



Relating Socioeconomic Status to Enrollment Flows and College Success

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- Use BPS:96/01 data = national sample
- Detailed personal characteristics
- Detailed academic background/ability
- 6 Year outcome measure

- 3 Possible papers

Plan

- Motivation
- Brief literature review & theory component
- Data
- Paper 1: MNL model of 6 year outcome
- Paper 2: Simultaneous modeling of outcome and summary behavior measures
- Paper 3: Hazard model of progress towards a degree

Motivation

- Historical policy emphasis on equal access to higher education by
 - Race/ethnicity
 - Income
 - First generation college students
- Research on first year persistence
- Increasing concern/focus on completion/success
 - Costs accrue to enrollment
 - Benefits accrue primarily upon completion

Literature

- Race: Kane (1994); Hu, St. John (2001)
- Ethnicity: Swail, Cabrera, Lee (2004)
- First generation college students: Ishitani (2003, 2006)
- Income: Paulsen, St. John (2002); Titus (2006); Manski & Wise (1983)

- Much overlap between these groups

Theoretical Framework

- Pursue degree if NPV of benefits exceeds NPV of costs
 - Becker (1964), Tinto (1975), Bean (1980)
- Paths may vary based on personal characteristics
- Paths may change with new information (Altonji 1993)
 - Grades
 - Household responsibilities
 - Economic conditions

Data

- 1996/2001 Beginning Postsecondary Survey
- National sample of those beginning in 1995-96 academic year.
- Restrict sample to those
 - Who are followed through 2001
 - Who initially attend 4 year institutions
 - Who are < age 23
- Sample of 5800-5900 students

Socioeconomic Status

- Race: African American
- Ethnicity: Hispanic
- Parental Education: First Generation
- Income: Independent & lowest quartile

Other Covariates I

- Academic background/ability:
 - Standardized test scores
 - High school GPA
 - High school program of study
 - Diploma receipt
- Demographics:
 - Gender
 - Age
 - Marital status
 - Parental status

Other Covariates II

- Institutional Characteristics:
 - Public/Private
 - Size
 - Selectivity
 - Growth
- Financial Aid Type (1st year)
- Unemployment rate in state of residence

Outcomes

- Degree receipt
- Lots of information on the path.

Paper #1: MNL Model of 6 year Outcome

- Substantial literature on degree attainment: 0/1 measure (Kuh et al 2006)

Six Year Outcomes (%)

		<u>Graduate</u>		
Full Sample		63.2		
White		65.6		
Black		44.6		
Hispanic		53.9		
Income:	Lowest 25%	50.8		
	Middle 50%	62.2		
	Highest 25%	75.8		
Parental Education:	High school	49.8		
	College	69.3		
	Post-graduate	77.0		
# of Observations: 5823				

Paper #1: MNL Model of 6 year Outcome

- Substantial literature on degree attainment: 0/1 measure (Kuh et al 2006)
 - Literature on 1st year persistence recognizes heterogeneity amongst non-persisters:
 - Stratton, O'Toole, Wetzel (2008) find stop out and drop out are distinct outcomes.
- Of those who have not graduated in 6 years, what % are still enrolled?

Six Year Outcome Probabilities

		<u>Graduate</u>	<u>Enrolled</u>	<u>Not Enrolled</u>
Full Sample		63.2	13.4	23.4
White		65.6		
Black		44.6		
Hispanic		53.9		
Income:	Lowest 25%	50.8		
	Middle 50%	62.2		
	Highest 25%	75.8		
Parental Education:	High school	49.8		
	College	69.3		
	Post-graduate	77.0		
# of Observations: 5823				

Six Year Outcome Probabilities

		<u>Graduate</u>	<u>Enrolled</u>	<u>Not Enrolled</u>
Full Sample		63.2	13.4	23.4
White		65.6	<p>36% who have not graduated by Spring 2001 are still enrolled!!!</p> <p>40% enrolled in 2000/2001 year.</p>	
Black		44.6		
Hispanic		53.9		
Income:	Lowest 25%	50.8		
	Middle 50%	62.2		
	Highest 25%	75.8		
Parental Education:	High school	49.8		
	College	69.3		
	Post-graduate	77.0		
# of Observations:	5823			

Six Year Outcome Probabilities

		<u>Graduate</u>	<u>Enrolled</u>	<u>Not Enrolled</u>
Full Sample		63.2	13.4	23.4
White		65.6	12.3	22.1
Black		44.6	18.8	36.5
Hispanic		53.9	20.0	26.1
Income:	Lowest 25%	50.8	17.4	31.7
	Middle 50%	62.2	13.4	24.5
	Highest 25%	75.8	9.9	14.3
Parental Education:	High school	49.8	16.6	33.6
	College	69.3	12.5	18.2
	Post-graduate	77.0	10.4	12.6
# of Observations: 5823				

Six Year Outcome Probabilities

		<u>Graduate</u>	<u>Enrolled</u>	<u>Not Enrolled</u>
Full Sample		63.2	13.4	23.4
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	Post-graduate	77.0	10.4	12.6
# of Observations: 5823				

Model

- Estimate Logit and MNL models of 6 year outcome.
- Those still enrolled differ in significant ways as compared to those no longer enrolled – treating all non-graduates the same is inappropriate.
- Most significant factor driving both graduation and persistence is academic preparation, not race/ethnicity or socio-economic background. (Adelman 2004)
- Socioeconomic status is significantly related to graduation.
- In addition, Hispanics and those from lower income households are significantly more likely to persist all else

Empirical Results

- Most significant factor driving both graduation and persistence is academic preparation, not race/ethnicity or socio-economic background. (Adelman 2004)
- Socioeconomic status is, however, still significantly related to graduation.
- In addition, Hispanics and those from lower income households are significantly more likely to still be enrolled all else equal.

Why?

- Lower income students may need to work, enroll less continuously.
- Hispanic students are more likely to enroll part-time.



Enrollment path differences may explain differences in time to degree

Paper #2

Simultaneously Modeling Outcome & Behavior

- Multiple equation model:
 - Part-Time Enrollment
 - Stop Out Behavior
 - End at Different Institution
 - Outcome: Graduation, Still Enrolled, Not Enrolled
- Covariates = all known when enter college

Paper #2

Simultaneously Modeling Outcome & Behavior

- PT enrollment, Stopout, Transfer Behavior:
 - **Not highly associated with socioeconomic indicators**
 - Strongest association is with lower high school GPA
 - Also associated with institution and financial aid type

Paper #2

Simultaneously Modeling Outcome & Behavior

- Outcome:
 - **Socioeconomic status is an important determinant**
 - High school GPA is important
 - Institution & financial aid type are important
- Residuals:
 - + correlation between behaviors and being still enrolled
 - - correlation between behaviors & graduation

Why look at this?

- Capture only yes/no on behaviors, not frequency or timing.
- Stop out only identified if return within 6 years.
- Can not include new information like
 - College grades
 - Marriage
 - Childbirth
 - Unemployment rate
- Benefits < Costs

Paper #3

A Discrete Time Hazard of the Enrollment Path

- Preliminary Results!!!
- Model initial PT/FT enrollment decision using predetermined covariates.
- Model transitions that follow:
 - FT & PT to FT, PT, NT, & graduation
 - NT to FT, PT, NT.
- Includes time varying covariates including past behavior

Results I

- Initial enrollment more likely part-time if
 - Older
 - Lower test scores
 - Lower high school GPA
 - Began in spring
 - Higher unemployment rate prior year
- Race, ethnicity, income, & parental education were not significant.

Results II Transitions from FT

- More likely to not enroll if are first generation, lower income, not 'other race'.
- More likely to graduate if are white, not first generation.
- High school & college GPAs are critical, not test scores
- Past behavior is important
- Unemployment rate (UR) is important
 - Higher UR makes transition to PT more likely
 - Higher UR makes graduation less likely

Results III Transitions from PT

- More likely to enroll FT if of 'other race', not Hispanic, not independent, not a first generation student.
- High school & college GPAs are critical
- Past behavior is important
- Unemployment rate (UR) is important
 - Higher UR makes transition to FT more likely
 - Higher UR makes graduation less likely

Results IV Transitions from NT

- More likely to enroll FT if not a first generation student.
- High school & college GPAs are important
- Past behavior is important
- Unemployment rate (UR) is important
 - Rising UR makes transition to PT more likely

Paper 3 Results Overview

- Socioeconomic indicators are important determinants of enrollment flow.
- High school & college GPAs are important.
- Past behavior is important.
- Unemployment rate (UR) is important.

Conclusions

- Persistence at the 6 year mark is important. Not all non-graduates are 'failures'.
- Socioeconomic status is not as critical as academic ability/background, but still plays a role.
- Much of that role plays out in pattern of enrollment, some in probability of graduating.
- Results also indicate role for economic conditions spurring increased enrollment for those possibly on the margin & influencing the timing of graduation.

Questions?

Paper #2

Simultaneously Modeling Outcome & Behavior

- Part-Time Enrollment more likely if:
 - **Independent of parents**
 - Lower high school GPA
 - Public Institution
 - No loan or grant aid first year

Paper #2

Simultaneously Modeling Outcome & Behavior

- Stop Out more likely if:
 - **Lower income**
 - Lower high school GPA
 - Public Institution
 - Not a selective institution
 - No grant aid first year

Paper #2

Simultaneously Modeling Outcome & Behavior

- More likely to end at another institution if:
 - **Parents do not have post-graduate degree**
 - Younger
 - Lower high school GPA
 - Not a selective institution (unless fit is poor)
 - Received loan aid first year

Paper #2

Simultaneously Modeling Outcome & Behavior

- More likely to not be enrolled vs graduate if:
 - African American
 - First generation college student
 - Lower Income
 - Low high school GPA
 - Less selective institution or public institution
 - Older or a parent
 - Received a loan, not a grant or work study aid

Paper #2

Simultaneously Modeling Outcome & Behavior

- More likely to still be enrolled vs graduate if:
 - **Hispanic**
 - **First generation college student**
 - Low high school GPA
 - A public institution
 - A parent
- Residuals:
 - + correlation between behaviors and being still enrolled
 - - correlation between behaviors & graduation