

Supplementary Appendix
for
Academic Entrepreneurship:
Entrepreneurial Advisors and their Advisees' Outcomes

by Maria P. Roche

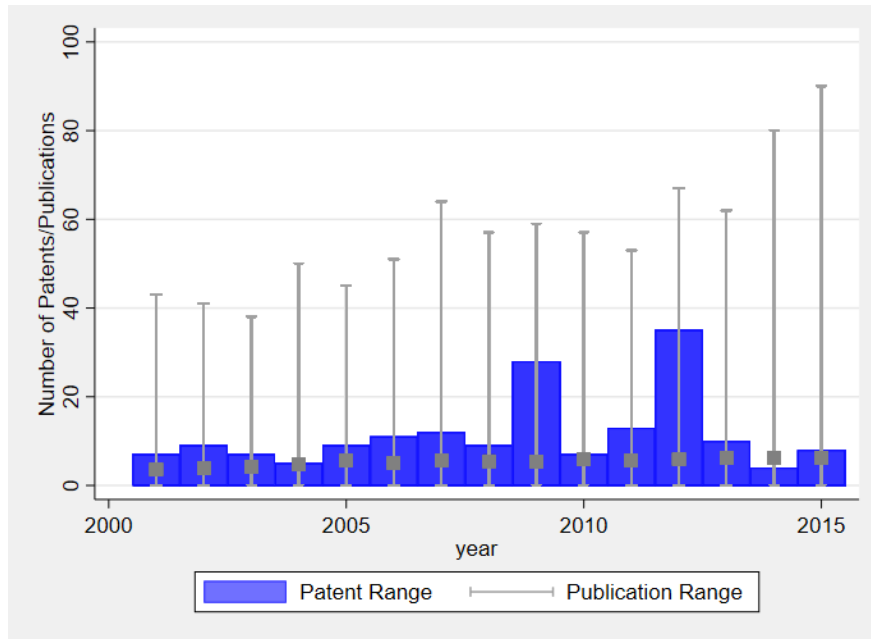


Figure A1: Innovative Output of Professors Over Time

Notes: This figure displays the range of patents (bar) and publications (line) produced by individual professors at the examined university by year. The box indicates the average for publications. The average for patents is below one in every year.

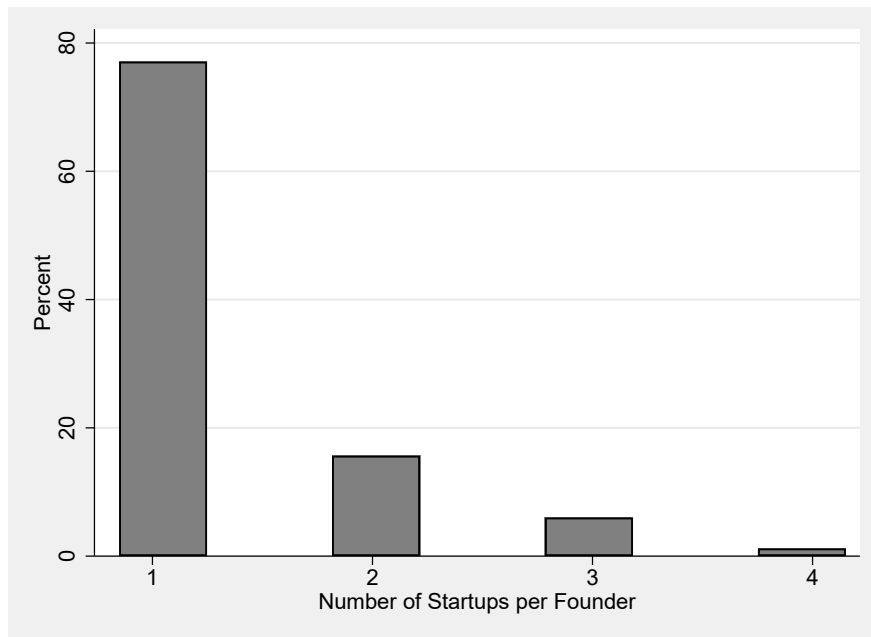


Figure A2: Number of Startups per Professor-Founder

Notes: This figure displays the distribution of the numbers of startups a professor-founder founded. The y-axis reports percent values.

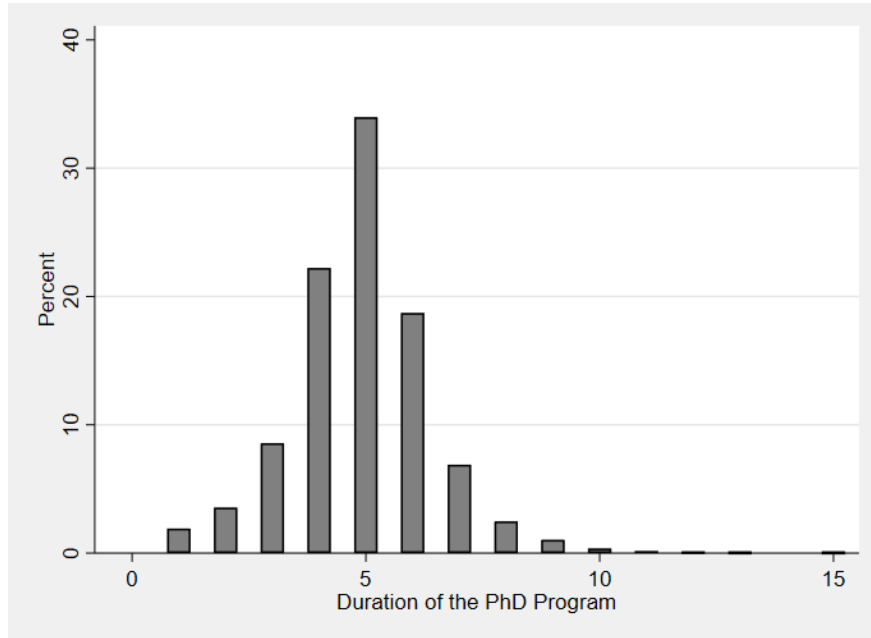


Figure A3: Duration of the PhD Program

Notes: This figure displays the distribution of students' PhD program duration.

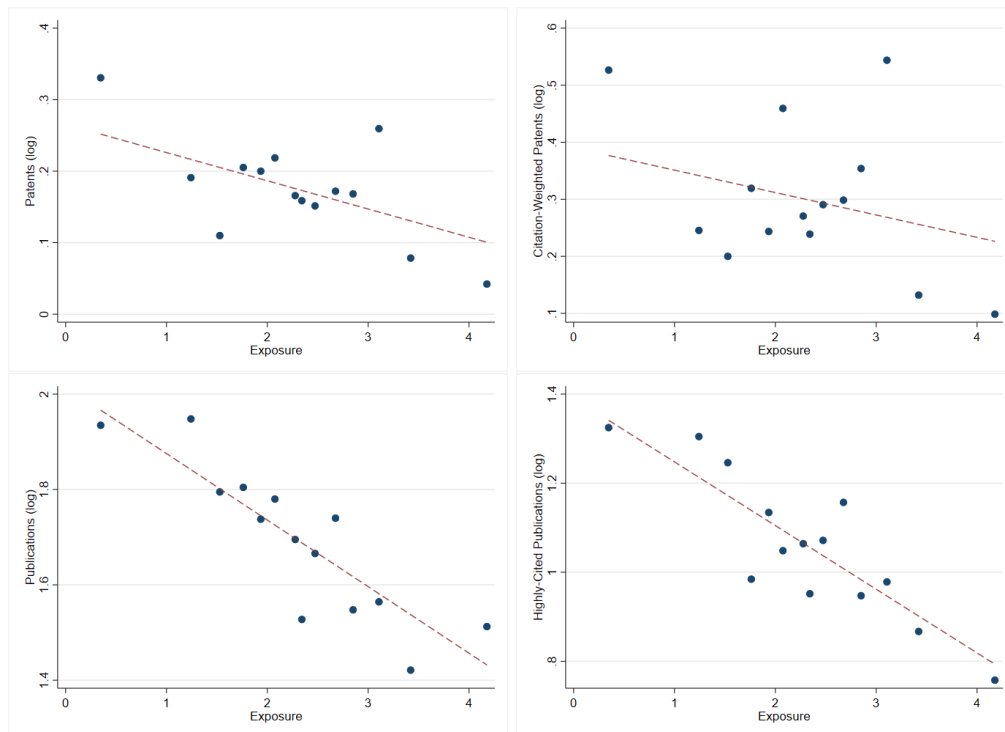


Figure A4: Binscatter Plots - Student Outcomes and Exposure

Notes: This graph reports the results from estimating the relationship between exposure (continuous) and student outcomes including professor fixed effects, start-year fixed effects, professor-year trends, and student major fixed effects using binned scatterplots (15 bins, mean average). The linear fit line is obtained using OLS.

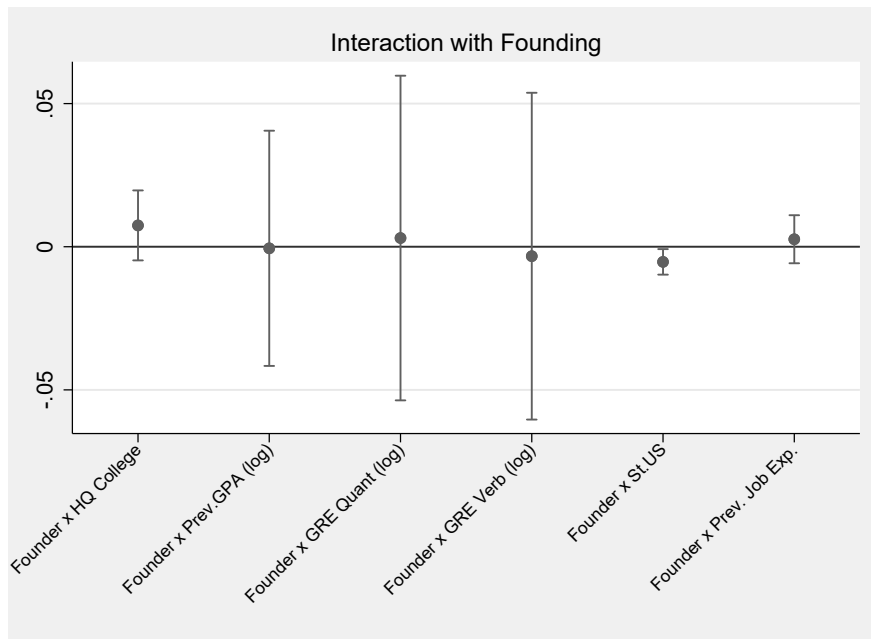


Figure A5: Interaction of Student Quality Indicators with Professors' Prior Founding Experience

Notes: This figure displays the interaction coefficients between a professor having founded in the five years prior to a student's entry and student quality indicators. The characteristics I examine are the quality of a student's previous degree-granting institution, previous GPAs, GRE Scores, US citizenship, and previous work experience as proxies for incoming students' quality and characteristics. The model used includes both student and professor fixed effects. Standard errors are clustered on the PI level.

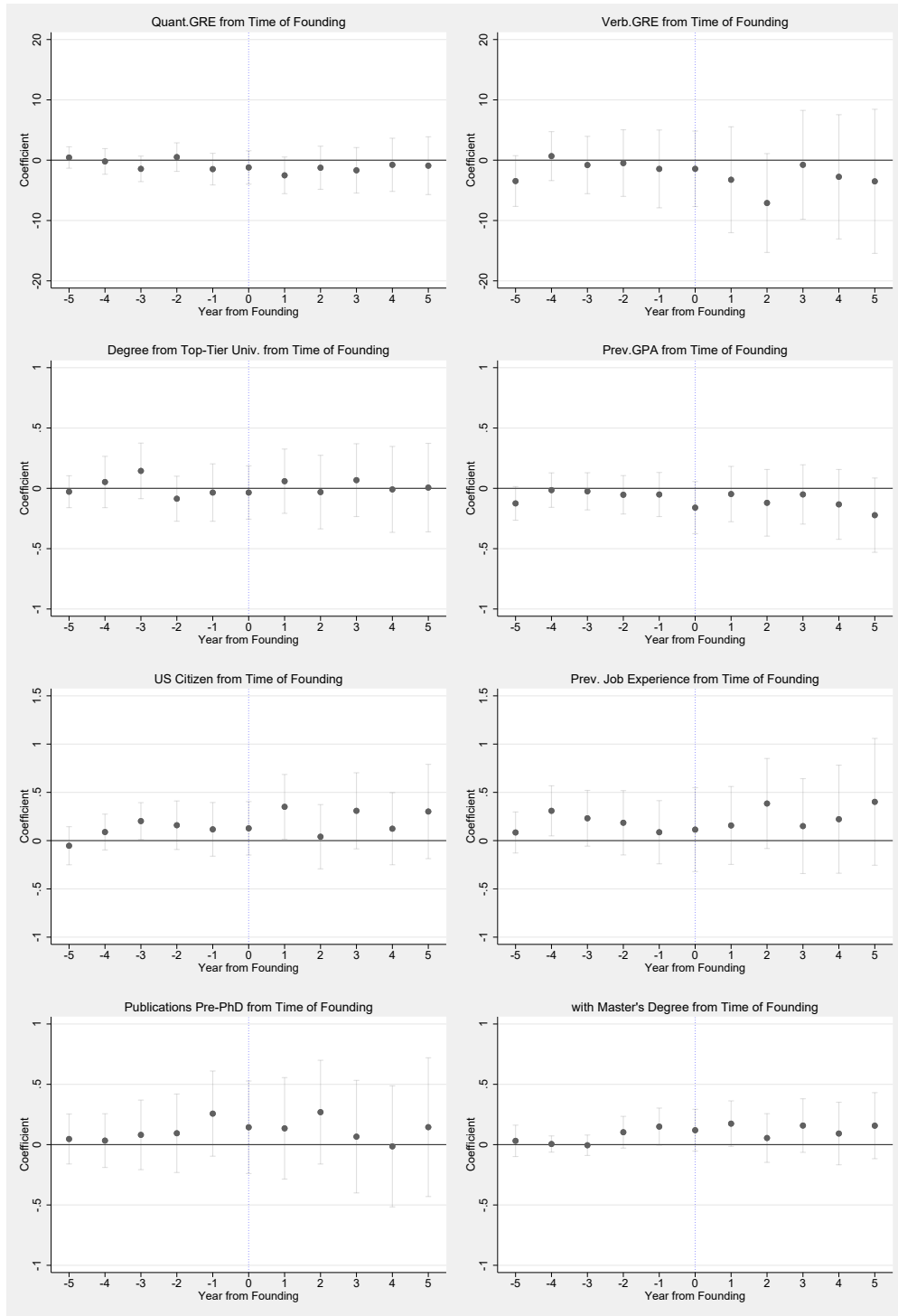


Figure A6: Before and After Founding Year - Incoming Student Characteristics
Notes: This figure displays the coefficients from estimating the relationship between incoming student characteristics and time from founding. The characteristics I examine are GRE Scores, the quality of a student's previous degree-granting institution, previous GPAs, US citizenship, previous work experience, previous publication record, and previous degree level (= 1 if the student had obtained a master's degree). The graphs are produced including professor, year, and major fixed effects, as well as major-year trends. The dashed vertical lines indicate the time of founding. Standard errors are clustered on the professor level to account for intra-group correlation. 95 percent confidence intervals are displayed.

Table A1: Professor outcomes - Robustness

<i>in a year (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
<i>Panel A: using year of founding as omitted category</i>				
6y pre	-0.226** (0.0811)	-0.476* (0.225)	-0.0933 (0.166)	0.0470 (0.0991)
5y pre	-0.248*** (0.0538)	-0.367** (0.159)	-0.124 (0.120)	0.00144 (0.101)
4y pre	-0.162** (0.0516)	-0.388** (0.135)	-0.0742 (0.0956)	0.00785 (0.0869)
3y pre	-0.173* (0.0812)	-0.116 (0.229)	0.0604 (0.0787)	0.134 (0.101)
2y pre	-0.125* (0.0564)	-0.0351 (0.219)	0.00584 (0.0646)	0.0950 (0.0633)
1y pre	-0.0527 (0.0617)	-0.0420 (0.127)	-0.0467 (0.0721)	-0.0635 (0.0599)
1y post	0.0811 (0.0542)	0.217** (0.0943)	-0.0734 (0.100)	-0.00640 (0.0586)
2y post	-0.0240 (0.0468)	0.0675 (0.127)	-0.137 (0.0896)	-0.0778 (0.0781)
3y post	-0.00419 (0.0593)	0.0655 (0.224)	-0.153 (0.0868)	-0.166** (0.0593)
4y post	-0.0633 (0.0602)	-0.175 (0.106)	-0.294*** (0.0846)	-0.208** (0.0658)
5y post	-0.0348 (0.0571)	-0.0838 (0.194)	-0.347** (0.129)	-0.311*** (0.0380)
Observations	1422	1422	1422	1422
R-squared	0.440	0.388	0.634	0.616
<i>Panel B: including from tenure control</i>				
5y pre	-0.0239 (0.0580)	0.106 (0.202)	-0.0312 (0.0789)	-0.0467 (0.0661)
4y pre	0.0611 (0.0499)	0.0852 (0.199)	0.0188 (0.0747)	-0.0403 (0.0460)
3y pre	0.0525 (0.0316)	0.360** (0.135)	0.154 (0.113)	0.0865 (0.0999)
2y pre	0.0981 (0.0635)	0.438** (0.135)	0.0988 (0.110)	0.0469 (0.0585)
1y pre	0.170* (0.0829)	0.429* (0.232)	0.0462 (0.128)	-0.112 (0.0618)
founding	0.216** (0.0831)	0.463* (0.225)	0.0922 (0.161)	-0.0516 (0.106)
1y post	0.296*** (0.0826)	0.679** (0.252)	0.0188 (0.0991)	-0.0584 (0.0815)
2y post	0.192** (0.0793)	0.531* (0.265)	-0.0449 (0.187)	-0.129 (0.101)
3y post	0.211* (0.106)	0.528 (0.361)	-0.0613 (0.181)	-0.217** (0.0945)
4y post	0.152 (0.118)	0.287 (0.279)	-0.202 (0.145)	-0.260*** (0.0536)
5y post	0.184 (0.122)	0.383 (0.365)	-0.255* (0.124)	-0.361*** (0.0717)
Post Tenure (=0/1)	0.0652 (0.0666)	0.0799 (0.0841)	0.00652 (0.0853)	0.0281 (0.0497)
Observations	1422	1422	1422	1422
R-squared	0.441	0.388	0.634	0.616
Prof, Year, Dept FEs	YES	YES	YES	YES
Cumul.no. Authors, Advisor dummy	YES	YES	YES	YES

Notes: This table displays the results from estimating equation (1). The corresponding results using a different omitted variable, and/or slightly different controls can be found in Figure 5. *Panel A* reports results using the year of founding as the omitted category, *Panel B* reports those including a years from tenure control and using the 6 plus years prior to founding as the omitted category. Robust standard errors are clustered on the year level and are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Summary Statistics - By PI Type

	Founder	Founder or Patent-holder	All PIs
	<i>Student Averages</i>		
	(1)	(2)	(3)
Exposure (cont.)	2.39	1.00	0.54
Exposure (=0/1)	0.63	0.26	0.14
Duration of PhD	4.96	4.92	4.95
Departments:			
- AERO	0.03	0.04	0.07
- BIOMED	0.09	0.06	0.06
- CHEME	0.13	0.19	0.12
- CHEM	0.04	0.12	0.10
- CIVIL	0.02	0.03	0.08
- CS	0.09	0.11	0.11
- ECE	0.33	0.33	0.22
- MATERIALS	0.11	0.09	0.08
- ME	0.15	0.15	0.12
Ethnicity:			
- Asian	0.58	0.54	0.50
- Black	0.03	0.04	0.04
- Hispanic	0.03	0.03	0.03
- Two or More	0.02	0.01	0.01
- White	0.35	0.38	0.42
Other Characteristics:			
- Female	0.22	0.23	0.23
- US Citizen	0.38	0.41	0.43
- Previous GPA	3.61	3.60	3.59
- Verbal GRE	155.00	154.32	154.24
- Quant. GRE	162.77	162.06	161.84
- Pre-PhD Publication Record	0.31	0.28	0.26
- Previous Master's Degree	0.21	0.22	0.22
- CV Record	0.85	0.82	0.81
First Job:			
- Academia/National Lab	0.42	0.39	0.42
- Industry	0.57	0.60	0.57
- Founder	0.01	0.01	0.01
Outcomes During PhD:			
- Patents	0.34	0.30	0.22
- Citation-Weighted Patents	2.75	1.69	1.90
- Publications	6.50	6.08	5.48
- Highly-Cited Publications	2.86	3.13	2.38
PI Founder or Patent-holder	1.00	1.00	0.54
Observations	647	1545	2853

Notes: This table displays averages for student characteristics by different types of PIs. Column 1 displays averages for students of advisors who are ever founders, column 2 for those of PIs who are ever founders or patent-holders, and column 3 presents averages for students of all PIs.

Table A3: Summary Statistics - All PIs

Professor-Year Level	min	mean	p50	max
<i>All Professors</i>				
Female	0.00	0.15	0.00	1.00
Age at time	25.00	47.61	47.00	88.00
Assistant Professor	0.00	0.22	0.00	1.00
Patents	0.00	0.38	0.00	35.00
Citation-Weighted Patents	0.00	1.82	0.00	698.00
Publications	0.00	5.35	4.00	90.00
Highly-Cited Publications	0.00	2.53	1.00	71.00
Founder or Patent-holder	0.00	0.44	0.00	1.00
Observations	9661			
<i>Founder or Patent-holder Professors</i>				
Female	0.00	0.12	0.00	1.00
Age at time	25.00	48.03	47.00	82.00
Assistant Professor	0.00	0.18	0.00	1.00
Patents	0.00	0.48	0.00	35.00
Citation-Weighted Patents	0.00	3.85	0.00	698.00
Publications	0.00	7.24	5.00	90.00
Highly-Cited Publications	0.00	3.54	2.00	71.00
Observations	4195			
<i>Founder Professors</i>				
Female	0.00	0.10	0.00	1.00
Age at time	25.00	46.53	45.00	76.00
Assistant Professor	0.00	0.18	0.00	1.00
Patents	0.00	0.73	0.00	13.00
Citation-Weighted Patents	0.00	6.35	0.00	698.00
Publications	0.00	9.47	7.00	90.00
Highly-Cited Publications	0.00	4.65	3.00	71.00
Observations	1203			

Notes: This table displays summary statistics for all professors (*All Professors*), those professors who ever founded a company or had at least one patent (*Founder or Patent-holder Professors*), and those professors who ever founded a company (*Founder Professors*). The values displayed reflect the characteristics of the PIs by year.

Table A4: PhD Productivity during the PhD Program (OLS Results) - Nuances

<i>during PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
<i>Panel A: Interaction with Executive Position</i>				
ePI (=0/1)	0.0846 (0.108)	0.0500 (0.133)	-0.231*** (0.0777)	-0.257* (0.121)
ePI (=1) × executive=1	0.145 (0.318)	0.428 (0.578)	-0.125 (0.253)	-0.295 (0.268)
R-squared	0.275	0.276	0.411	0.383
<i>Panel B: Number of Years Student was Exposed</i>				
ePI (1 & 2 years)	0.241 (0.156)	0.340 (0.246)	-0.153 (0.105)	-0.147 (0.109)
ePI (3 & 4 years)	0.143 (0.0982)	0.140 (0.175)	-0.299** (0.137)	-0.467** (0.167)
ePI (5 or more years)	-0.204 (0.123)	-0.246 (0.202)	-0.490*** (0.161)	-0.602*** (0.171)
R-squared	0.283	0.280	0.411	0.385
Student Controls	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes
Prof FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2536	2536	2536	2536
Number of Professors	434	434	434	434

Notes: This table displays the results from estimating equation (2) including the interaction of *ePI* with professors having an executive position in the company they found (*Panel A*) and distinguishing by the number of years a student was exposed (*Panel B*). The test of joint significance reveals a *p*-value of 0.01. Standard errors are reported in parentheses and are clustered on the professor and year level. * *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01.

Table A5: PhD Productivity - Controlling for Potential Life Cycle Effects (OLS Results)

<i>during PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
<i>Panel A</i>				
ePI (=0/1)	-0.0232 (0.185)	-0.0309 (0.282)	-0.597** (0.235)	-0.585** (0.224)
R-squared	0.392	0.411	0.517	0.498
<i>Panel B</i>				
ePI (continuous)	-0.0710* (0.0352)	-0.0475 (0.0659)	-0.195*** (0.0422)	-0.181*** (0.0545)
R-squared	0.395	0.411	0.520	0.500
<i>Panel C</i>				
ePI (relative)	-0.487 (0.287)	-0.516 (0.482)	-0.952** (0.367)	-1.207*** (0.364)
R-squared	0.394	0.412	0.517	0.499
Student Controls	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes
Prof FE x Year	Yes	Yes	Yes	Yes
Observations	2536	2536	2536	2536
Number of Professors	434	434	434	434

Notes: This table displays the results from estimating equation (2), where I substitute professor and year fixed effects with professor dummies times year controls. *Student Controls* are those described in Table 2. Robust standard errors are reported in parentheses and are clustered on the advisor and year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: PhD Productivity - Using a Different Definition of Entrepreneurial Exposure (OLS Results)

<i>during PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
ePI (=0/1)	0.156 (0.102)	0.188 (0.160)	-0.232** (0.0858)	-0.271* (0.131)
Student Controls	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes
Prof FE x Year	Yes	Yes	Yes	Yes
R-squared	0.276	0.275	0.411	0.383
Observations	2536	2536	2536	2536
Number of Professors	434	434	434	434

Notes: This table displays the results from estimating equation (2), where I redefine ePI . In this model, ePI takes on the value one only if the student started the PhD at most 5 years after the professor's startup's founding date. Robust standard errors are reported in parentheses and are clustered on the advisor and year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: PhD Productivity - Controlling for Potential Tenure and Age Effects (OLS Results)

<i>during PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
<i>Panel A</i>				
ePI (=0/1)	0.107 (0.169)	0.195 (0.282)	-0.342* (0.164)	-0.531*** (0.163)
Full Professor	-0.00921 (0.0875)	-0.0308 (0.122)	0.0000554 (0.131)	0.107 (0.142)
Exposure (=0/1) × Full Professor	0.0251 (0.180)	-0.0431 (0.298)	0.116 (0.200)	0.274 (0.244)
R-squared	0.275	0.275	0.411	0.384
<i>Panel B</i>				
ePI (=0/1)	0.0903 (0.126)	0.162 (0.239)	-0.252** (0.106)	-0.421*** (0.122)
Age < 25 th	-0.136** (0.0548)	-0.246** (0.0851)	-0.0272 (0.130)	-0.0449 (0.146)
ePI (=0/1) × Age < 25 th	-0.00817 (0.148)	-0.0732 (0.280)	-0.121 (0.225)	-0.0484 (0.181)
Age > 75 th	0.0213 (0.0726)	0.0913 (0.0972)	-0.130 (0.161)	-0.102 (0.192)
ePI (=0/1) × Age Top > 75 th	0.102 (0.197)	-0.0488 (0.377)	0.0895 (0.160)	0.580** (0.217)
R-squared	0.277	0.277	0.411	0.384
Student Controls	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes
Prof FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2536	2536	2536	2536
Number of Professors	434	434	434	434

Notes: This table displays the results from estimating equation (2) and including different controls to capture potential tenure or age-related effects. In *Panel A*, I interact an indicator equal to one if the professor was tenured at the time of starting a company. *Student Controls* are those described in Table 2. In *Panel B*, I include two age indicators and their interaction with entrepreneurial engagement. The 25th age percentile corresponds to an age of 40 or younger at founding and the 75th corresponds to an age of over 52 at founding. Standard errors are reported in parentheses and are clustered on the professor and year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: What predicts PhD Student Outcomes?

<i>during PhD (in log)</i>	Patents		Publications	
	amount (1)	cit.-weighted (2)	amount (3)	highly-cited (4)
Verbal GRE	-0.00238 (0.00164)	-0.00432* (0.00222)	-0.00132 (0.00262)	-0.00369 (0.00354)
Quant. GRE	0.00802*** (0.00221)	0.00724 (0.00456)	0.0259*** (0.00530)	0.0168*** (0.00516)
Prev. GPA	0.0445 (0.0297)	0.0462 (0.0449)	0.198* (0.0968)	0.0734 (0.0921)
Prev. Job Experience	0.0756** (0.0279)	0.125*** (0.0395)	-0.0126 (0.0744)	-0.00593 (0.0788)
Publications Pre-PhD	0.168*** (0.0331)	0.240*** (0.0484)	1.272*** (0.0459)	1.141*** (0.0683)
Prev. Degree from Top Univ.	0.0483 (0.0580)	0.142 (0.105)	0.158 (0.100)	0.131 (0.112)
Master's Degree	-0.0409 (0.0422)	-0.0621 (0.0532)	-0.0792 (0.0530)	-0.0325 (0.0523)
Omitted Major: Algorithms, Combinatorics, and Optimization (ACO)				
Aerospace Engineering (AE)	0.00949 (0.127)	0.106 (0.0772)	-0.272 (0.319)	-0.372 (0.298)
Bioinformatics (BINF)	-0.0464 (0.116)	0.157* (0.0872)	0.0395 (0.297)	-0.395 (0.610)
Bioengineering (BIOE)	0.0563 (0.127)	0.174 (0.102)	-0.432 (0.335)	-0.566* (0.321)
Biology (BIOL)	-0.0328 (0.137)	-0.00532 (0.0932)	-0.613 (0.386)	-0.642* (0.334)
Biomedical Engineering (BMED)	0.156 (0.103)	0.316*** (0.0883)	-0.762** (0.298)	-0.596* (0.289)
Biomedical Engineering - Joint with Med. School (BMEJ)	-0.0185 (0.118)	0.157* (0.0809)	-0.0178 (0.583)	0.283 (0.505)
Computer Engineering (CE)	-0.00641 (0.115)	0.148* (0.0753)	-0.558* (0.300)	-0.501 (0.291)
Chemical Engineering (CHE)	0.125 (0.124)	0.223** (0.0822)	0.00683 (0.300)	-0.244 (0.310)
Chemistry (CHEM)	0.0793 (0.125)	0.139** (0.0503)	-0.0622 (0.331)	-0.180 (0.298)
Computer Science (CS)	0.458*** (0.107)	0.763*** (0.0958)	0.251 (0.321)	0.215 (0.266)
Computational Science and Engineering (CSE)	0.103 (0.177)	0.412* (0.214)	-0.0765 (0.488)	0.0161 (0.545)
Electrical and Computer Engineering (ECE)	0.372*** (0.104)	0.604*** (0.0999)	0.549* (0.300)	0.453 (0.299)
Environmental Engineering (ENVE)	-0.0593 (0.117)	0.0435 (0.0676)	-0.485 (0.395)	-0.441 (0.369)
Human-Centered Computing (HCC)	-0.0127 (0.117)	0.351* (0.176)	0.498 (0.412)	0.403 (0.427)
Industrial Engineering (IE)	-0.110 (0.141)	0.0251 (0.159)	-1.688*** (0.276)	-1.225*** (0.347)
Mechanical Engineering (ME)	0.0985 (0.125)	0.231*** (0.0752)	0.00949 (0.306)	-0.0349 (0.269)
Materials Science and Engineering (MSE)	0.322** (0.124)	0.438*** (0.0997)	0.291 (0.291)	0.173 (0.245)
Nuclear Engineering (NE)	-0.0901 (0.102)	0.161 (0.133)	-0.158 (0.396)	-0.383 (0.279)
Nuclear and Radiological Engineering (NRE)	0.0421 (0.143)	0.467 (0.301)	-0.0160 (0.358)	-0.640* (0.304)
Paper Science and Engineering (PSE)	-0.0793 (0.114)	0.0326 (0.0781)	-0.282 (0.369)	-0.974*** (0.323)
Polymer, Textile and Fiber Engineering (PTFE)	-0.0624 (0.112)	0.116 (0.0705)	0.283 (0.292)	0.222 (0.464)
Robotics (ROBO)	0.0234 (0.172)	0.0391 (0.0656)	0.375 (0.301)	0.398 (0.292)
Textile Engineering (TE)	0.101 (0.148)	0.276 (0.231)	-0.386 (0.335)	-0.536 (0.334)
Observations	2649	2649	2649	2649
R-squared	0.0788	0.0700	0.257	0.205
Fixed Effects	year	year	year	year

Notes: This table displays the results from estimating what student characteristics predict the amount of patents, citation-weighted patents, publications and highly-cited publications a student produces within five years from starting the PhD. Standard errors are reported in parentheses, and are clustered on the year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Interaction of Student Quality Indicators with Professors' Prior Founding Experience

	$1(\text{Match}_{s,p,d})$
Founder x HQ College	0.00745 (0.00573)
Founder x Prev.GPA (log)	-0.000549 (0.0193)
Founder x GRE Quant (log)	0.00304 (0.0266)
Founder x GRE Verb (log)	-0.00330 (0.0268)
Founder x St.US	-0.00529** (0.00209)
Founder x Prev. Job Exp.	0.00262 (0.00394)
Student FE	Yes
Prof FE	Yes
Observations	330469
R-squared	0.0316

Notes: This table displays the interaction coefficients between a professor having founded in the five years prior to a student's entry and student quality indicators. The characteristics we examine are the quality of a student's previous degree-granting institution, previous GPAs, GRE Scores, US citizenship, and previous work experience as proxies for incoming students' quality and characteristics. The model used includes both student and professor fixed effects. Standard errors are reported in parentheses and are clustered on the professor level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Heterogeneity in PhD Productivity during the PhD Program (OLS Results)

<i>during PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
<i>Panel A: Interaction with Undergraduate Degree from Home Institution</i>				
ePI	0.130 (0.109)	0.184 (0.168)	-0.252*** (0.0774)	-0.319** (0.109)
Undergrad. from Home Inst.	0.0563 (0.0570)	0.184* (0.0878)	0.0763 (0.0923)	0.0459 (0.0707)
ePI × Undergrad. from Home Inst.	-0.0442 (0.0804)	-0.120 (0.0967)	-0.0943 (0.294)	-0.172 (0.337)
R-squared	0.275	0.277	0.411	0.383
<i>Panel B: Interaction with incoming GPA >75th</i>				
ePI	0.0878 (0.107)	0.121 (0.159)	-0.312*** (0.0746)	-0.344*** (0.0950)
Previous GPA >75 th	-0.0536 (0.0368)	-0.0647 (0.0609)	0.0703 (0.0941)	0.0959 (0.109)
ePI × Previous GPA >75 th	0.130 (0.128)	0.156 (0.186)	0.165* (0.0839)	0.0217 (0.176)
R-squared	0.276	0.275	0.411	0.384
<i>Panel C: Interaction with Student Nationality EU</i>				
ePI	0.120 (0.107)	0.158 (0.169)	-0.266*** (0.0600)	-0.332*** (0.0903)
EU	-0.100 (0.0915)	-0.300** (0.102)	0.0845 (0.231)	0.213 (0.229)
ePI × EU	0.0155 (0.630)	-0.356 (0.513)	0.438* (0.244)	0.268 (0.369)
R-squared	0.275	0.276	0.411	0.384
Student Controls	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes
Prof FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2536	2536	2536	2536
Number of Professors	434	434	434	434

Notes: This table displays the results from estimating equation (2) and including interaction terms with an indicator equal one if a student ever worked for an entrepreneurial PI during the PhD and having received the undergraduate degree at the home institution (*Undergrad. from Home Inst.*; *Panel A*) and an interaction with having a incoming GPA above or equal to 3.83, which represents the 75th percentile (*Panel B*). *Panel C* includes an interaction with students that have a European citizenship. Standard errors are reported in parentheses and are clustered on the professor and year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Covariate Balance in Full and Matched Sample

	Exposed		Not Exposed		Absolute difference of means
	Mean	S.D	Mean	S.D	
<i>Panel A: Full Sample</i>					
CEM Controls					
Prof. Age (8 bins)	4.64	2.30	4.31	2.31	-0.33**
Prof. Previous 5y Patent or not	0.71	0.45	0.40	0.49	-0.32***
Prof. Previous 5y Publications (quintiles)	3.77	1.31	2.81	1.40	-0.95***
Prof.'s Students Previous 5y Publ. (av. terciles)	2.05	0.80	1.97	0.83	-0.08
Full Prof.	0.67	0.47	0.49	0.50	-0.17***
Start-year	2007.57	3.30	2005.95	3.81	-1.63***
Student Characteristics					
Female	0.22	0.42	0.24	0.42	0.01
Asian	0.56	0.50	0.49	0.50	-0.07**
Black	0.03	0.16	0.05	0.21	0.02*
Hispanic	0.03	0.17	0.02	0.15	-0.01
Two or More	0.02	0.13	0.01	0.10	-0.01
White	0.36	0.48	0.42	0.49	0.06*
US Citizen	0.39	0.49	0.43	0.50	0.04
Prev. GPA	3.62	0.30	3.59	0.32	-0.03*
Verbal GRE	155.07	8.86	154.11	9.03	-0.97*
Quant. GRE	163.05	3.92	161.63	4.87	-1.42***
Student Previous Publication Record	0.28	0.45	0.26	0.44	-0.02
Observations	406		2447		
<i>Panel B: Matched Sample</i>					
CEM Controls					
Prof. Age (8 bins)	4.46	2.55	4.65	2.64	0.20
Prof. Previous 5y Patent or not	0.66	0.48	0.64	0.48	-0.02
Prof. Previous 5y Publications (quintiles)	3.63	1.50	3.49	1.45	-0.14
Prof.'s Students Previous 5y Publ. (av. terciles)	1.95	0.75	2.12	0.85	0.17
Full Prof.	0.61	0.49	0.61	0.49	-0.00
Start-year	2006.38	3.28	2005.83	3.80	-0.55
Student Characteristics					
Female	0.19	0.39	0.15	0.36	-0.04
Asian	0.59	0.49	0.61	0.49	0.01
Black	0.03	0.16	0.02	0.15	-0.00
Hispanic	0.03	0.16	0.01	0.11	-0.01
Two or More	0.00	0.00	0.00	0.00	0.00
White	0.35	0.48	0.36	0.48	0.01
US Citizen	0.41	0.49	0.44	0.50	0.03
Prev. GPA	3.63	0.32	3.55	0.32	-0.08
Verbal GRE	155.33	7.71	155.43	8.35	0.10
Quant. GRE	163.08	4.01	163.10	4.17	0.03
Student Previous Publication Record	0.27	0.44	0.24	0.43	-0.03
Observations	79		89		

Notes: This table displays the mean differences between the sample of students who were exposed vs. not exposed to an entrepreneurial advisor. *Panel A* reports the summary statistics before weighting and *Panel B* reports the summary statistics after weighting. The variables under *CEM Controls* are those used to match individuals.

Table A12: What predicts having an entrepreneurial advisor? Extended

	Professor was a founder					
	All		Undergraduate at			
	During PhD	Pre-Entry (5y)	Home Institution Only		At Other Institution	
			During PhD	Pre-Entry (5y)	During PhD	Pre-Entry (5y)
(1)	(2)	(3)	(4)	(5)	(6)	
Both US Citizens	-0.00550 (0.0375)	-0.00528 (0.0165)	0.0879* (0.0493)	0.0697* (0.0391)	-0.0210 (0.0364)	-0.0138 (0.0174)
Same Ethnicity	0.00374 (0.0184)	0.0175* (0.00890)	0.0174 (0.0779)	-0.0218 (0.0156)	0.00391 (0.0211)	0.0214** (0.00942)
Same Gender	0.0275 (0.0244)	0.0201* (0.0113)	0.0138 (0.0605)	-0.0306* (0.0165)	0.0333 (0.0266)	0.0268* (0.0134)
Both Degr. from Top-Tier Univ.	0.0262 (0.0237)	-0.0125 (0.0158)	0.130** (0.0554)	0.0293* (0.0158)	0.0126 (0.0220)	-0.0200 (0.0162)
Gender	-0.0341 (0.0329)	-0.0234** (0.0107)	-0.0774 (0.0762)	-0.0500 (0.0536)	-0.0374 (0.0346)	-0.0229** (0.0104)
White	-0.0549 (0.0539)	-0.0115 (0.0234)	-0.0669 (0.137)	-0.0217 (0.0978)	-0.0510 (0.0623)	-0.00775 (0.0273)
Asian	-0.0526 (0.0538)	0.00738 (0.0285)	-0.0287 (0.0981)	-0.0569 (0.0450)	-0.0573 (0.0642)	0.0144 (0.0323)
Black	-0.0873 (0.0515)	-0.0226 (0.0173)	-0.123 (0.144)	-0.103 (0.0984)	-0.0867 (0.0589)	-0.0205 (0.0222)
Student US citizen	-0.0102 (0.0289)	0.00741 (0.0124)	-0.106 (0.0800)	-0.106 (0.0778)	0.00783 (0.0264)	0.0233 (0.0195)
Verbal GRE	0.000557 (0.000903)	-0.000375 (0.000764)	0.00134 (0.00250)	-0.00182 (0.00187)	0.000499 (0.000822)	-0.000189 (0.000753)
Quant. GRE	0.00306 (0.00194)	-0.000177 (0.00171)	0.00339 (0.00417)	0.000246 (0.00172)	0.00290 (0.00209)	-0.000485 (0.00210)
Prev. GPA	0.00248 (0.0287)	0.0110 (0.0161)	0.194*** (0.0475)	0.0747 (0.0548)	-0.0193 (0.0307)	0.00492 (0.0174)
Master's Degree	-0.0255 (0.0197)	-0.0120 (0.00974)	-0.0141 (0.0455)	0.0238 (0.0229)	-0.0179 (0.0196)	-0.0130 (0.0101)
Degree from Top-Tier Univ.	0.0391 (0.0521)	0.0269 (0.0279)			0.0330 (0.0475)	0.0248 (0.0296)
Prev. Job Experience	0.0108 (0.0159)	-0.00359 (0.00943)	0.0179 (0.0418)	0.0305 (0.0220)	0.0114 (0.0196)	-0.00755 (0.0116)
Pre-PhD Publication Record	0.00419 (0.0141)	0.0147* (0.00752)	-0.0121 (0.0246)	-0.0260 (0.0302)	0.00892 (0.0171)	0.0219** (0.0101)
Observations	2648	2648	329	329	2318	2318
R-squared	0.0919	0.0523	0.216	0.176	0.0943	0.0581

Notes: This table displays the OLS results from estimating the likelihood who a student has a PI that was a founder during the student's PhD program (*During PhD*) and a PI who was a founder in the five years prior to the student's entry (*5y Pre-Entry*). I include the following homophily measures, all of which equal to one if student and advisor align are the same: *Both US Citizens*, *Same Gender*, *Same Ethnicity*, *Both Degr. from Top-Tier Univ.*. The variable *Gender* equals to one if the student is male, *Ethnicity* is equal one if the student is white, and *US Citizen* indicates whether a student is a US citizen or not. I further control for a student's score on the different sections of the GRE test and a student's incoming GPA score (*Previous GPA*). *Master's Degree* equals one if the student completed a master's degree prior to enrolling in the PhD, and *Degree from Top-Tier Univ.* equals one if the student's prior degree was attained at a top-tier university. *Prev. Job Experience* equals one if a student had a job prior to starting the PhD, and *Publications Pre-PhD* equals one if the students ever published prior to joining the PhD program. Columns 1-2 are for all students, columns 3-4 are restricted to those students who received their undergraduate degree at the PhD granting institution, and columns 5-6 are restricted to those students who received their undergraduate degree at any other institution than the PhD granting one. I include department, major, and year fixed effects. Standard errors are reported in parentheses and are clustered on the major and year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: PhD Productivity - Panel with Student FE (OLS Results)

<i>in a given year of the PhD (in log)</i>	Patents		Publications	
	amount	cit.-weighted	amount	highly-cited
	(1)	(2)	(3)	(4)
ePI-Post x $\tau_{s,t}$	0.00295 (0.00691)	-0.00327 (0.0169)	-0.0708*** (0.0164)	-0.0348*** (0.0117)
ePI-Post & $\tau_{s,t}$	Yes	Yes	Yes	Yes
Student FE	Yes	Yes	Yes	Yes
Prof FE x Year	Yes	Yes	Yes	Yes
Mean of DV	0.03	0.05	0.50	0.26
Observations	16963	16964	16964	16964
R-squared	0.0856	0.0695	0.259	0.178

Notes: This table displays the results from estimating student outcomes at the student-year level. The coefficient of interest is *ePI-Post* x $\tau_{s,t}$. The variable *ePI-Post* equals one if the student had an entrepreneurial advisor in a given year of the PhD program and $\tau_{s,t}$ measures a student's time in the program. I further include professor fixed effects and time year trends. Robust standard errors are clustered on the student level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A14: Potential Mechanisms

Mechanism	Predictions	Measurement
I. Where Research and Entrepreneurship meet - Influence on Research Orientation		
<i>Commercial</i>	As their advisors become engaged in entrepreneurship, students may adopt more commercially oriented research attitudes from them. This may entail a relative shift to patenting activity and a focus on research related to the advisor's entrepreneurial venture. Further, this could entail changes to the type of research students engage in with possible shifts in more applied research. Possible shifts in research orientation are likely to differ depending on students' non-academic outside options. Note that, given complementarities arising between commercially and academically oriented research efforts, we may also observe students producing more valuable research.	a) The ratio of commercially oriented output to scientific output measured by patents/publications; b) the overlap of a student's dissertation topic with the advisor's startup; c) The average impact factor of students' publications; d) the number of citations students' publications receive; e) the type of publications students produce; f) differences by US citizenship.
<i>Academic</i>	As their advisors become engaged in entrepreneurship, students may adopt less academically oriented research attitudes. This may entail a drop in the amount of research they produce in total, that is highly valued by the scientific community, and is more basic in nature. As with commercial orientation, shifts are likely to differ depending on how flexible students are to do so.	a) The average impact factor of students' publications; b) the number of citations students' publications receive; c) the type of publications students produce; d) differences by US citizenship.
II. Where Education and Entrepreneurship meet - Engagement in Student Development		
<i>Training</i>	Typically, students are trained on the job by their advisors in an apprenticeship-like manner to become independent researchers. As PIs become engaged in entrepreneurship, their focus may shift away from providing "hands-on" training to the students they supervise. There are likely to be differences depending on how directive the PI's role is for PhD training in a field, and those students requiring less training, will experience a relatively smaller change.	a) The number of publications a student co-authors with their advisor (<i>apprenticeship</i>); b) the number of first-authored publications a student produces (<i>independence</i>); c) differences by field (life/basic sciences vs. engineering); difference by incoming GRE score (and/or GPA).
<i>Mentorship</i>	Given the additional task of starting a company, as advisors transition into entrepreneurship, they may reduce the amount of mentorship they provide to students.	Exit survey responses which provide students' evaluations of their advisors. This survey includes dimensions such as, advisor availability, level of feedback and career support.

Table A15: Mentoring

	<i>Exit Survey Responses</i>					
	Mentoring Score (=5)				Would ... (=5)	
	Overall (1)	Availability (2)	Constructive Feedback (3)	Career Support (4)	Still Choose University (5)	Recommend Program (6)
Unit of Analysis: Student						
ePI (continuous)	-0.0634** (0.0176)	-0.0479** (0.0171)	-0.0545** (0.0190)	-0.0576** (0.0160)	-0.0346* (0.0157)	-0.0391* (0.0180)
Student Controls	Yes	Yes	Yes	Yes	Yes	Yes
Major FE	Yes	Yes	Yes	Yes	Yes	Yes
Prof FE	Yes	Yes	Yes	Yes	Yes	Yes
Grad-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1020	1020	1020	1020	1020	1020
R-squared	0.470	0.495	0.472	0.439	0.380	0.402
Number of Professors	274	274	274	274	274	274

Notes: This table displays the relationship between advising quality of professors as a function of entrepreneurial engagement. I report the results obtained from the university's PhD exit survey (only available for the years 2012-2016). The outcomes in columns 1-4 are equal to one if students gave their advisor a top score (5 out of 5). The dependent variable in columns 5 and 6 are responses to the questions whether students would still choose the university if they had to go to graduate school again, and whether they would recommend the program to someone wishing to pursue graduate school. In this model, *ePI* is only counted if the student started the PhD at most 5 years after the professor's startup's founding date. Standard errors are reported in parentheses and clustered on the graduation year level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.