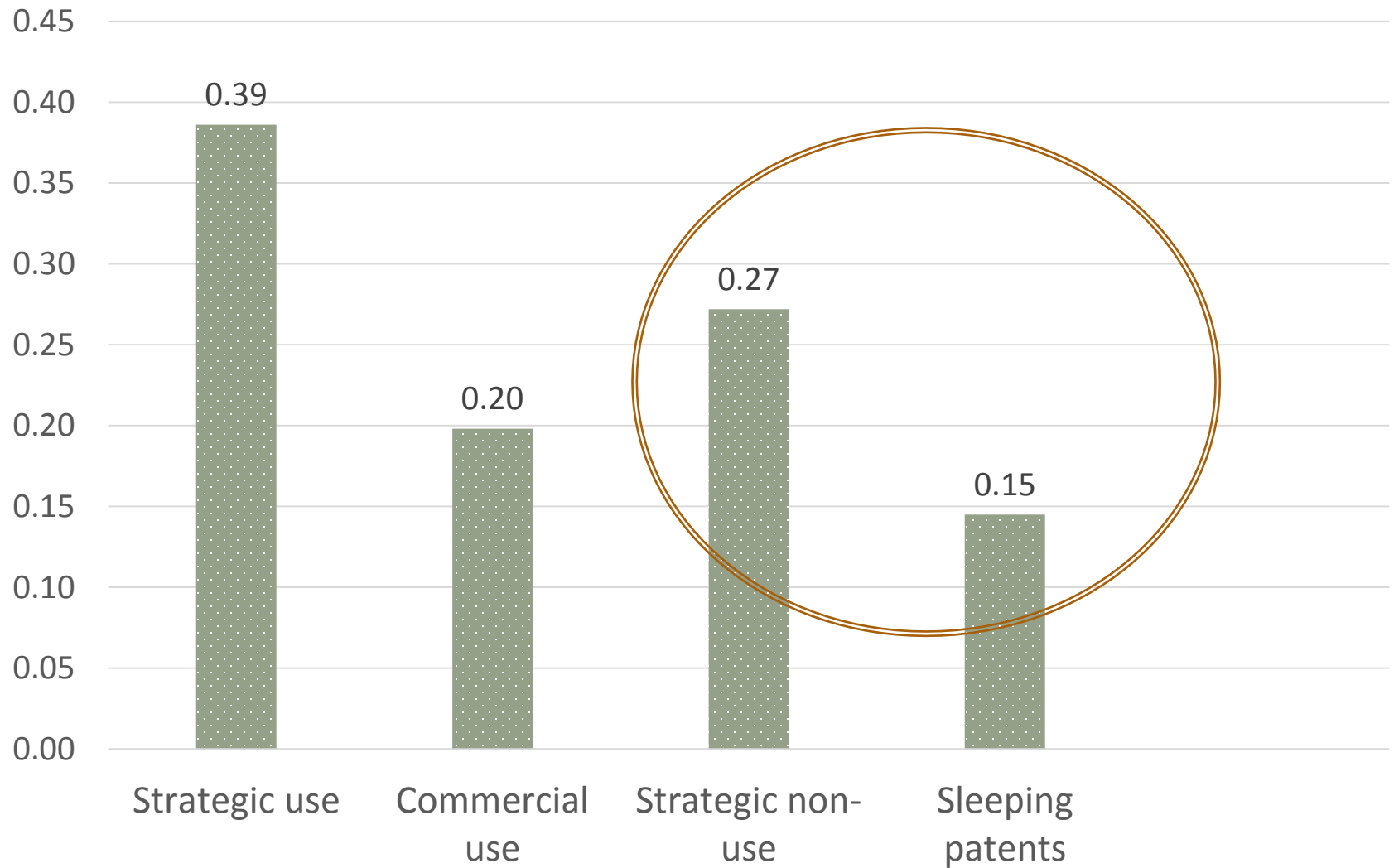
Uses of patents (shares)



Patent uses

	Patent use		
		Used	Not used
Motive for patenting	Blocking	Strategic use	Strategic non-use
	No blocking	Commercial use	Sleeping patents

Patent uses (shares)



Bivariate probit estimation

Marginal effects on bivariate probabilities of blocking and used

VARIABLES	Strategic use [Used=1 & Blocking=1]	Commercial use [Used=1 & Blocking=0]	Strategic non-use [Used=0 & Blocking=1]	Sleeping patents [Used=0 & Blocking=0]
1 COMPETITOR	0.076***	-0.012	-0.017	-0.047***
+COMPETITORS	0.057***	-0.039***	0.020*	-0.039***
IIPC4_NFIRMS	-0.012**	0.002	0.002	0.007**
ITOT_ECLA	-0.015**	-0.000	0.006	0.009**
ICLAIMS	-0.028***	0.000	0.011	0.017***
OPPOSITION	0.064*	0.004	-0.030	-0.037*
IFAMILY_SIZE	0.022***	-0.008	-0.000	-0.014***
N_INVENTORS	0.009***	-0.000	-0.004*	-0.006***
XY_PAT_REF	-0.000	-0.004	0.005	-0.000
100-249 EMPL	0.023	-0.006	-0.002	-0.015
250-499 EMPL	-0.022	-0.044**	0.058***	0.008
500-999 EMPL	-0.023	-0.059***	0.075***	0.006
100-4999 EMPL	-0.033*	-0.051***	0.070***	0.014
5000+ EMPL	-0.055***	-0.056***	0.086***	0.026**
Lpat_STOCK	-0.014***	-0.011***	0.018***	0.007***

Marginal effects on bivariate probabilities of blocking and used

VARIABLES	Strategic use [Used=1 & Blocking=1]	Commercial use [Used=1 & Blocking=0]	Strategic non-use [Used=0 & Blocking=1]	Sleeping patents [Used=0 & Blocking=0]
El_dev_engin_energy	0.127***	0.062**	-0.121***	-0.068***
Audio_visual	0.088**	0.081**	-0.127***	-0.043
Telecom	0.047	0.119***	-0.152***	-0.014
InformationTech	0.105***	0.119***	-0.176***	-0.048**
Semiconductors	0.066	0.074**	-0.110***	-0.030
Optics	0.066	0.082**	-0.118***	-0.029
Anal_measur_control_tech	0.059*	0.083***	-0.117***	-0.025
Medical_tech	0.090***	0.052*	-0.095**	-0.047**
Org_chemistry	-0.077**	0.024	0.005	0.049**
Macromol_chem_polymers	0.115***	0.054	-0.107***	-0.062***
Biotechnology	-0.002	0.076**	-0.085*	0.010
Chem_petrol_basic_chemistry	0.070*	0.031	-0.063	-0.038
Chemical_eng	0.101***	0.123***	-0.179***	-0.045*
Environm_tech	0.098**	0.132***	-0.187***	-0.042
Machine_tools	0.180***	0.078**	-0.161***	-0.098***
Mechanical_Elements	0.059	0.096***	-0.131***	-0.023
Transport	0.043	0.059*	-0.083**	-0.018
EU	-0.045***	0.008	0.009	0.028***
JP	0.001	-0.071***	0.079***	-0.009
IL	-0.007	-0.094*	0.109	-0.007
Observations	10,684	10,684	10,684	10,684

baseline category for techn classes: pharmaceuticals and cosmetics

Are ICT-related patents different?

With few exceptions, the patterns of use and non-use of electrical engineering patents are not different from other patents - e.g., medical technology, machine tools and transport

Relative to pharma/cosmetics (baseline), electrical engineering patents are more likely to be used (both «strategic» use and commercial use), less likely to remain unused (strategic non-use and sleeping patents) and more likely to be cross-licensed

Patents in technologies related to software/business methods on average are also more frequently used than pharma/biotech patents - especially sale, licensing/cross-licensing

These results are robust to control for patent, technology and patentee characteristics

Implications for digital markets

- ❖ our data show that patents that build upon standards are more likely to be used than other patents ... standard setting organizations (and patent pools?) help reduce transaction costs and favor the development of downstream applications
- ❖ The development of digital markets depends on competitive strategies and patenting strategy is part of the competitive strategy
- ❖ platform-based innovations generate ecosystems of interconnected, complementary products and service providers
- ❖ Well-defined IPRs can help protect platform-based business models and coordination among participants, which is good for market-building
- ❖ Network externalities and a strong patent protection may have negative consequences for competition ... a closer coordination of IPR and competition policies is important to prevent anti-competitive behavior (e.g. refuse to license standard essential patents)