

Tracking Matriculation, Attrition, and Time to Degree in Economics Ph.D. Programs

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**Mountains
& Minds**

Background

- Post-1996:
- ↓ economics Ph.D. students in the pipeline
- ↑ economics faculty reaching retirement age
- »» growing scarcity of new Ph.D. economists
 - evidenced by stark ↑ starting salaries
 - (with resulting compression issues)
- Are Supply Responses Likely?

Background

- My work in this area:
 - Studies of:
 - Labor market outcomes:
 - Employment, salary, job conditions
 - Matriculation
 - Attrition
 - Time to degree

Research Questions

1. Matriculation

Why do potential economists not enroll in Ph.D. programs in economics?

What do they do instead?

Research Questions

2. Attrition/Retention

How many dropout?

Why? When? Can it be predicted?

Research Questions

3. Time To Degree

Why do some take longer?

Time spent at each stage of process?

Which characteristics affect time-to-degree?

Research Goals

Examine program, applicant, enrollee, dropout, & time-to-degree characteristics in economics Ph.D. programs

- Representative by quality tier
- Capture large share of Ph.D. production
- Manageable number for long-term study

Research Design

Data

- Program characteristics (P-baseline)
- Applicant characteristics (P-baseline)
- Enrollee characteristics (P-baseline)
- Enrollee progress (P-yearly)
- Dropout surveys (S-yearly)
- Completer surveys (S-yearly)

P = program survey; S = student survey

Research Design

Considerations

- Data availability
 - Program Cooperation
 - Survey Response Rates
 - Is Nonresponse Bias Measurable?
- Comparison Groups and Comparable Data
 - Nonmatriculants v. Matriculants
 - Dropouts v. Continuing Students
 - Fast Completers v. Slower Completers



Matriculation:

Getting Students to Enroll

What is underlying population?

- Undergraduate Majors?
 - Too numerous and broad
- All Ph.D. program applicants?
 - Qualifications
 - Recordkeeping by programs
- Our focus: All accepted applicants to Ph.D. programs

Matriculation:

Getting Students to Enroll

- Findings:
 - Among those accepted, VERY few do not enroll (<12%)
 - Good news: few numerical losses after admission
 - Challenge: interest more top undergraduate majors in applying to Ph.D. programs

Attrition/Retention

- How many dropout?
- Why? When? Can it be predicted?

Attrition/Retention

- Estimate dropout rates
 - 586 entering students of 27 Ph.D. programs
 - » 77 drops by start of 2nd year
 - » 78 more drops by start of 3rd year
 - » ≈ 26% dropout in first 2 years
- Relate student & program characteristics to attrition
- Assess reasons for dropout

Attrition/Retention

Data

- Program Characteristics
 - From DGS at 27 Ph.D. programs
- Student Characteristics
 - Baseline Data from Ph.D. programs
- Annual Follow-up with Ph.D. programs

Attrition/Retention

Data

- Student Characteristics
- Baseline Data from Ph.D. programs
- Annual Follow-up with Ph.D. programs

Attrition/Retention

Table 1 - Ph.D. Program Characteristics and Attrition Rates by Program Rank

	<i>Program Rank</i>					<i>Full sample</i>	<i>Two-year attrition rate by row variable^d</i>	
	<i>1-6</i>	<i>7-15</i>	<i>16-30</i>	<i>31-48</i>	<i>>48</i>		<i>1</i>	<i>0</i>
	Number of programs	3	6	7	6		5	27
Number of students	103	149	142	128	64	586	-	-
Number of dropouts	15	27	42	50	21	155	-	-
First-year attrition rate	0.04^c	0.13	0.07	0.23	0.23	0.13	-	-
Second-year attrition rate ^a	0.11	0.06	0.24	0.20	0.13	0.15	-	-
Two-year attrition rate	0.15	0.18	0.30	0.39	0.33	0.26	-	-
First-year class size (# of students)	37	27	22	25	18	26	0.29	0.23
Faculty-student ratio	0.20	0.29	0.29	0.26	0.32	0.27	0.30	0.23
Private university ^b	1.00	0.25	0.36	0.20	0.55	0.43	0.20	0.31
Terminal master's degree offered ^b	0.00	0.14	0.17	0.16	0.41	0.16	0.29	0.26
Seminar attendance required ^b	0.23	0.58	0.45	0.84	0.89	0.58	0.29	0.23
Core exam pass required ^b	0.77	0.62	0.58	0.73	0.38	0.63	0.27	0.26
Shared offices available ^b	0.54	1.00	0.83	1.00	0.45	0.82	0.26	0.30
Individual advisers assigned ^b	0.31	0.52	0.35	0.21	0.00	0.32	0.25	0.27

Attrition/Retention

Table 2 - Student Characteristics by Ph.D. Program Rank

	Program Rank					Full sample	Two-year attrition rate by row variable ^d	
	1-6	7-15	16-30	31-48	>48		1	0
	Number of students	103	149	142	128		64	586
GRE analytical score	752^c	737	716	713	667	722	0.22	0.33
GRE verbal score	575	547	573	577	517	562	0.22	0.32
GRE quantitative score	785	782	765	771	738	772	0.20	0.39
U.S. Citizen ^a	0.32	0.26	0.39	0.34	0.38	0.33	0.30	0.25
Male ^a	0.72	0.66	0.67	0.58	0.67	0.66	0.25	0.29
Median age at entry to program	24.6	24.7	24.6	25.0	26.5	24.8	0.28	0.26
Hold prior graduate degree ^a	0.38	0.48	0.44	0.47	0.58	0.46	0.25	0.28
Hold undergraduate degree in economics ^a	0.73	0.69	0.78	0.65	0.58	0.70	0.26	0.27
Hold undergraduate degree in economics/math ^a	0.10	0.08	0.04	0.05	0.00	0.06	0.17	0.27
Hold undergraduate degree in math ^a	0.08	0.03	0.01	0.02	0.03	0.03	0.16	0.27
Median years since undergraduate degree	1.3	2.3	2.2	2.3	3.2	2.3	0.27	0.26

Attrition/Retention

Table 2 - Student Characteristics by Ph.D. Program Rank

	<i>Program Rank</i>					<i>Full sample</i>	<i>Two-year attrition rate by row variable^d</i>	
	<i>1-6</i>	<i>7-15</i>	<i>16-30</i>	<i>31-48</i>	<i>>48</i>		<i>1</i>	<i>0</i>
Number of students	103	149	142	128	64	586	-	-
Type of Undergraduate Institution Attended^b								
U.S. economics Ph.D.-granting ^a	0.33	0.21	0.24	0.21	0.25	0.24	0.26	0.29
U.S. top-50 liberal arts ^a	0.08	0.05	0.07	0.05	0.02	0.06	0.21	0.27
Other U.S. public ^a	0.02	0.01	0.06	0.09	0.08	0.05	0.50	0.25
Other U.S. private ^a	0.00	0.03	0.04	0.03	0.08	0.03	0.28	0.26
Top-50 foreign ^a	0.13	0.04	0.02	0.02	0.02	0.04	0.12	0.27
Other foreign ^a	0.45	0.66	0.57	0.59	0.56	0.58	0.25	0.29
Type of Financial Aid During First Year of Study								
Fellowship ^a	0.93	0.56	0.34	0.27	0.22	0.47	0.24	0.30
Research assistantship ^a	0.00	0.01	0.06	0.16	0.02	0.05	0.17	0.27
Teaching assistantship ^a	0.00	0.23	0.40	0.42	0.31	0.28	0.28	0.26
No aid ^a	0.07	0.21	0.20	0.15	0.45	0.20	0.36	0.24

Attrition/Retention

Regression Analysis

- Probability of Dropout Lower:
 - Among students at top tier and lower programs (v. middle tiers)
 - At programs that assign shared offices to students on financial aid (integration)
 - Among those with higher verbal and quantitative GRE scores
 - Among those with research assistantships

Attrition/Retention

Data

- Dropout Characteristics
- Surveys
 - DGS (as part of yearly follow-up)
 - Dropouts
 - Response Rates:
 - 26/77 first-year (34%)
 - 31/78 second-year (40%)

Attrition/Retention

Survey Focus

- Why did they drop out?
 - Preparation
 - Program
 - Personal
- What are they doing now?
 - Other Ph.D. program
 - Other educational path
 - Other activities

Attrition/Retention

Why did they drop out?

- Unsatisfactory academic progress (59%)
 - "insufficient mathematical preparation"
 - "difficulty mastering economic theory"
- Personal and family reasons (12%)
- Lost interest in graduate study (10%)

Attrition/Retention

What are they doing now?

- Transferred to other economics Ph.D. program $\approx 1/3$
- Other Education (M.A., Ph.D. other field) $\approx 1/4$
- Other Career $\approx 1/4$
- Unknown $\approx 1/6$

Time To Degree

- Why do some take longer than others?
- How much time is spent at each stage of the process?
- What characteristics affect time-to-degree?

Time To Degree

Data Approaches

- Follow Enrollees through programs
 - time and cost issue:
 - median TTD in economics is 5.5 years
 - ranges to >25 years
- Survey Class of Completers

Time To Degree

Data

- Survey of completers
- Issues:
 - Identifying population of completers
 - Finding them
 - Survey responses

Time To Degree

Other Issues

- Defining time to degree
 - Time since enrollment
 - Time since undergrad
 - Time in residence
 - Graduation date
 - Defense date

Time To Degree

- Defining Other important times in process:
 - Course Work Completion
 - Qualifying Examinations
 - ABD
 - Dissertation Writing
 - Inconsistent across programs

Conclusion

- Examining matriculation, attrition & time-to-degree involves:
 - Substantial data collection efforts
 - Long term planning

Conclusion

- Formulate specific goals:
- What information do you think you need and why
- What information can you reasonably obtain
- Program/DGS cooperation essential