

APPENDIX A

Table A1 - Breakdown of economic activities by region

Region	GDP (%EU average)	GDP ^a	Industrial Gross Value Added ^a	Exports ^a	Unemployment rate
North-West	135	32,13%	37,48%	40,81%	5,50%
Piemonte	119	8,06%	12,82%	10,70%	4,70%
Valle d'Aosta	141	0,27%	0,08%	0,17%	3,20%
Liguria	119	2,98%	3,14%	1,42%	5,80%
Lombardia	142	20,82%	21,44%	28,52%	4,10%
Nord-Est	131	22,06%	18,05%	31,03%	4,20%
Bolzano	145	1,09%	0,33%	0,87%	2,80%
Trento	136	1,06%	1,01%	0,87%	3,60%
Veneto	124	9,14%	4,97%	13,59%	4,30%
Friuli-Venezia Giulia	118	2,23%	2,43%	3,22%	4,20%
Emilia-Romagna	131	8,54%	9,30%	12,48%	3,90%
Center	122	21,86%	27,06%	15,13%	8,80%
Toscana	115	6,47%	6,70%	7,30%	5,40%
Umbria	104	1,40%	0,98%	0,94%	6,00%
Marche	106	2,51%	1,35%	3,18%	4,90%
Lazio	139	11,49%	18,03%	3,70%	7,70%
South	73	16,13%	12,25%	11,29%	21,50%
Abruzzo	91	1,85%	1,71%	2,11%	7,90%
Molise	83	0,42%	0,17%	0,20%	9,90%
Campania	72	6,57%	6,53%	2,53%	14,90%
Puglia	70	4,47%	2,73%	2,27%	14,60%
Basilicata	76	0,71%	0,35%	0,37%	12,30%
Calabria	67	2,11%	0,76%	0,11%	14,30%
Sicilia	72	5,69%	4,03%	2,43%	16,10%
Sardegna	80	2,06%	1,13%	1,27%	12,80%

Source: European Commission (2005).

^a Regional breakdown (% of country values).

Table A2 - Breakdown of technological activities by region

Region	Total R&D expenditure	Public R&D expenditure	Private R&D expenditure	Human Resources in Science & Technology	EPO applications
North-West	37,48%	14,47%	54,42%	29,90%	44,44%
Piemonte	12,82%	2,85%	20,34%	7,37%	12,82%
Valle d'Aosta	0,08%	0,04%	0,10%	0,22%	0,20%
Liguria	3,14%	3,59%	3,41%	3,13%	1,73%
Lombardia	21,44%	8,00%	30,56%	19,19%	29,68%
Nord-Est	18,05%	12,18%	19,21%	20,43%	34,09%
Bolzano	1,89%	0,26%	0,39%	2,72%	1,67%
Trento	5,85%	2,59%	0,41%	2,89%	1,23%
Veneto	28,73%	3,11%	4,95%	25,93%	24,68%
Friuli-Venezia Giulia	14,03%	1,96%	2,21%	7,07%	5,58%
Emilia-Romagna	53,72%	4,26%	11,24%	25,33%	29,24%
Center	27,06%	58,75%	15,99%	22,04%	14,17%
Toscana	38,69%	6,59%	4,29%	20,83%	11,31%
Umbria	5,66%	0,56%	0,48%	4,86%	1,70%
Marche	7,77%	0,52%	1,16%	8,35%	3,94%
Lazio	104,14%	51,09%	10,06%	34,93%	9,00%
South	12,25%	9,59%	8,15%	18,84%	4,75%
Abruzzo	9,88%	1,67%	1,60%	7,14%	1,85%
Molise	1,00%	0,15%	0,03%	1,52%	0,13%
Campania	37,72%	4,66%	4,85%	23,62%	3,76%
Puglia	15,77%	2,11%	1,30%	15,33%	2,03%
Basilicata	2,00%	0,37%	0,25%	2,67%	0,26%
Calabria	4,37%	0,63%	0,11%	8,66%	0,65%
Sicilia	23,29%	3,52%	2,10%	20,39%	3,04%
Sardegna	6,55%	1,48%	0,14%	7,12%	0,66%

Source: European Commission (2005).

Table A3 - Breakdown of openness measures by region

Region	Population density ^a	Motorway density	Railway density	% double track railway	% electrified railway	Air transport passengers ^b	Broadband access ^{c,d}
North-West							
Piemonte	175,5	33	76	38,6%	67,3%	3,56%	53%
Valle d'Aosta	39,1	35	25	0,0%	0,0%	0,01%	56%
Liguria	295,6	70	94	64,9%	97,0%	1,13%	57%
Lombardia	422,5	25	69	41,6%	82,4%	37,85%	61%
Nord-Est							
Bolzano	67,9	25	49	55,0%	81,2%	0,07%	59%
Trento	84,8	0	0	0,0%	0,0%	0,00%	64%
Veneto	275,8	27	66	47,5%	65,0%	10,95%	60%
Friuli-Venezia Giulia	161,6	28	62	64,1%	80,6%	0,69%	59%
Emilia-Romagna	192,4	25	47	45,8%	91,7%	5,15%	60%
Center							
Toscana	161,7	19	63	52,2%	64,6%	4,43%	56%
Umbria	106,9	7	45	49,2%	95,9%	0,00%	58%
Marche	164,5	18	41	49,6%	62,3%	0,52%	58%
Lazio	323,3	28	72	69,7%	90,8%	36,41%	58%
South							
Abruzzo	122,9	33	48	24,1%	62,2%	0,00%	51%
Molise	72	8	62	8,5%	24,4%	0,38%	46%
Campania	430,3	33	80	55,2%	77,4%	0,00%	45%
Puglia	211,1	16	43	43,6%	72,5%	5,18%	49%
Basilicata	59,7	3	37	6,6%	60,2%	2,76%	43%
Calabria	133,2	20	58	30,5%	54,5%	0,00%	46%
Sicilia	196,8	25	54	12,2%	58,1%	1,31%	49%
Sardegna	68,7	0	18	3,7%	0,0%	10,66%	58%
Italy		22	55	41,8%	70,2%		55%

^b Regional breakdown (% national value); ^d Percentage of households in region.

Source: European Commission (2005; ^a 2010; ^c 2012)

Table A4 – Top USPTO applicants with connectivity to Italy and type of innovation: rank 1-25

	Applicant name	Patent stock	Patenting period			# legal domiciles	Headquarter	Main type of innovation	Technological category specialization	% patents in technological category
			First	Last	Tenure time					
1	STMICROELECTRONICS	4210	1974	2014	40	16	Foreign	Reaching-in	Electrical&Electronics	59,98%
2	PIRELLI	1112	1971	2013	42	3	Domestic	Localized	Mechanical	34,35%
3	ENI	1033	1979	2014	35	3	Domestic	Localized	Chemical	81,41%
4	GD	823	1974	2014	40	3	Domestic	Localized	Others	51,64%
5	FIAT	651	1972	2014	42	3	Domestic	Localized	Mechanical	51,46%
6	MONTEDISON	598	1970	1999	29	3	Domestic	Localized	Chemical	81,44%
7	IBM CORPORATION	588	1981	2013	32	2	Foreign	Reaching-in	Computers&Communications	76,87%
8	OLIVETTI	530	1972	2004	32	1	Domestic	Localized	Computers&Communications	35,28%
9	AUSIMONT	515	1985	2006	21	2	Domestic	Localized	Chemical	88,35%
10	CRF SOCIETA CONSORTILE PER AZIONI	459	1995	2013	18	2	Domestic	Localized	Mechanical	50,11%
11	TELECOM ITALIA	430	1996	2013	17	2	Domestic	Localized	Computers&Communications	89,07%
12	NATUZZI	422	1991	2013	22	1	Domestic	Localized	Design	99,76%
13	MICRON TECHNOLOGY	416	2000	2014	14	1	Foreign	Reaching-in	Computers&Communications	75,96%
14	THE PROCTER & GAMBLE	394	1990	2013	23	2	Foreign	Reaching-in	Chemical	44,92%
15	DANIELI & C OFFICINE MECCANICHE	383	1975	2013	38	5	Domestic	Localized	Mechanical	73,37%
16	3M INNOVATIVE PROPERTIES	374	1971	2013	42	1	Foreign	Reaching-in	Design	48,40%
17	SIGMA TAU	361	1974	2014	40	2	Domestic	Localized	Drugs&Medical	77,56%
18	BASELL	351	1992	2012	20	3	Foreign	Reaching-in	Chemical	93,45%
19	SNAM	347	1970	2007	37	2	Domestic	Localized	Chemical	74,93%
20	FARMITALIA CARLO ERBA	345	1972	2004	32	1	Domestic	Localized	Drugs&Medical	70,14%
21	CSELT	312	1974	2000	26	1	Domestic	Localized	Computers&Communications	61,54%
22	MAGNETI MARELLI	303	1973	2013	40	3	Domestic	Localized	Mechanical	53,14%
23	NUOVO PIGNONE	270	1974	2012	38	1	Domestic	Localized	Mechanical	34,07%
24	CNR	258	1974	2013	39	1	Domestic	Localized	Chemical	33,72%
25	CISCO	256	1997	2014	17	2	Foreign	Reaching-in	Computers&Communications	92,19%

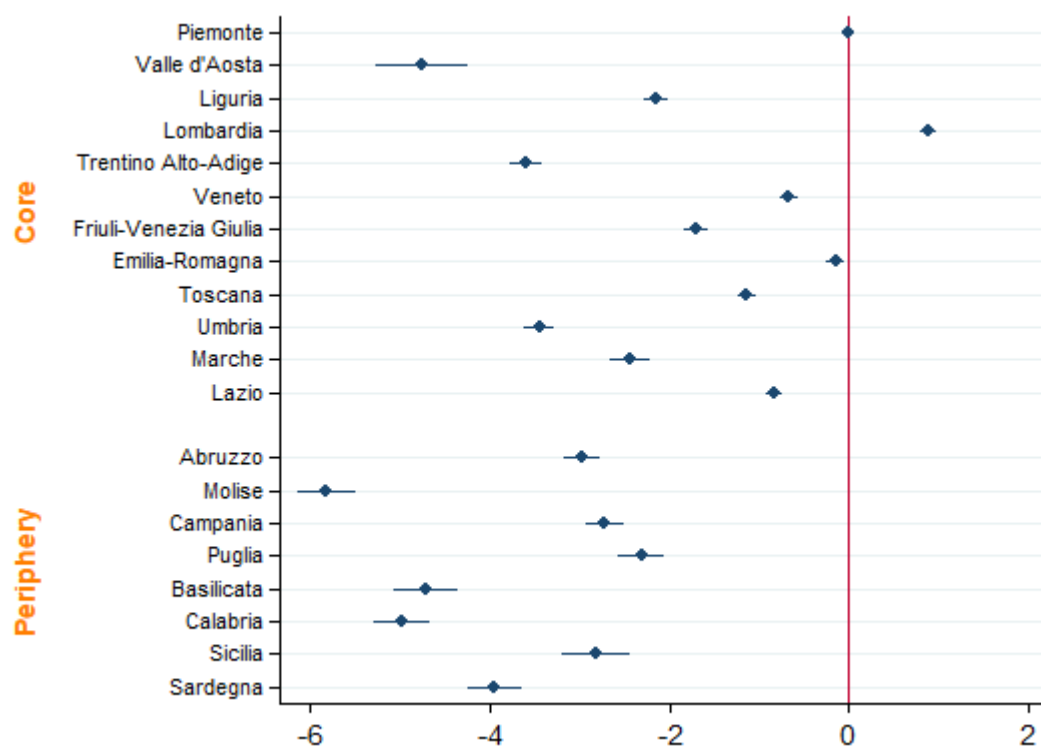
Table A5 – Top USPTO applicants with connectivity to Italy and type of innovation: rank 26-50

	Applicant name	Patent stock	Patenting period			# legal domiciles	Headquarter	Main type of innovation	Technological category specialization	% patents in technological category
			First	Last	Tenure time					
26	ERICSSON	245	1995	2013	18	2	Foreign	Reaching-in	Computers&Communications	87,76%
27	ABB	239	1990	2013	23	5	Foreign	Reaching-in	Electrical&Electronics	65,27%
28	NORDICA	237	1979	2010	31	1	Domestic	Localized	Others	60,76%
29	ELECTROLUX	233	1994	2014	20	5	Foreign	Reaching-in	Design	39,06%
30	SAES GETTERS	231	1973	2014	41	3	Domestic	Localized	Electrical&Electronics	40,69%
31	CAMPAGNOLO	222	1982	2013	31	1	Domestic	Localized	Mechanical	79,73%
32	SOLVAY	214	1972	2013	41	3	Foreign	Reaching-in	Chemical	82,24%
33	THE LIBMAN COMPANY	209	1989	2013	24	1	Foreign	Reaching-in	Design	90,91%
34	BULGARI	208	1984	2012	28	2	Domestic	Localized	Design	100,00%
35	TOD'S	202	1997	2014	17	1	Domestic	Localized	Design	100,00%
36	ZAMBON GROUP	201	1971	2011	40	1	Domestic	Localized	Chemical	53,23%
37	DE NORA	194	1968	2012	44	5	Domestic	Localized	Chemical	90,21%
38	WHIRLPOOL	192	1989	2014	25	2	Foreign	Reaching-in	Others	43,75%
39	GRUPPO LEPETIT	187	1967	2000	33	1	Domestic	Localized	Drugs&Medical	55,08%
40	FERRARI	182	1985	2014	29	1	Domestic	Localized	Mechanical	43,41%
41	WOLVERINE WORLD WIDE	182	2000	2009	9	1	Foreign	Reaching-in	Design	99,45%
42	ALCATEL	181	1985	2011	26	4	Foreign	Reaching-in	Computers&Communications	84,53%
43	Co.Ri.M.Me.	176	1991	2000	9	2	Domestic	Localized	Electrical&Electronics	85,80%
44	ACMA	164	1973	2013	40	2	Domestic	Localized	Mechanical	43,90%
45	AXIS	164	1974	2005	31	3	Foreign	Reaching-in	Mechanical	76,83%
46	INDENA	161	1988	2012	24	1	Domestic	Localized	Drugs&Medical	76,40%
47	J CHOO	161	2003	2012	9	1	Foreign	Reaching-in	Design	100,00%
48	FIDIA FARMACEUTICI	159	1980	2013	33	1	Domestic	Localized	Drugs&Medical	74,84%
49	SIEMENS	154	1976	2013	37	6	Foreign	Reaching-in	Computers&Communications	64,29%
50	NOVARTIS	150	1994	2013	19	3	Foreign	Reaching-in	Drugs&Medical	87,33%

Table A6 – Top USPTO applicants with connectivity to Italy and type of innovation: rank 26-50

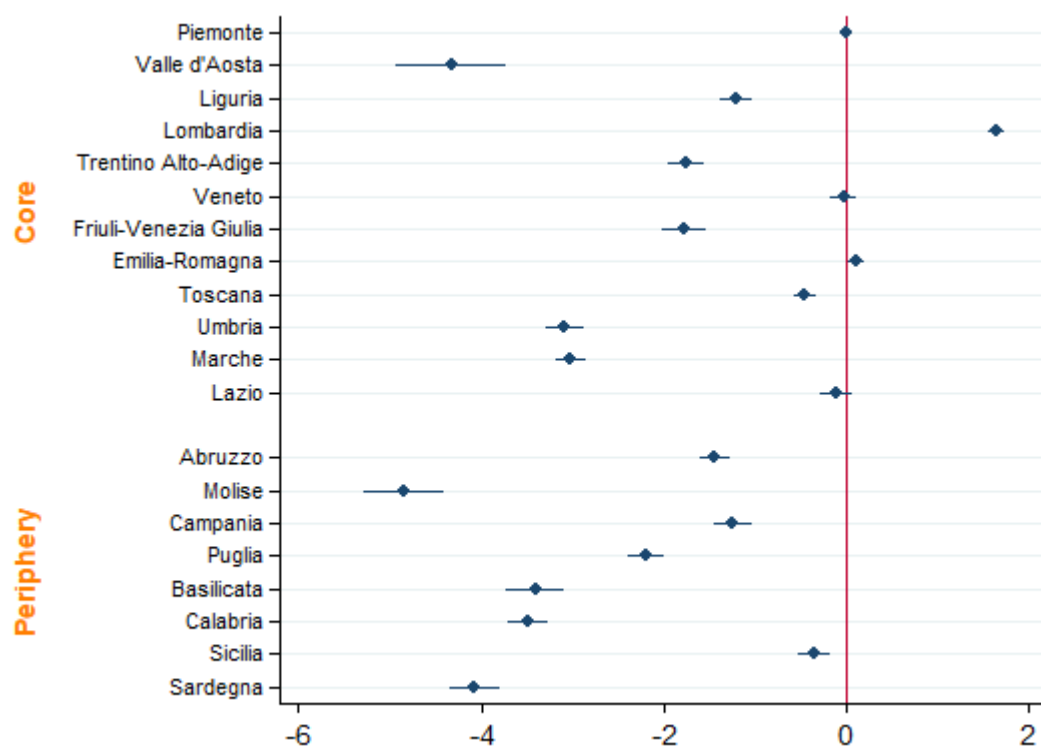
Period	# patents	Chemicals	Computers & Communications	Drugs & Medicals	Electronical & Electronics	Mechanical	Others	Design
1975-1979	3267	29,23%	7,53%	8,33%	10,19%	22,31%	18,09%	4,32%
1980-1984	3835	21,38%	6,10%	11,58%	8,76%	22,71%	20,31%	9,15%
1985-1989	5801	20,22%	5,02%	10,26%	11,00%	21,46%	19,96%	12,08%
1990-1994	6875	22,63%	5,09%	12,76%	10,89%	21,66%	17,53%	9,44%
1995-1999	9441	19,57%	8,90%	12,98%	13,34%	18,55%	16,30%	10,37%
2000-2004	11450	15,09%	13,11%	11,21%	13,46%	17,99%	14,64%	14,51%
2005-2009	12304	11,70%	16,15%	11,30%	12,83%	15,36%	12,52%	20,16%
2010-2014	7065	9,99%	15,03%	10,71%	14,44%	13,25%	8,41%	28,17%

Figure A1 – Testing regional heterogeneity of patent activities in Italy. Poisson regression



Subsample: localized innovation. Piemonte as reference region.

Figure A2 – Testing regional heterogeneity of patent activities in Italy. Poisson regression



Subsample: reaching-in innovation. Piemonte as reference region.

Appendix References

European Commission. (2005). Europe in figures: Eurostat yearbook 2005. European Communities, Luxembourg.

European Commission. (2010). Europe in figures: Eurostat yearbook 2010. European Union, Luxembourg.

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