Table A.1. Father's education

field	level	Class	Freq.	Percent	Cum.	Class	Freq.	Percent	Cum.
			inventors				non-inventors		
Humanities and Arts	lower second	31	1	0.06	0.06	31	26	0.07	0.07
Teacher Education	lower second	32	1	0.06	0.13	32	30	0.08	0.16
Social Sciences, Business and Law	lower second	33	23	1.47	1.59	33	370	1.04	1.19
Technology and Natural Sciences	lower second	34	97	6.18	7.78	34	1918	5.38	6.57
Transport and IT	lower second	35	1	0.06	7.84	35	28	0.08	6.65
Health and Welfare	lower second	36	2	0.13	7.97	36	9	0.03	6.67
Agriculture and Forestry	lower second	37	75	4.78	12.75	37	1142	3.2	9.87
Services	lower second	38	6	0.38	13.13	38	126	0.35	10.23
General education	upper second	40	17	1.08	14.21	40	271	0.76	10.99
Humanities and Arts	upper second	41	1	0.06	14.28	41	10	0.03	11.02
Social Sciences, Business and Law	upper second	43	26	1.66	15.93	43	329	0.92	11.94
Technology and Natural Sciences	upper second	44	97	6.18	22.12	44	1050	2.94	14.88
Transport and IT	upper second	45	3	0.19	22.31	45	47	0.13	15.01
Health and Welfare	upper second	46	2	0.13	22.43	46	40	0.11	15.12
Agriculture and Forestry	upper second	47	22	1.4	23.84	47	210	0.59	15.71
Services	upper second	48	11	0.7	24.54	48	229	0.64	16.36
Humanities and Arts	lowest tertiary	51	3	0.19	24.73	51	43	0.12	16.48
Teacher Education	lowest tertiary	52	46	2.93	27.66	52	380	1.07	17.54
Social Sciences, Business and Law	lowest tertiary	53	1	0.06	27.72	53	8	0.02	17.56
Technology and Natural Sciences	lowest tertiary	54	37	2.36	30.08	54	329	0.92	18.49
Transport and IT	lowest tertiary	55	1	0.06	30.15	55	7	0.02	18.5
Health and Welfare	lowest tertiary	56	2	0.13	30.27	56	18	0.05	18.56
Agriculture and Forestry	lowest tertiary	57	12	0.76	31.04	57	98	0.27	18.83
Services	lowest tertiary	58	1	0.06	31.1	58	35	0.1	18.93
Humanities and Arts	lower tertiary	61	2	0.13	31.23	61	16	0.04	18.97
Teacher Education	lower tertiary	62	-	-	-	62	26	0.07	19.05
Social Sciences, Business and Law	lower tertiary	63	20	1.27	32.5	63	244	0.68	19.73
Technology and Natural Sciences	lower tertiary	64	2	0.13	32.63	64	15	0.04	19.77
Transport and IT	lower tertiary	65	1	0.06	32.7	65	37	0.1	19.88
Health and Welfare	lower tertiary	66	-	-	-	66	6	0.02	19.89
Services	lower tertiary	68	6	0.38	33.08	68	44	0.12	20.02
Humanities and Arts	higher tertiary	71	12	0.76	33.84	71	142	0.4	20.41
Teacher Education	higher tertiary	72	-	-	-	72	5	0.01	20.43
Social Sciences, Business and Law	higher tertiary	73	27	1.72	35.56	73	210	0.59	21.02
Transport and IT	higher tertiary	74	69	4.4	39.96	74	377	1.06	22.07
Health and Welfare	higher tertiary	76	24	1.53	41.49	76	136	0.38	22.45
Agriculture and Forestry	higher tertiary	77	22	1.4	42.89	77	121	0.34	22.79
Services	higher tertiary	78	1	0.06	42.96	78	31	0.09	22.88
Humanities and Arts	doctorate or eq.	81	2	0.13	43.08	81	16	0.04	22.93
Social Sciences, Business and Law	doctorate or eq.	83	3	0.19	43.28	83	24	0.07	22.99
Technology and Natural Sciences	doctorate or eq.	84	13	0.83	44.1	84	56	0.16	23.15
Health and Welfare	doctorate or eq.	86	3	0.19	44.3	86	25	0.07	23.22
Agriculture and Forestry	doctorate or eq.	87	3	0.19	44.49	87	7	0.02	23.24
Services	doctorate or eq.	88	4	0.25	44.74	88	24	0.07	23.31
unknown	-	99	867	55.26	100	99	27362	76.69	100
Total			1569	100			35677	100	

Table A.2. Using a polynomial of the instrument: Patent count & university engineering education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
uni_eng	0.234***	0.227***	0.222***	0.221***	0.221***	0.221***	0.222***	0.223***
	(0.038)	(0.036)	(0.036)	(0.036)	(0.037)	(0.037)	(0.037)	(0.037)
F-test	81.657	43.177	29.429	22.172	17.872	15.485	15.753	14.356
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni_eng	0.302**	0.289**	0.288**	0.272**	0.261**	0.264**	0.269**	0.275**
	(0.150)	(0.145)	(0.147)	(0.136)	(0.131)	(0.132)	(0.127)	(0.122)
F-test	6.937	3.654	2.455	2.388	1.941	1.640	1.718	1.595
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni_eng	0.598	0.447	0.286	0.284	0.281	0.284	0.299	0.317
	(0.514)	(0.335)	(0.230)	(0.231)	(0.225)	(0.224)	(0.221)	(0.217)
F-test	1.513	1.252	1.115	1.140	.918	.749	.633	.601
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level.

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.3. Using a polynomial of the instrument: Patent count & engineering education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
eng	0.136***	0.126***	0.126***	0.127***	0.127***	0.127***	0.127***	0.128***
	(0.021)	(0.019)	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
F-test	92.849	57.805	38.583	28.940	23.902	20.502	20.722	18.060
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
eng	0.106***	0.107**	0.106**	0.104**	0.103**	0.105**	0.107***	0.110***
	(0.041)	(0.042)	(0.042)	(0.041)	(0.041)	(0.041)	(0.041)	(0.039)
F-test	23.109	11.886	7.930	6.210	4.974	4.148	3.740	4.029
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
eng	0.185**	0.164**	0.151*	0.151*	0.151*	0.151*	0.156*	0.156**
	(0.088)	(0.083)	(0.083)	(0.082)	(0.082)	(0.082)	(0.080)	(0.072)
F-test	7.098	3.799	2.558	1.986	1.590	1.330	1.301	1.331
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.4. Using a polynomial of the instrument: Patent count & university education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
uni	0.067***	0.067***	0.064***	0.063***	0.061***	0.058***	0.056***	0.055***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
F-test	181.69	102.72	75.118	58.777	49.199	47.049	42.636	44.291
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni	0.202*	0.177**	0.177**	0.162**	0.125**	0.105**	0.099***	0.088***
	(0.104)	(0.083)	(0.083)	(0.072)	(0.052)	(0.042)	(0.038)	(0.033)
F-test	5.005	3.889	3.516	2.518	2.589	3.217	2.936	1.884
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni	0.157**	0.152**	0.150**	0.143**	0.133**	0.134***	0.140***	0.143***
	(0.068)	(0.064)	(0.063)	(0.059)	(0.053)	(0.052)	(0.053)	(0.052)
F-test	7.416	4.576	4.060	3.020	2.702	2.619	2.257	2.189
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.5. Using a polynomial of the instrument: Patent indicator & university engineering education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
uni_eng	0.108***	0.103***	0.100***	0.099***	0.098***	0.097***	0.097***	0.097***
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
F-test	81.657	43.177	29.429	22.172	17.872	15.485	15.753	14.356
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni_eng	0.155**	0.142**	0.141**	0.136**	0.134**	0.131**	0.130**	0.134***
	(0.068)	(0.062)	(0.062)	(0.058)	(0.057)	(0.056)	(0.053)	(0.051)
F-test	6.937	3.654	2.455	2.388	1.941	1.640	1.718	1.595
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni_eng	0.217	0.157	0.115	0.115	0.115	0.111	0.116	0.124
	(0.188)	(0.117)	(0.084)	(0.084)	(0.082)	(0.081)	(0.081)	(0.081)
F-test	1.513	1.252	1.115	1.140	.918	.749	.633	.601
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level.

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.6. Using a polynomial of the instrument: Patent indicator & engineering education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
eng	0.063***	0.057***	0.057***	0.057***	0.057***	0.055***	0.055***	0.056***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
F-test	92.849	57.805	38.583	28.940	23.902	20.502	20.722	18.060
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
eng	0.054***	0.054***	0.053***	0.053***	0.053***	0.053***	0.053***	0.054***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)
F-test	23.109	11.886	7.930	6.210	4.974	4.148	3.740	4.029
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
eng	0.067**	0.058**	0.056*	0.056*	0.056*	0.056*	0.057**	0.059**
	(0.033)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.027)
F-test	7.098	3.799	2.558	1.986	1.590	1.330	1.301	1.331
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.7. Using a polynomial of the instrument: Patent indicator & university education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
uni	0.030***	0.029***	0.027***	0.027***	0.025***	0.024***	0.023***	0.023***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
F-test	181.69	102.72	75.118	58.777	49.199	47.049	42.636	44.291
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni	0.093**	0.083**	0.083**	0.073**	0.050**	0.040**	0.038***	0.036***
	(0.045)	(0.037)	(0.037)	(0.031)	(0.021)	(0.016)	(0.015)	(0.013)
F-test	5.005	3.889	3.516	2.518	2.589	3.217	2.936	1.884
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni	0.054**	0.052**	0.052**	0.050**	0.045**	0.046**	0.049**	0.053***
	(0.025)	(0.024)	(0.023)	(0.022)	(0.020)	(0.019)	(0.020)	(0.020)
F-test	7.416	4.576	4.060	3.020	2.702	2.619	2.257	2.189
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.8. Using a polynomial of the instrument: Citations & university engineering education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
uni_eng	2.322***	2.204***	2.157***	2.182***	2.218***	2.246***	2.257***	2.262***
	(0.438)	(0.441)	(0.448)	(0.453)	(0.455)	(0.453)	(0.454)	(0.455)
F-test	81.657	43.177	29.429	22.172	17.872	15.485	15.753	14.356
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni_eng	2.592	2.591	2.671	2.325	2.11	2.156	1.993	1.722
	(1.787)	(1.816)	(1.856)	(1.728)	(1.686)	(1.664)	(1.574)	(1.472)
F-test	6.937	3.654	2.455	2.388	1.941	1.640	1.718	1.595
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni_eng	7.725	6.006	4.348	4.358	4.231	4.237	4.18	3.98
	(6.787)	(4.584)	(3.306)	(3.325)	(3.222)	(3.179)	(3.033)	(2.791)
F-test	1.513	1.252	1.115	1.140	.918	.749	.633	.601
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level.

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.9. Using a polynomial of the instrument: Citations & engineering education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
eng	1.347***	1.221***	1.223***	1.248***	1.270***	1.282***	1.288***	1.289***
	(0.249)	(0.237)	(0.246)	(0.251)	(0.250)	(0.246)	(0.246)	(0.246)
F-test	92.849	57.806	38.584	28.941	23.902	20.503	20.722	17.604
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
eng	0.907*	0.939	0.918	0.857	0.848	0.86	0.827	0.721
	(0.558)	(0.588)	(0.580)	(0.573)	(0.573)	(0.571)	(0.563)	(0.534)
F-test	23.109	11.887	7.931	6.211	4.975	4.148	3.740	4.064
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
eng	2.394**	2.176*	2.089*	2.086*	2.066*	2.068*	2.032*	1.805**
	(1.218)	(1.158)	(1.159)	(1.157)	(1.150)	(1.150)	(1.091)	(0.924)
F-test	7.098	3.799	2.558	1.986	1.590	1.331	1.301	1.332
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.10. Using a polynomial of the instrument: Citations & university education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
uni	0.736***	0.739***	0.723***	0.721***	0.707***	0.670***	0.636***	0.609***
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.11)	(0.11)	(0.10)
F-test	181.69	102.72	75.118	58.777	49.199	47.049	42.636	44.291
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni	2.137*	1.781*	1.823*	1.857**	1.512**	1.186**	1.023**	0.833*
	(1.21)	(0.95)	(0.97)	(0.90)	(0.70)	(0.58)	(0.51)	(0.44)
F-test	5.005	3.889	3.516	2.518	2.589	3.217	2.936	1.884
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni	1.868**	1.792**	1.812**	1.844**	1.751**	1.646**	1.643**	1.592**
	(0.882)	(0.829)	(0.829)	(0.794)	(0.725)	(0.679)	(0.675)	(0.634)
F-test	7.416	4.576	4.060	3.020	2.702	2.619	2.257	2.189
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level
F-test is the robust F-test on the joint significance of the instrument vector.

Table A.11. Using a polynomial of ln(distance) as instrument: Patent count & university engineering education

polynomial dep. variable	1	2	3	4	5	6	7	8
Specification: base								
uni_eng	0.236***	0.230***	0.211***	0.205***	0.207***	0.197***	0.180***	0.174***
	(0.040)	(0.037)	(0.035)	(0.035)	(0.035)	(0.033)	(0.030)	(0.029)
F-test	73.138	44.532	29.728	22.779	18.433	15.729	17.736	18.319
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni_eng	0.325*	0.314*	0.317**	0.298**	0.310**	0.286**	0.169**	0.165**
	(0.176)	(0.163)	(0.155)	(0.147)	(0.146)	(0.136)	(0.082)	(0.079)
F-test	5.742	3.300	2.583	2.042	1.766	1.652	3.973	4.460
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni_eng	0.246	0.205	0.206	0.144	0.145	0.139	0.159	0.164
	(0.208)	(0.194)	(0.173)	(0.143)	(0.143)	(0.138)	(0.119)	(0.113)
F-test	3.165	1.583	1.223	1.162	0.930	0.775	1.665	1.726
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level.
F-test is the robust F-test on the joint significance of the instrument vector.

Table A.12. Using a polynomial of ln(distance) as instrument: Patent count & engineering education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
eng	0.131***	0.131***	0.128***	0.128***	0.125***	0.125***	0.121***	0.120***
	(0.021)	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.018)	(0.018)
F-test	100.534	57.257	38.304	28.740	24.699	21.142	18.829	16.727
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
eng	0.325*	0.314*	0.317**	0.298**	0.310**	0.286**	0.169**	0.165**
	(0.176)	(0.163)	(0.155)	(0.147)	(0.146)	(0.136)	(0.082)	(0.079)
F-test	14.979	9.445	8.364	6.474	5.627	4.706	4.599	4.052
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
eng	0.123	0.146*	0.149*	0.151*	0.165**	0.160**	0.157**	0.159**
	(0.096)	(0.086)	(0.084)	(0.084)	(0.075)	(0.074)	(0.064)	(0.065)
F-test	5.044	3.619	2.521	1.951	1.874	1.563	1.775	1.570
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.

Table A.13. Using a polynomial of ln(distance) as instrument: Patent count & university education

polynomial	1	2	3	4	5	6	7	8
dep. variable								
Specification: base								
uni	0.058***	0.054***	0.051***	0.051***	0.051***	0.051***	0.051***	0.051***
	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
F-test	284.629	146.090	109.952	82.560	66.693	55.785	50.354	44.094
nobs	60234	60234	60234	60234	60234	60234	60234	60234
Specification: base + father's education								
uni	0.171**	0.120*	0.059*	0.067**	0.079**	0.072**	0.068***	0.068***
	(0.086)	(0.063)	(0.035)	(0.031)	(0.032)	(0.029)	(0.026)	(0.026)
F-test	5.954	3.681	6.049	5.904	4.756	4.082	5.088	4.422
nobs	33645	33645	33645	33645	33645	33645	33645	33645
Specification: base + father's education + region dummies								
uni	0.153**	0.153**	0.131***	0.129***	0.133***	0.128***	0.120***	0.118***
	(0.075)	(0.075)	(0.049)	(0.047)	(0.048)	(0.045)	(0.039)	(0.037)
F-test	6.430	3.229	4.210	3.615	2.960	2.470	3.120	2.883
nobs	29177	29177	29177	29177	29177	29177	29177	29177

Notes: numbers presented are coefficient and (s.e.). ***, **, and * indicate significance at 1,5, and 10% level

F-test is the robust F-test on the joint significance of the instrument vector.