ORGANISATION DE COOPÉRATION ET DE DÉVELOPPEMENT ÉCONOMIQUES

WHO LICENSES OUT AND WHY?

THE OECD SURVEY ON LICENSING OF PATENTS

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BACKGROUND

- A patent license is a contract by which the patent holder authorises another party to use its invention under certain conditions (notably financial).

- Anecdotal evidence => Growing licensing activity in the past two decades

- Increasing importance of external sources of knowledge in the context of open and flexible innovation models

WHY LICENSING OUT?

- Leverage economic value from intellectual assets
- Make value from un-used inventions, or expand the range of uses (markets) of a particular invention
- Establish technology as a de facto standard
- “fabless” firms, specialised in R&D (biotech, semiconductors, chemicals etc.)
- Entering into cross-licensing deals

WHY LICENSING IN?

Access technology invented in other companies/ universities, hence saving on research cost:

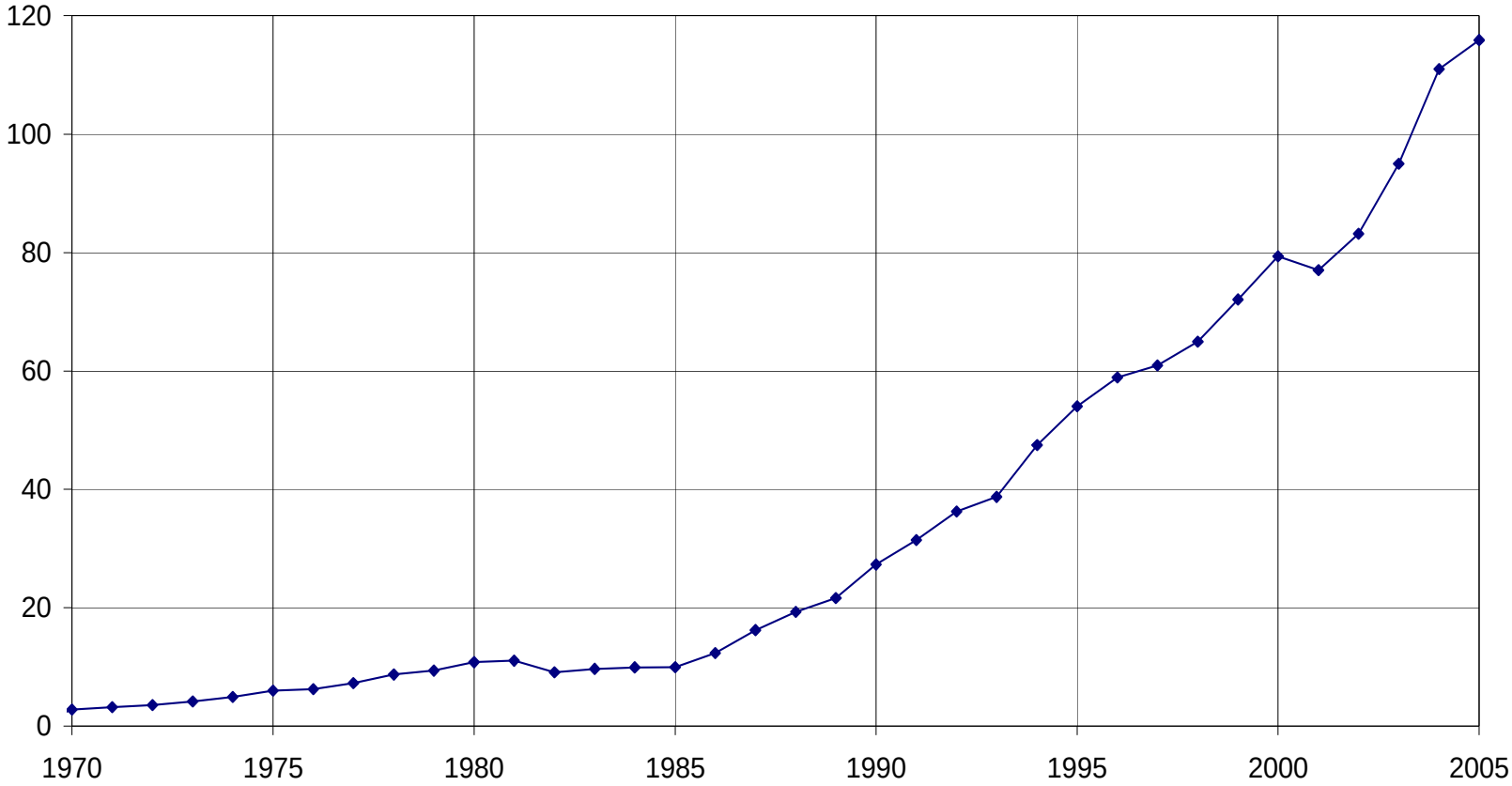
- Shorter product life-cycles, more complex technologies and products, no one company can generate all the technology.

- Offshoring, globalisation of value chains (separating R&D from manufacturing).

EXPECTED ECONOMIC EFFECTS

- Licensing of technologies has many potentially positive effects:
  - increases the diffusion of technology,
  - reduces duplicative inventions,
  - boost downstream competition (by reducing barriers to entry related to R&D),
  - facilitates the creation of companies specialised in R&D or in manufacturing; thereby improving the allocation of resources in the economy (specialisation).
- Potential negative effects: licensing can reduce competition, consumers' welfare, and hamper innovation.

Worldwide (cross-border) royalty and license receipts (Billion USD; source: World Bank)



WHAT DO WE WANT TO KNOW?

- Technology transactions have probably a sizeable impact on innovation and the economy => of interest to government to understand and measure.

- Possible market failures? (knowledge is a product with peculiar economic characteristics) => government might help.

- Currently, little is known on licensing transactions : we need to quantify and better understand the functioning of technology markets

THE OECD SURVEY

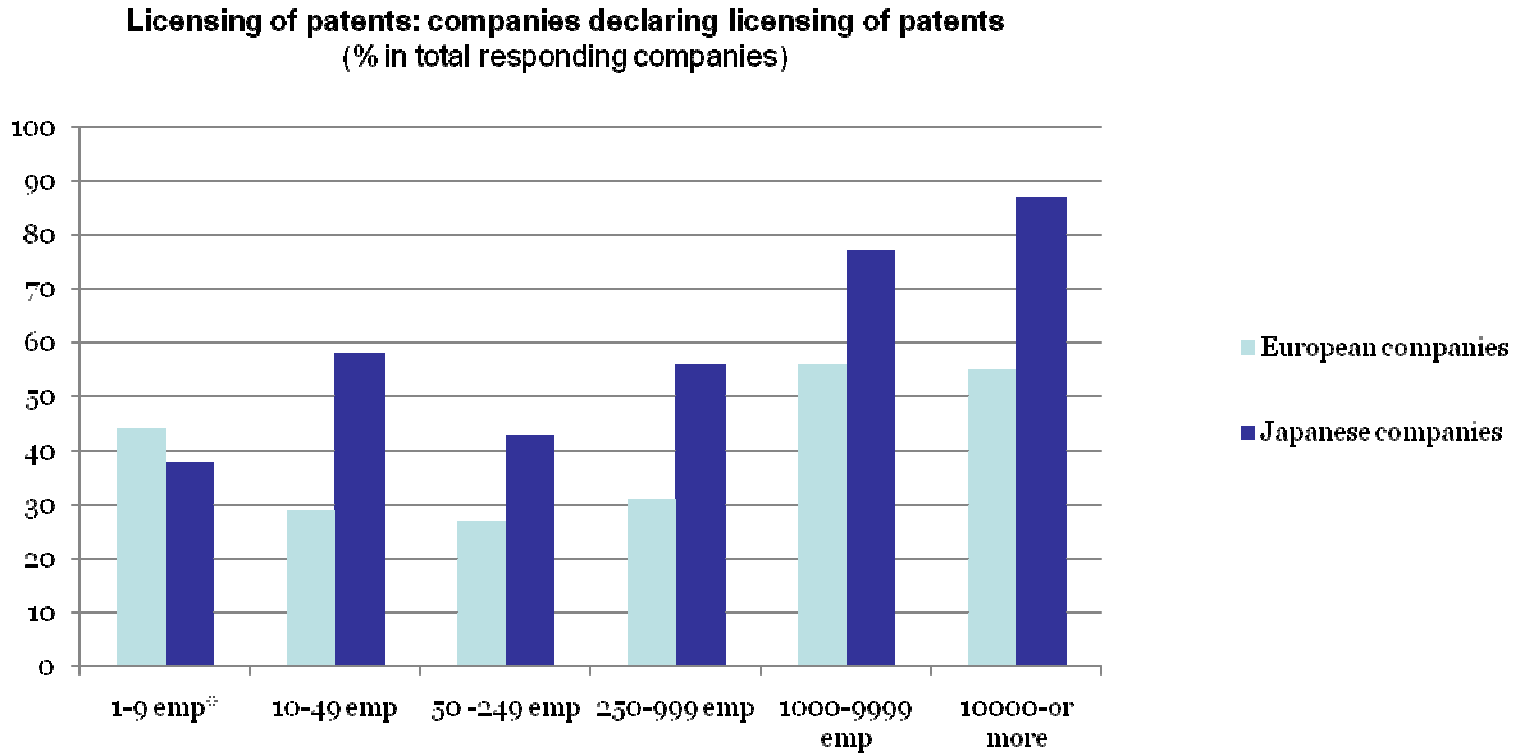
- For that purpose the OECD, with the European Patent Office and the University of Tokyo (with support of JPO), has taken the initiative of conducting a business survey on the economic uses of patents, focusing in particular on the licensing-out.
- The aim is to investigate the use of patents for licensing:
  - its development over recent years, intensity and types of licensing (intra-group vs. non-affiliated companies; cross-border; cross-licensing)
  - its motivations and articulation with other practices of companies,
  - unmet opportunities and obstacles.

  - And the use of patents for raising capital (venture capital, private investors, stock markets, loans, etc)

SURVEY DESIGN AND IMPLEMENTATION

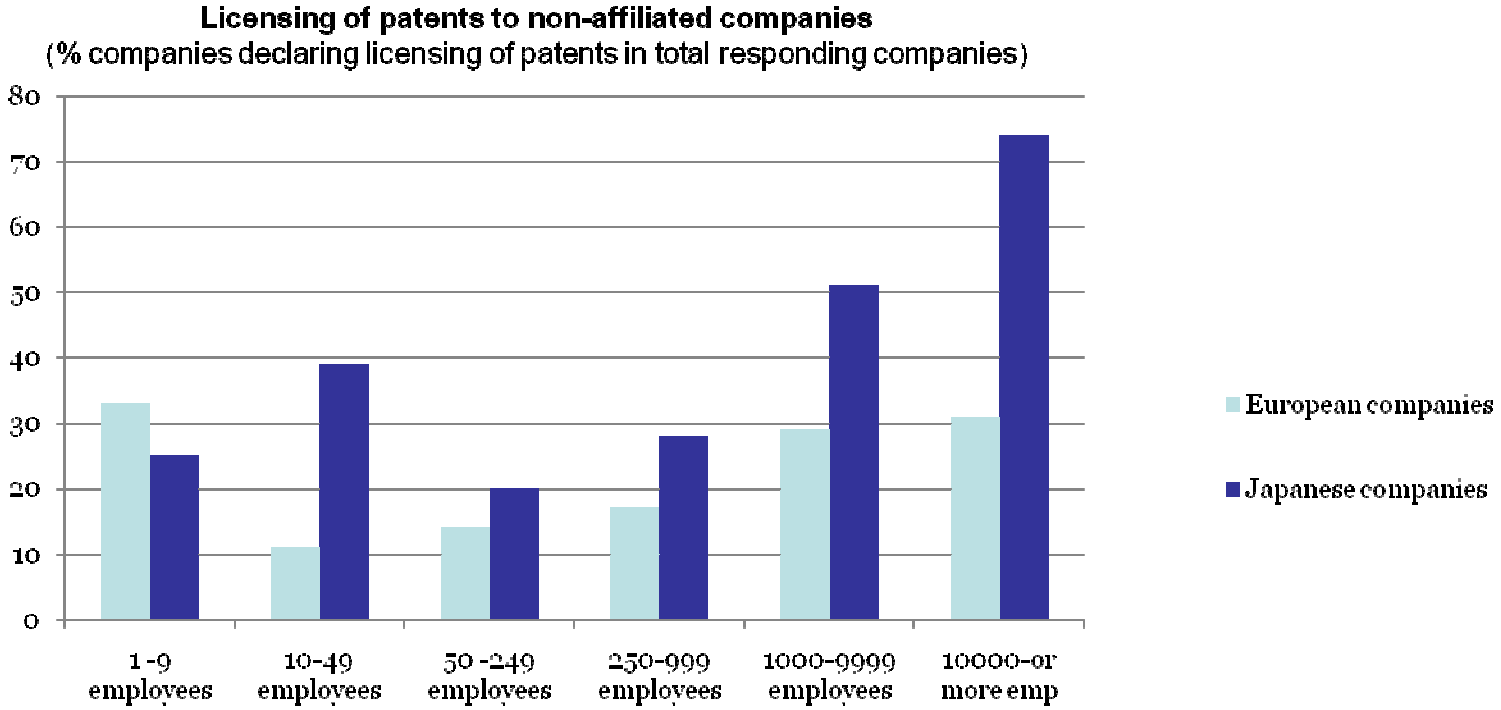
- Target population = patent holders
- In the case of **Europe**, the questionnaire on licenses and other uses of patents was added to the *Annual EPO Applicant Panel Survey, and* only to EPO member countries.
  - A combined sample : biggest (more than two filings), smallest applicants (at most two filings) and a random sample (run from May to mid-September 2007).
  - The response rate was 42.9%, and the resulting sample is 612 respondents (of which 476 being private companies).
- In **Japan**, the survey was carried out by the University of Tokyo, in agreement with JPO
  - targeted specifically Japanese applicants to the JPO having at least two filings in the 2006 fiscal year.
  - The response rate was 33.7%; 1,640 valid responses were obtained out of 4,873 valid targets

LICENSING-OUT OF PATENTS



35 % of European companies holding patents are active in licensing out (59% of Japanese companies).

LICENSING TO NON AFFILIATED COMPANIES



- 20 % of European companies (holding patents) license patents to non-affiliated firms (27% of Japanese companies).
- U-shaped relationship between size and % of licensing companies

WHO LICENSES OUT THE MOST?

High share among small firms

- Lacking manufacturing or marketing capabilities (e.g. start-ups).
- Inventions falling outside the core competencies and markets of the firm.

High share among the largest firms

- Broader patent portfolio, greater variety of inventions.
- Product integrators => more engaged into cross-licensing.
- Better to enforce their patents?

WHO LICENSES OUT THE MOST? (2)

After controlling for other characteristics (size etc.), licensing to unaffiliated companies is higher

- in chemistry (including pharmaceuticals), and electronics;
- among UK companies and, to a lesser extent, companies from Nordic countries;
- among younger companies.

THE INTENSITY OF LICENSING
TO NON AFFILIATED PARTIES

- Not only the share of licensing firms is higher among larger companies, both in Europe and Japan, but also the share of patents which are licensed (intensity of licensing) is higher:
  - 18% of companies with more than 250 employees licence 20% or more of their portfolio, compared to 11% in SMEs in Europe
  - In Japan: 37% in larger companies against 23% in SMEs

MOTIVATIONS FOR LICENSING OUT

Motivations for licensing out: Share of deals concluded
in the previous three years obeying the following motivations

	European Companies			Japanese Companies		
	All	>250 employees	<=250 employees	All	>250 employees	<= 250 employees
Earning revenue	**60**	**40**	**70**	**52**	**54**	**55**
Entering into cross licensing	**18**	**28**	**12**	**18**	**19**	**16**
Sharing technology with other companies (open innovation)	10	8	11	5	3	6
Establishing your technology as a de facto standard	12	**12**	11	11	8	14
Outsourcing manufacturing	4	3	4	11	10	14
Stopping perceived infringement of your patents	**14**	**14**	**14**			
# of companies (active in licensing)	124	48	76	460	274	58

UNDER-DEVELOPED TECHNOLOGY MARKETS

Share (%) of your patent portfolio that you would be willing to license out
but could not actually licence (European companies)

	All	Not Licensing firms			Licensing firms		
		All	<=250 emp	>250 emp	All	<=250 emp	>250 emp
0	76	81	83	76	55	50	64
>0	**24**	**19**	**17**	**24**	**45**	**50**	**36**
1 <20	5	5	2	10	9	3	21
20 <40	8	7	5	9	16	20	8
40 <60	5	3	3	2	12	16	4
60 <80	1	1	1	0	4	6	0
80 <100	4	4	5	2	5	6	3
# companies	476	352	183	169	124	48	76

- In Europe, 24% of firms declare that they have patents that they were willing to license out but could not license.
- The figure is higher for firms which are already licensing: 45% would like to licence a patent; and this share is higher in SMEs: 50% declare willing to licence.
- SMEs have more difficulties than large firms in licensing patents.

OBSTACLES TO LICENSE PATENTS

- In the two areas, the main hampering factor by far is the difficulty to find partners:
  - -25% of European companies and 18% of Japanese companies considered it as a very important factor.
- Other factors have lower importance, both in Europe and in Japan:
  - the complexity and cost of drafting and negotiating contracts, the lack of readiness of the invention, the too low level of the price offered.
- In Europe, but not in Japan, all factors are deemed more important by smaller companies (less than 250 employees) than by larger ones.
  - 30% of smaller European companies declared the difficulty of identifying a partner as being a very important impediment to licensing (compared to 16% in largest companies).

FINANCIAL USES OF PATENTS

Financial uses of patents (EPO survey): How important are patents for the following operations
(% of companies declaring "very important" factor for raising capital in total responding companies)

European companies	Venture capital	Private investors	Stock market	Securitisation	Negotiating loans	Obtaining public subsidies
All	18	21	11	6	9	8
<=250 employees	**22**	**27**	11	6	**10**	**10**
>250 employees	11	10	9	6	7	4
Foundation year						
<=1960 (174 companies)	7	5	8	8	7	7
>1960 and <=2000 (174 companies)	17	21	11	4	6	5
>2000 (128 companies)	**31**	**38**	**13**	6	**14**	**13**
No of companies responding	285	290	281	281	284	285

- Convincing venture capitalists and private investors are the two most important; these are more important for smaller companies than for larger ones;
- The size factor seems to be less relevant than the age factor: younger companies, founded after 2000, give far higher importance to patents for raising funds than older ones

LESSONS AND POLICY IMPLICATIONS

- Licensing out is widespread among patenting firms, both in Europe and in Japan.
- A significant number of transactions are missed.
- In Europe (not in Japan) SMEs have more difficulties to license out their patents than large firms.
- The major difficulty is informational (identifying partners)

=> need specialised market intermediaries (US)? A role for government (Japan = INPIT)?

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Patent Statistics at the OECD

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The new OECD Patent Statistics Manual

- Significant revision of the OECD Patent Manual 1994
- Targets both users and producers of patent statistics
  - in statistical agencies and in S&T agencies;
  - users of patent databases conducting analytical work on the dynamics of technology
- Goals
  - *"The aim of the manual is to provide basic information about patent data used in the context of science and technology (S&T) measurement, construction of indicators of technological activity, and guidelines for the compilation and interpretation of patent indicators in this context"..*

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Patent Databases

- OECD Triadic Patent Families Database:
  - set of patents filed for at the EPO, the Japan Patent Office (JPO) and granted by the USPTO that share one or more priority applications.
- OECD REGPAT Database:
  - patent applications to the EPO and PCT filings linked to regions using the inventors/applicants addresses.
  - Territorial level 2 (TL2), which refers to the 335 large regions of the OECD area.
  - Territorial Level 3 (TL3), which refers to the 1 679 small regions of the OECD area.
- OECD Citations Database: citations from patents published by the EPO and the WIPO (PCT).

Harmonisation of Applicants' names

- Efforts are currently undertaken to develop methods to harmonise patent applicants' names in order to link patent data with firm-level databases.
  - workshop was held on 13 March 2008 to exchange experiences and promote convergence and co-ordination to make datasets compatible across countries and endeavours.
  - Single and reliable database which will be linkable to PATSTAT (EPO worldwide patent database)
  - Unique list of harmonised names' in patent data linkable to economic databases

Uses of HAN for policy analysis

- Construction of company patent portfolios and their association to economic data :
  - Economic performance; financing; etc.
- Breakdown of patent activity by companies:
  - Regional and international activity in research; alliances in technology (e.g. co-ownership in patents)
  - Patterns of technolocial diversification
  - Patenting by technology *entrants* and *established* companies
  - Spillovers measurement with citations;
  - Technology interactions across institutional sectors: universities and industry; governamental agencias; etc.

An application: University inventions and new technology business

(work by D. Guellec G. Thoma)

- Exploring the links between University inventions and newly inventive businesses

Questions:

1) Statistical connection between university inventions and "inventive entrepreneurship" across regions?
   - ❖ Analysis done at the TL3 level, all OECD.
   - ❖ University patents" include all patents resulting from university research, even if filed by businesses.
   - ❖ Inventive entrepreneurship is identified with "first time patentees": the first time an entity appears in the patent database

Exploring the links between University inventions and newly inventive businesses

Correlation between university and business patents across regions.

	Rank correlation	Pearson correlation			
	1990-2004	**1990-2004**	**1990-94**	**1995-99**	**2000-04**
Overall	52%	53%	43%	43%	50%
All regions with more than 2+ pats	46%	51%	38%	42%	48%
Overall TL2 regions (sample=439)	75%	64%	55%	61%	59%
Top Knowledge Regions, TL3	47%	49%	36%	35%	54%
OECD	52%	56%	44%	44%	54%

A strong statistical connection between university patents and new inventive firms at the regional level:

	pooled sample		
	coeff.	**std err.**	**sign.**
Stock of business patents by region & technical field	0.003	0.000	***
Stock of NBO patents by region	0.011	0.000	***
Stock of NBO patents by country	0.000	0.000	***
Time dummies	Yes		
Constant	0.076	0.004	***
Elasticities at the mean value of log linear estimator			
	pooled sample		
	coeff.	**std err.**	**median**
Stock of business patents by region & technical field	0.9%		
Stock of NBO patents by region	3.1%		
Stock of NBO patents by country	0.0%		

Conclusions

- Importance and utility of patent data for the analysis of innovation and entrepreneurship
  - Relevant and comprehensive information when looking to dynamics in technology and the meaning of technology for business
  - Richness of patent data (multiple dimensions; e.g. geographical, nature of technology, institutional sector, etc.)
  - OECD project on entrepreneurship

THANK YOU!