PATVAL-EU: THE VALUE OF THE EUROPEAN PATENTS

ITALIAN SURVEY

PRELIMINARY RESULTS

We present here the preliminary results from the European Inventors' Survey 2003. The survey is part of a research project aimed at improving the knowledge of the invention process, the incentives and rewards to the European inventors, and the value of their patents.
Patents are extensively used as Science and Technology indicators. The patent document contains a wide variety of information, like the institution owing the patent rights, the location of the inventors, reference to previous patents and to the scientific literature that have been useful for addressing quite a few issues. However there exist quite a few important subjects whose analysis requires information that is not contained in the patent file, and that can only be obtained through direct interviews.
The research project therefore aimed at building a database of patent characteristics obtained from a survey of European inventors in EPO patents.
A questionnaire has been devised to gather information about:
1) The economic value of the patents (e.g., information about whether the patent produced economic returns and an estimate thereof);
2) The inventors (e.g. age, educational and work background; the institutions -if other than the assignee- to which they belong);
3) The process that led to the invention (e.g. information about the external sources of knowledge that were used in the research);
4) The property rights (e.g. information about whether the patent right was licensed, the strategic motive for patenting, whether the patent gave rise to litigations).
The questionnaire has been submitted to about 25,000 inventors located in six European countries: France, Germany, Italy, the Netherlands, Spain, and the UK.
The sample is composed of patents granted by the European Patent Office with priority date in years 1993-1996.

This document reports some preliminary results from the survey of Italian inventors, based on a sample of 930 patents.

A. The Inventors: Personal Information, Education, Employment and Mobility

Table 1 describes the composition of the sample of Italian inventors, in terms of gender. The vast majority of inventors in Italy are male. Females are only the 3.23% of our sample.

	Freq.	Percent	Cum.
Male	888	95.48	95.48
Female	30	3.23	98.71
No answer	12	1.29	100
Total	*930*	*100*	

Table 1. Gender of the inventor

As for the educational background of the inventor at the time of the research that led to the patent under analysis, we asked the inventor about the highest degree at the time of the invention. As it is shown in Table 2, most inventors had a university BA or equivalent (49%), but there's also a significant share (39%) of inventors with a high school diploma.

	Freq.	Percent	Cum.
Secondary School or lower	64	6.88	6.88
High School Diploma	361	38.82	45.7
University BA or equivalent	455	48.92	94.62
University Master or equivalent	14	1.51	96.13
University PhD or equivalent	25	2.69	98.82
No answer	11	1.18	100
Total	*930*	*100*	

Table 2. Educational background of the inventor

Then a series of questions aimed at gathering information about the employment status of the inventor at the time of the invention and about his/her labour mobility. We asked information about the employer at the time of the invention, right after the invention and before the invention.

Table 3 reports information about the status of the inventor at the time of the invention, distinguishing employed, self-employed, student, and other. Table 4 reports information about the type of organization of the inventor.

These two tables show that the vast majority of the inventors were employed by a large firm (defined, on the questionnaire, as a firm with more than 250 employees). The share of self-employed inventors is very low (less than 10%), highlighting the fact that a larger number of inventions is made within the boundaries of large firms.

	Freq.	Percent	Cum.
Employed	755	81.18	81.18
Self-employed	74	7.96	89.14
Student	4	0.43	89.57
Other	84	9.03	98.6
No answer	13	1.40	100
Total	*930*	*100*	

Table 3. Status of the inventor at the time of the invention

	Freq.	Percent	Cum.
Large Firm (more than 250 employees)	615	66.13	66.13
Medium firm (100-250 employees)	104	11.18	77.31
Small firm (less than 100 employees)	147	15.81	93.12
Hospital, Foundation, or Private Research Organisation	8	0.86	93.98
Government Research Organisation	8	0.86	94.84
University and education	14	1.51	96.35
Other Government	0	0.00	96.35
Other	16	1.72	98.07
No answer	18	1.93	100
Total	*930*	*100*	

Table 4. Type of organization of primary employer at the time of the invention

We do not report here information about the employment position of the inventor before and after the invention. However it is interesting to note that Italian inventors do not seem to be very mobile in terms of labour mobility. We asked the inventors how many times they changed the employer/organisation after the one of the patent. As it is shown in Table 5, 73% of interviewed inventors in Italy haven't changed employment position after the invention.

	Freq.	Percent	Cum.
0	683	73.44	73.44
1	149	16.02	89.46
2	62	6.67	96.13
3	11	1.18	97.31
4	8	0.86	98.17
5	1	0.11	98.28
No answer	16	1.72	100
Total	*930*	*100*	

Table 5. Times the inventor changed employer after the one of the patent

B. The Invention Process

The questionnaire also contained a section where we asked questions about relevant characteristics of the invention process.

One of the questions was about the existence of formal or informal collaboration(s) between the inventor's employer/organisation and other partners for the research leading to this patent. We've clearly stated that we define a formal collaboration agreement as a collaboration involving well defined contracts among the parties.

The bulk of the research leading to the patents in our sample was performed in-house by the inventor's employer/organisation: 76.45% of patents didn't involve any collaboration with other partners.

	Freq.	Percent	Cum.
No collaboration	711	76.45	76.45
Collaborative research	198	21.29	97.74
No answer	21	2.26	100
Total	*930*	*100*	

Table 6. Collaboration agreements

Apart from collaboration between the inventor's employer/organization and other partners, we also asked about the importance of the interaction with people belonging both to the same organization of the inventor and to other organization. We further distinguish on the basis of the time that typically took to reach his/her office (see Table 7-Table 10).

About 50% of patents didn't involve interactions between the inventor and people belonging to other organizations. Interactions with people from the same organisation of the inventor and close in terms of the time needed to reach their office have been pointed as important in a larger number of cases.

	Freq.	Percent	Cum.
No interactions	252	27.1	27.1
1 (not important)	45	4.84	31.94
2	66	7.1	39.04
3	165	17.74	56.78
4	150	16.13	72.91
5 (very important)	162	17.42	90.33
No answer	90	9.67	100
Total	*930*	*100*	

Table 7. Importance of interaction with people belonging to the organization of the inventor, and it typically took less than one hour to reach his/her office

	Freq.	Percent	Cum.
No interactions	423	45.48	45.48
1 (not important)	50	5.38	50.86
2	43	4.62	55.48
3	72	7.74	63.22
4	61	6.56	69.78
5 (very important)	35	3.76	73.54
No answer	246	26.46	100
Total	*930*	*100*	

Table 8. Importance of interaction with people belonging to organization of the inventor, and it typically took more than one hour to reach his/her office

	Freq.	Percent	Cum.
No interactions	498	53.55	53.55
1 (not important)	69	7.42	60.97
2	35	3.76	64.73
3	41	4.41	69.14
4	22	2.37	71.51
5 (very important)	12	1.29	72.8
No answer	253	27.2	100
Total	*930*	*100*	

Table 9. Importance of interaction with people belonging to other organizations, and it typically took less than one hour to reach his/her office

	Freq.	Percent	Cum.
No interactions	447	48.06	48.06
1 (not important)	62	6.67	54.73
2	35	3.76	58.49
3	58	6.24	64.73
4	54	5.81	70.54
5 (very important)	44	4.73	75.27
No answer	230	24.73	100
Total	*930*	*100*	

Table 10. Importance of interaction with people belonging to other organizations, and it typically took more than one hour to reach his/her office

When then asked about the kind of urban or rural environment the invention was made. Table 11 reports the results.

	Freq.	Percent	Cum.
City with more than 1 million inhabitants.	99	10.65	10.65
City with 500.000 to 1 million inhabitants	68	7.31	17.96
City with 100.000 to 500.000 inhabitants	124	13.33	31.29
City with 50.000 to 100.000 inhabitants	114	12.26	43.55
City with 10.000 to 50.000 inhabitants	278	29.89	73.44
City with fewer than 10.000 inhabitants	164	17.63	91.07
Rural area	47	5.05	96.12
No answer	36	3.88	100
Total	*930*	*100*	

Table 11. Kind of urban or rural environment where the invention was made

Research is known to be a lengthy and costly process. However no data exist about the time needed to get a patent. We specifically asked the number of man-months required for the research that led to the patent under analysis.

	Freq.	Percent	Cum.
Less than 1 man-month	71	7.63	7.63
1-3 man-months	149	16.02	23.65
4-6 man-months	176	18.92	42.57
7-12 man-months	165	17.74	60.31
13-24 man-months	149	16.02	76.33
25-48 man-months	62	6.67	83
49-72 man-months	16	1.72	84.72
More than 72 man-months	14	1.51	86.23
Not applicable[1]	109	11.72	97.95
No answer	19	2.05	100
Total	*930*	*100*	

Table 12. Man-months required by the research

C. Inventors' Rewards

We asked the inventor whether he/she received any personal monetary compensation expressly offered because of the production of this patent (see Table 12). The Italian law doesn't grant a monetary compensation to the inventors for the production of patent. However 25% of the patents were granted a monetary compensation to the inventor for their production. This usually is transitory and very low (less than 5% of the inventor's annual income).

	Freq.	Percent	Cum.
No	687	73.87	73.87
Yes	232	24.95	98.82
No answer	11	1.18	100
Total	*930*	*100*	

Table 13. Monetary compensation to the inventor

D. The Value Of The Patent

It is well known that there exists a long and costly route between the invention and the actual commercialisation of a new product or technology. As a result, only few inventions yield economic returns. In fact, many of them are never commercialised, nor they produce economic returns. The problem is important because the ability to translate new technologies into economically valuable goods or services has become crucial for the competitiveness of firms, regions, and even of entire countries.

In order to assess this issue, we asked a series of questions aimed at capturing the different aspect of the value of the patent, and at evaluating its economic value.

[1] The inventor does not have to provide an answer to the question about man-month if, in a previous question, he/she stated that the idea for the invention came from pure inspiration/creativity or from his/her regular activities, and it was patented without further research or development costs.

First, we asked the inventors to rate the economic and strategic value of this patent in comparison with other patents in the inventor's industry or technological field.
A low share of patent is rated to be in the top 10% of patent in its industry or technological field. The highest share of patents (29%) is placed among the top 50%, but not in the top 25%.

	Freq.	Percent	Cum.
Top 10%	159	17.10	17.10
Top 25%, but not top 10%	259	27.85	44.95
Top 50%, but not top 25%	271	29.14	74.09
Bottom 50%	164	17.63	91.72
No answer	77	8.28	100
Total	*930*	*100*	

Table 14. Economic and strategic value of the patent, in comparison with other patents in the industry or technological field

Then we asked the inventor whether the applicant/owner had ever used this patent for commercial or industrial purposes. The great majority of patents (59%) have been used for commercial or industrial purposes, but there are also cases where the patent wasn't used for such a purpose or where the applicant is still investigating this possibility.

	Freq.	Percent	Cum.
Yes	545	58.6	58.6
No	232	24.95	83.55
Not yet, but still investigating the possibilities	125	13.44	96.99
No answer	28	3.01	100
Total	*930*	*100*	

Table 15. Patent utilization for commercial or industrial purposes