Intellectual property governance and strategic value creation:

some evidence from European organizations in ICT, pharmaceutical and public research fields

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Research objectives

original exploratory empirical study about

- what forms of intellectual property (IP) appropriation mechanisms do firms engage in
  - proprietary IP (patents, copyright) vs. non proprietary IP (open source, non-patented innovations)
- what kind of strategic value do firms seek when they exchange these different forms of IP
  - in different *marketplaces* (patent, copyright, open source, non-patented technology) and through different *governance forms* (selling, buying, licensing, etc.)
- what obstacles do they encounter when attempting to create value through the exchange of IP

pilot case studies in three sectors

		ICT	pharmaceutical	public research organizations
number of organizations surveyed		38	34	45
n. employees	less than 250 employees	78.9%	76.47%	2.2%
	more than 250 employees	21.1%	23.53%	97.8%
latest turnover (GBP)	less than 50 million	78.9%	52.9%	73.3%
	more than 50 million	15.8%	23.5%	15.6%

- **the governance forms for the exchange of IP considered in the study**

Types of IP	**governance structures**
patents as a tool for the protection of novel ideas	selling patents
	buying patents
	out-licensing patents
	in-licensing patents
	cross licensing patents
	participation in patent pools
copyright as a tool for the protection of original creative expressions	selling copyright
	buying copyright
	out-licensing copyright
	in licensing copyright
open source' IP as a tool for the protection of original ideas and creative expressions	participating in open source software development
	participating in open source pharmaceutical projects
	participating in other open source communities
non patented innovations	releasing not patented innovations to the public
	releasing not patented innovations to private firms
	using not patented innovations
	collaborating with universities without patent restrictions

- participation in IP exchanges according to type of IP and governance structures

governance structures	ICT	pharmaceutical	public research organizations
n. organizations that exchange IP	28	24	32
patents	13	14	29
selling patents		√	√
buying patents	√	√	
out-licensing patents	√	√	√
in-licensing patents	√	√	
cross licensing patents	√	√	
participation in patent pools		√	
copyright	9	3	9
selling copyright		√	√
buying copyright	√	√	
out-licensing copyright		√	√
in licensing copyright		√	
open source' IP	14	12	11
participating in open source software development	√		√
participating in open source pharmaceutical projects		√	
participating in other open source communities			
non patented innovations	19	17	18
releasing not patented innovations to the public		√	√
releasing not patented innovations to private firms	√	√	√
using not patented innovations	√	√	√
collaborating with universities without patent restrictions		√	√

Participation in IP exchanges

		% firms interviewed in each sector		
		ICT	pharmaceutical	public research organizations
n. different types of IP exchanged (patents, copyright, open source, non patented technology) (of all organizations interviewed)	0	26.3	29.4	28.9
	1	26.3	20.6	20.0
	2	31.6	38.2	20.0
	3	7.9	11.8	22.2
	4	7.9	0.0	8.9
n. different types of IP according to IPR restrictions (of organizations that exchange at least one type of IP)	only proprietary	17.9	16.7	28.1
	only non-proprietary	42.9	37.5	3.1
	both proprietary and non-proprietary	39.3	45.8	68.8

- 13 possible benefits (respondents could tick up to 5 most important)

benefit categories	specific benefits
financial gain	direct income from market transaction
	cost cutting (e.g. via savings on royalties or patent administration)
	increasing ability to raise venture capital (e.g. via the stock market)
competitive advantage	increasing market share (e.g. building broader user base or securing market protection)
	professional recognition or brand recognition
	competitive signalling
innovation	being able to use the best inventions, innovations, creative expressions
	setting common standards / making or using compatible technology or creative expressions
	innovation methodology: developing better technology or creative expressions
	benefiting from user or supplier involvement as a development strategy (e.g. through learning and feedback)
strategic relationships	building informal relationships with industry networks
	increasing ability to enter collaborative agreements (e.g. joint ventures, strategic alliances, etc.)
	giving something to the community

Benefits from IP exchange: ICT

benefit types	specific benefits	patents	copy	open source	non-patented
financial gain	direct income from market transaction	0.99	2.82	0.00	1.26
	cost cutting (e.g. via savings on royalties or patent administration)	1.20	0.51	1.32	0.76
	increasing ability to raise venture capital (e.g. via the stock market)	0.86	3.67	0.00	1.10
competitive advantage	increasing market share (e.g. building broader user base or securing market protection)	1.57	1.25	0.93	0.62
	professional recognition or brand recognition	0.92	1.31	0.97	0.98
	competitive signalling	1.72	0.92	0.68	0.82
innovation	being able to use the best inventions, innovations, creative expressions	1.23	0.66	0.97	0.98
	setting common standards / making or using compatible technology or creative expressions	0.54	0.00	1.42	1.26
	innovation methodology: developing better technology or creative expressions	0.66	1.41	1.05	1.05
	benefiting from user or supplier involvement as a development strategy (e.g. through learning and feedback)	0.48	2.04	1.13	0.91
strategic relationships	building informal relationships with industry networks	0.72	0.51	0.95	1.37
	increasing ability to enter collaborative agreements (e.g. joint ventures, strategic alliances, etc.)	1.52	0.54	0.80	0.97
	giving something to the community	0.00	0.00	2.43	0.78

Benefits from IP exchange: pharmaceutical

benefit types	specific benefits	patents	copy	open source	non-patented
financial gain	direct income from market transaction	0.75	1.97	0.00	1.27
	cost cutting (e.g. via savings on royalties or patent administration)	0.75	0.99	1.27	1.13
	increasing ability to raise venture capital (e.g. via the stock market)	1.89	4.93	0.00	0.00
competitive advantage	increasing market share (e.g. building broader user base or securing market protection)	1.06	1.85	0.59	0.92
	professional recognition or brand recognition	2.12	0.00	0.00	0.53
	competitive signalling	1.41	0.00	0.00	1.06
innovation	being able to use the best inventions, innovations, creative expressions	1.10	0.82	1.06	0.94
	setting common standards / making or using compatible technology or creative expressions	0.63	0.00	1.06	1.41
	innovation methodology: developing better technology or creative expressions	1.06	0.00	1.19	1.06
	benefiting from user or supplier involvement as a development strategy (e.g. through learning and feedback)	0.71	1.85	1.19	1.06
strategic relationships	building informal relationships with industry networks	2.02	0.00	2.71	0.00
	increasing ability to enter collaborative agreements (e.g. joint ventures, strategic alliances, etc.)	0.75	0.99	1.90	0.99
	giving something to the community	0.57	0.00	0.00	1.69

Benefits from IP exchange: public research organizations

benefit types	specific benefits	patents	copy	open source	non-patented
financial gain	direct income from market transaction	1.32	1.20	0.00	0.94
	cost cutting (e.g. via savings on royalties or patent administration)	1.05	1.82	0.00	0.80
	increasing ability to raise venture capital (e.g. via the stock market)	1.93	0.61	0.00	0.53
competitive advantage	increasing market share (e.g. building broader user base or securing market protection)	0.79	2.73	0.00	0.40
	professional recognition or brand recognition	0.82	1.42	0.41	1.25
	competitive signalling	1.05	0.91	0.00	1.60
innovation	being able to use the best inventions, innovations, creative expressions	0.48	0.41	2.41	1.45
	setting common standards / making or using compatible technology or creative expressions	0.00	2.07	1.81	1.09
	innovation methodology: developing better technology or creative expressions	0.72	0.21	1.51	1.82
	benefiting from user or supplier involvement as a development strategy (e.g. through learning and feedback)	0.88	0.76	1.66	1.00
strategic relationships	building informal relationships with industry networks	1.45	1.17	1.28	0.00
	increasing ability to enter collaborative agreements (e.g. joint ventures, strategic alliances, etc.)	1.05	0.78	1.14	1.03
	giving something to the community	0.53	0.55	1.86	1.60

Benefits from IP exchange: comparison

	ICT				pharmaceutical				Public research organizations			
	patent	copy	open source	non patented	patent	copy	open source	non patented	patent	copy	open source	non patented
financial gain	1.02	1.05	0.95	1.00	0.87	1.26	0.84	1.08	1.35	1.06	0.00	0.86
competitive advantage	0.96	0.79	1.14	1.03	1.20	1.73	0.58	0.86	0.23	0.43	0.10	0.31
innovation	0.89	0.57	1.19	1.14	0.93	0.58	1.15	1.07	0.63	0.73	1.44	1.03
strategic relationships	1.02	0.42	1.22	1.10	1.06	0.66	1.32	0.94	0.64	0.50	1.04	0.58

- 14 possible obstacles (respondents could tick up to 5 of highest impact)

obstacle categories	specific obstacles
search problems	difficulty in locating owners of IP/ technology developers who do not enforce IP
	difficulty in locating the users of IP/technological solutions
	difficulty in finding the best IP or technological solution
lack of transparency	difficulty in assessing the degree of originality of the IP or technological solution
	description or drawing in the IP document is not clear / difficulty in understanding non-patented technological solutions as they are not formally documented
	difficulty in assessing the economic value of the IP or technological solution
contract	difficulty in negotiating a price for the IP or technological solution
	difficulty in negotiating the terms (not related to price) of the exchange contract
	excessive cost of enforcing the exchange contract
	problems (not related to cost) with enforcing the exchange contract
	trust issues (e.g. opportunistic behaviour, free-riding, or similar)
regulation	differences in practices of firms
	regulations allow too exclusive rights
	international IP regulations do not fit the needs of different local markets

Obstacles to IP exchange: ICT

obstacle categories	specific obstacles	patent	copyright	open source	non-patented
search problems	difficulty in locating owners of IP	1.21	1.75	1.12	0.41
	difficulty in locating the users of IP	1.41	0.00	1.31	0.96
	difficulty in finding the best IP	1.41	0.00	1.75	0.64
lack of transparency	difficulty in assessing the degree of originality of the IP	1.32	1.15	0.74	0.90
	description or drawing in the IP document is not clear	1.81	0.00	1.12	0.83
	difficulty in assessing the economic value of IP	1.69	0.81	1.31	0.39
contract	difficulty in negotiating a price for the IP	2.82	0.68	0.00	0.64
	difficulty in negotiating the terms (not related to price) of the exchange contract	1.92	1.11	0.71	0.53
	excessive cost of enforcing the exchange contract	2.35	0.68	0.87	0.32
	problems (not related to cost) with enforcing the exchange contract	1.06	0.00	2.46	0.36
	trust issues (e.g. opportunistic behaviour, free-riding, or similar)	0.38	0.56	2.14	0.79
regulation	differences in practices of firms	0.00	3.06	1.96	0.00
	regulations allow too exclusive rights	0.60	0.87	1.68	0.83
	international IP regulations do not fit the needs of different local markets	0.85	1.22	0.79	1.16

Obstacles to IP exchange: pharmaceutical

obstacle categories	specific obstacles	patent	copyright	open source	non-patented
search problems	difficulty in locating owners of IP	1.00	0.00	1.15	1.07
	difficulty in locating the users of IP	1.48	0.00	1.03	0.71
	difficulty in finding the best IP	0.67	0.00	2.31	1.07
lack of transparency	difficulty in assessing the degree of originality of the IP	0.89	3.33	0.77	0.89
	description or drawing in the IP document is not clear	0.30	2.22	2.05	1.19
	difficulty in assessing the economic value of IP	1.33	1.43	0.00	0.92
contract	difficulty in negotiating a price for the IP	1.33	1.67	0.00	0.89
	difficulty in negotiating the terms (not related to price) of the exchange contract	1.48	0.00	1.03	0.71
	excessive cost of enforcing the exchange contract	1.60	0.00	0.00	0.86
	problems (not related to cost) with enforcing the exchange contract	1.07	4.00	0.00	0.86
	trust issues (e.g. opportunistic behaviour, free-riding, or similar)	0.53	0.00	1.85	1.29
regulation	differences in practices of firms	0.00	0.00	3.69	1.29
	regulations allow too exclusive rights	1.14	0.00	0.00	1.22
	international IP regulations do not fit the needs of different local markets	0.89	0.00	0.00	1.43

Obstacles to IP exchange: public research organizations

obstacle categories	specific obstacles	patent	copyright	open source	non-patented
search problems	difficulty in locating owners of IP	0.68	1.41	1.24	1.08
	difficulty in locating the users of IP	1.19	0.31	1.09	1.19
	difficulty in finding the best IP	1.36	0.00	2.49	0.54
lack of transparency	difficulty in assessing the degree of originality of the IP	1.34	0.93	0.00	0.95
	description or drawing in the IP document is not clear	0.00	0.00	2.18	2.85
	difficulty in assessing the economic value of IP	1.07	1.36	0.60	0.79
contract	difficulty in negotiating a price for the IP	0.87	1.57	0.00	1.21
	difficulty in negotiating the terms (not related to price) of the exchange contract	1.43	0.66	0.58	0.76
	excessive cost of enforcing the exchange contract	0.80	1.64	0.00	1.26
	problems (not related to cost) with enforcing the exchange contract	1.19	0.00	2.18	0.95
	trust issues (e.g. opportunistic behaviour, free-riding, or similar)	0.00	0.82	4.35	1.26
regulation	differences in practices of firms	1.19	0.82	2.90	0.00
	regulations allow too exclusive rights	0.00	0.00	4.35	1.90
	international IP regulations do not fit the needs of different local markets	0.48	1.97	1.74	0.76

Obstacles to IP exchange: comparison

	ICT				pharmaceutical				Public research organizations			
	patent	copy	open source	non patented	patent	copy	open source	non patented	patent	copy	open source	non patented
search	1.18	0.68	1.53	0.64	1.03	0.00	1.37	1.00	1.17	0.57	1.05	1.10
transparency	1.47	0.80	1.02	0.76	0.97	1.67	0.74	1.01	1.01	1.16	0.71	0.99
contract	1.31	0.84	1.35	0.60	1.23	0.92	0.82	0.89	0.92	1.06	0.87	1.14
regulation	0.71	1.53	1.31	0.72	0.67	1.35	1.20	1.14	0.89	1.19	2.20	0.38

Are benefits specific to IP governance forms?

√ = coefficient of variation of benefit shares greater than 50

	patents			**copyright**			**open source**			**non-patented innovations**		
	ICT	pharma	PRO	ICT	pharma	PRO	ICT	pharma	PRO	ICT	pharma	PRO
	10	12	20	6	3	13	13	3	9	18	13	15
financial gain	√	√	√	√	√		√					√
competitive advantage	√		√	√	√					√	√	
innovation	√		√	√	√				√			√
strategic relationships	√	√	√	√	√	√					√	

Are obstacles specific to IP governance forms?

√ = coefficient of variation of obstacle shares greater than 50

	patents			**copyright**			**open source**			**non-patented innovations**		
	ICT	pharma	PRO	ICT	pharma	PRO	ICT	pharma	PRO	ICT	pharma	PRO
	10	12	20	6	3	13	13	3	9	18	13	15
search problems	√		√	√		√	√		√	√		
lack of transparency	√		√	√	√				√			
contract	√		√	√	√		√		√	√		
regulation	√		√	√		√			√	√		√

implications

- most firms exchange IP rather than just holding it
  - of these, most **exchange more than one type of IP and combine proprietary and non-proprietary IP**
- the exchange of product and process innovations that are not formally protected involves a high share of firms in all 3 sectors and generates a relatively higher number of transactions
- evidence of patterns with respect to size and research intensity, need to check specific areas of economic activity
- *better understanding of the processes of value creation through exchange of IP requires to take into account a wide range of different forms of IP, both proprietary and non-proprietary, including paying attention to the exchange of product and process innovations that are not formally protected*

implications

- in all three sectors
  - firms create value through all forms of IP: the exchange of each type of IP allows firms to seek several types of benefits
    - firms strategically use different forms of IP to seek specific benefits: *alternative IP appropriation mechanisms are used because they confer specific advantages*
    - different governance forms are associated to specific benefits, particularly in the case of proprietary IP
  - many firms benefit in numerous ways from exchanging non-proprietary IP: particularly important for innovation processes
    - non-proprietary IP is important as a value driver: *IP legislation should allow different models of value creation from IP to co-exist*

Implications

- firms encounter many obstacles when exchanging all kinds of IP
- removing the obstacles to value creation through IP exchange is not simple or even possible as they depend on many different sources, some of which are linked to the nature of new knowledge itself
- interventions directed at removing some of these obstacles should not be “one size fits all” but tailored to specific forms of IP and to specific types of transactions
  - more specific analyses of the obstacles that hamper the smooth functioning of different P marketplaces would be timely

References

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