

APPENDICES

The Appendix provides supplementary data supporting the analyses presented in the main text. Appendix 1 details the distribution of firm-level observations across industries and years, while Appendix 2 presents the corresponding distribution across institutions (countries) and years. These tables illustrate the scope and coverage of the dataset used in this study, compiled from the EU Industrial R&D Investment Scoreboard, and serve to enhance transparency and reproducibility of the research.

APPENDIX 1

Table A1. Data description: Number of observations industry–year.

Industry	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Aerospace & Defence	44	44	46	51	54	51	48	51	50	44	42	40
Alternative Energy	7	7	8	8	8	7	6	9	9	9	8	8
Automobiles & Parts	85	99	121	141	149	144	156	150	147	146	144	128
Banks	20	19	24	28	28	35	27	25	23	24	23	20
Beverages	5	4	9	9	10	8	8	8	8	8	8	8
Biotechnology	22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chemicals	85	89	114	129	128	119	123	127	127	127	125	110
Commercial Vehicles & Truck	24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer Hardware	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer Services	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Construction & Building	31	42	52	66	67	63	65	62	61	65	67	62
Electrical Components & Equipment	31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electricity	19	17	24	28	29	29	24	25	23	23	23	20
Electronic & Electrical Equipment	61	114	173	226	219	213	235	234	223	222	223	214
Electronic Office Equipment	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Equity Investment Instruments	NA	NA	1	1	1	1	NA	NA	NA	NA	NA	NA
Financial Services	NA	NA	13	14	14	14	14	15	12	14	17	14
Fixed Line Telecommunications	18	23	19	20	16	16	13	14	15	15	15	15
Food & Drug Retailers	6	7	3	4	4	3	3	3	4	6	5	4
Food Producers	30	38	50	58	58	50	56	54	51	52	50	41
Forestry & Paper	5	7	9	12	13	10	13	9	10	11	9	8
Gas, Water & Multiutilities	8	8	10	13	13	12	14	15	15	14	14	12
General Industrials	41	39	68	89	93	75	90	90	82	74	68	62
General Retailers	8	9	10	17	17	13	18	22	24	22	23	22
Health Care	51	53	78	91	95	84	85	83	80	85	78	72
Household Goods & Home Construction	22	25	31	36	35	35	45	44	44	42	36	34
Industrial Engineering	NA	113	176	205	197	179	194	188	187	185	172	154
Industrial Machinery	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Industrial Metals & Mining	20	31	32	39	40	37	39	41	50	54	53	51
Industrial Transportation	4	8	9	11	11	7	7	7	9	9	9	6
Internet	13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Leisure Goods	29	30	34	37	38	36	40	38	40	39	38	35
Life Insurance	3	3	2	5	4	NA	2	4	1	1	NA	NA
Media	12	15	14	14	17	16	18	23	27	26	25	22
Mining	5	6	9	9	10	11	12	13	11	13	14	12
Mobile Telecommunications	3	3	5	9	11	13	17	17	18	18	15	12
Nonequity Investment Instruments	NA	NA	1	1	NA	NA	NA	NA	NA	NA	NA	NA
Nonlife Insurance	3	3	1	2	3	NA	3	3	6	4	5	4
Oil & Gas Producers	22	24	24	26	28	25	23	26	26	28	26	25
Oil Equipment, Services & Distribution	12	14	14	16	16	14	13	10	10	10	8	6

Other financials	10	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Personal & Household Goods	22	26	37	44	47	47	50	44	44	44	38	34
Pharmaceuticals & Biotechnology	79	111	141	172	174	161	184	194	194	189	193	186
Real Estate Investment & Services	NA	NA	1	2	2	3	6	13	7	10	12	11
Semiconductors	106	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Software & Computer Services	71	118	182	251	256	237	248	252	276	274	293	274
Support Services	12	13	18	27	27	26	25	26	25	25	28	22
Technology Hardware & Equipment	NA	212	282	321	309	271	268	261	237	231	221	194
Telecommunications	55	NA	NA	NA	1	NA	NA	NA	NA	NA	NA	NA
Tobacco	5	5	6	6	6	6	5	5	5	5	5	4
Toys	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA
Travel & Leisure	14	14	17	21	18	17	17	23	23	24	20	18

Notes:

NAs are used to represent unavailable observations for the industry–year.

Above displayed industries are compiled based on the 52 FTSE Russell Industry Classification Benchmark (ICB) and its four-tier digit structure for comparing and analysing like-organizations.

To enhance readability, the grey highlight line categorizes industries into groups of five.

APPENDIX 2

Table A2. Data description: number of observations institution–year.

Institution	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Argentina	NA	NA	NA	NA	NA	1	NA	1	1	1	NA	NA
Australia	10	12	14	15	15	8	13	13	10	10	9	9
Austria	7	5	11	13	11	10	14	15	15	15	14	13
Belgium	11	10	12	13	13	11	12	12	11	13	12	10
Bermuda	4	7	10	18	NA	NA	NA	NA	NA	NA	NA	NA
Brazil	7	7	8	9	9	8	8	7	6	5	5	4
Canada	9	10	15	23	21	26	24	24	22	24	23	21
Cayman Islands	12	19	44	59	NA	NA	NA	NA	NA	NA	NA	NA
China	18	55	93	186	294	304	366	412	476	513	552	546
Colombia	NA	NA	NA	NA	1	1	NA	NA	NA	NA	NA	NA
Czech Republic	NA	NA	1	1	1	1	NA	NA	NA	NA	NA	NA
Denmark	21	18	22	25	24	25	22	26	25	25	24	23
Finland	14	14	19	22	21	19	19	18	17	15	15	12
France	56	55	71	82	82	75	67	70	65	60	59	54
Germany	96	102	126	131	128	100	128	130	128	120	120	106
Greece	1	NA	1	2	3	2	2	2	1	1	NA	NA
Hong Kong	8	4	5	6	NA	NA	NA	NA	NA	NA	NA	NA
Hungary	2	2	1	1	1	1	1	1	1	1	1	1
Iceland	1	1	1	1	1	1	1	1	1	1	1	1
India	11	13	20	23	25	11	25	30	32	29	25	24
Iraq	NA	NA	NA	NA	NA	NA	2	2	1	1	NA	NA
Ireland	9	7	10	15	20	18	21	23	25	26	24	23
Israel	9	9	15	23	24	20	20	19	17	18	18	15
Italy	22	23	30	34	31	26	24	24	26	24	21	20
Japan	256	294	350	374	359	328	357	335	316	307	292	231
Liechtenstein	1	NA	1	1	1	1	1	1	1	1	1	1
Luxembourg	3	3	4	6	7	8	6	5	4	6	4	2
Malaysia	NA	NA	1	3	4	2	3	2	1	NA	NA	1
Malta	NA	NA	1	1	1	1	1	1	NA	1	1	1
Mexico	NA	1	1	1	1	2	2	1	1	1	1	1
Netherlands	19	23	34	39	41	33	35	35	35	33	27	27
New Zealand	1	1	2	2	2	2	3	3	3	3	3	3
Norway	9	9	11	12	10	12	12	9	10	10	10	6
Poland	NA	NA	NA	NA	NA	NA	NA	1	NA	NA	1	NA
Portugal	3	3	3	4	3	3	2	2	2	3	2	2
Russia	2	3	4	4	3	3	2	3	1	1	2	1
Saudi Arabia	1	2	1	2	2	2	2	2	3	2	1	1
Singapore	5	3	5	6	9	6	5	5	5	5	5	5
Slovenia	1	1	1	1	1	1	1	1	1	1	1	1
South Africa	1	1	1	2	2	NA	2	1	2	2	NA	NA
South Korea	22	32	52	77	79	72	65	69	68	59	59	52
Spain	14	15	16	17	17	16	14	15	14	14	13	12
Sweden	23	24	35	43	39	37	34	32	30	28	28	21
Switzerland	39	39	53	60	53	54	51	55	50	51	47	44
Taiwan	46	46	81	100	112	109	102	96	88	86	80	81
Thailand	1	1	1	1	1	1	1	1	NA	NA	NA	NA
Turkey	4	3	5	6	7	6	6	4	5	6	7	3
UK	67	76	96	119	112	97	106	109	105	101	87	73
United Arab Emirates	NA	NA	NA	NA	NA	NA	NA	1	1	1	NA	1
USA	420	449	579	675	674	625	631	608	578	568	558	512
Venezuela	NA	1	1	1	1	1	1	1	NA	NA	NA	NA

Notes:

NA's are used to represent unavailable observations for the institution–year.

Above displayed country institutions are compiled based on the firm's corporate headquarters.

To enhance readability, the grey highlight line categorizes country institutions into groups of five.