An Analysis of the Effects of State Financial Aid Policy on the Timing of Postsecondary Enrollment: A Focus on Income and Race Differences

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Jiyun Kim
University of Michigan
State governments have moved toward greater reliance on merit-based aid programs away from need-based aid.

Widening socioeconomic and racial gaps in college participation rates and limited effectiveness of financial aid policy among underrepresented student population.

This study focuses on whether and how state aid differentially affect students’ initial college enrollment and the types of institutions they attend depending on income and race/ethnicity.
Student responses to financial aid vary substantially by income and racial/ethnic backgrounds:

- Positive influences of need-based grants on enrollment decisions among low-income students (Perna & Titus, 2004; St. John et al., 2004)

- Disproportionate impact of merit aid on college attendance (esp. 4-yr) for whites and middle- to upper-income students (Cornwell, Mustard, & Sridhar, 2006; Dynarski, 2000; 2004)
Limitations of the Existing Literature

- Use of cross-sectional designs that fail to consider the longitudinal process of college enrollment
- Need for utilizing an appropriate longitudinal method to investigate the choice of students who enrolled in college at different time points
A Conceptual Framework

**Individual-level**

- Socio-demographic Factors
  - Gender, Race/Ethnicity
  - SES (family income, parental education)
  - Region of high school location
  - Distance to a nearest college

- Postsecondary Aspiration
- Financial Aid and Information
- Parental Expectation/Involvement
- Academic Preparation

**State-level**

- Financial Policy
  - State Need-based Aid
  - State Non Need-based Aid
  - Public Institutional Tuition
  - State Funding for Public Institutions

- Education and Economic Context
  - High school graduation rate
  - Higher education attainment rate
  - Per capita Income/Poverty rate
  - Unemployment rate

**Interaction**

- **Time/Duration**
  - High School Completion
  - College Enrollment & Destination

**Interaction**

- Postsecondary Aspiration
- Parental Expectation/Involvement
- Academic Preparation
- Financial Aid and Information

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Research Questions

- Do time-to-enrollment trajectories differ for high school graduates who are from different income and race/ethnic groups?

- Do state-level financial aid policies influence a student’s decision of whether, when, and where to enroll in college after completing high school?

- Does the effect of state aid on enrollment vary for students from different income and race/ethnic groups?
Methodology: Data

- Main data source: For student-level, National Education Longitudinal Study (NELS: 88/2000).

- Additional student-level data: Common Core of Data (CCD) and the National Postsecondary Student Aid Study (NPSAS: 93); to calculate distance to a nearest college (using zip code) & to impute expected amount of financial aid.


  - collected from sources including National Association of State Student Grant & Aid Programs (NASSGAP), Digest of Education Statistics, and Census.
Methodology: Variables

- **Outcome**: 1) Binary: whether or not a student who graduated high school in or after 1992 was enrolled in college
   2) Categorical measure that differentiates enrollment in terms of selectivity (Barron’s) and the type (not enrolled / 2-yr or less / 4-yr non-selective / 4-yr selective public / 4-yr selective private)

- **Student-level**: demographics, family backgrounds, HS academic preparation, expected financial aid (imputed), and FA information

- **State-level**: state need-based and non-need based aid, public tuition, state funding for public institutions (per FTE), per capita income, unemployment rate, public HS graduation rate, % poverty, % bachelor’s or higher degree

- Test *interactions* between race & state aid, income & state aid
Statistical Approach: Event History Modeling

- Event: transition from high school to college
- Time-to-event is measured discretely (by year): Discrete time event history modeling (using Binary/Multinominal logit regression)
- Hazard rate: conditional probability that a student experiences an event in each discrete time period $t$ (Singer & Willett, 1991).
- Will estimate how state FA policy affects the hazard of enrollment (controlling for other covariates)
Steps in the Data Analysis

- Descriptive and exploratory methods to estimate baseline hazard rates of college enrollment
- Estimate a discrete-time hazard model (binary and multinomial regressions) controlling for a set of covariates
- Graphical simulations to explore the differential FA impact on enrollment behavior by race and income in response to changes in state aid schemes
Findings: Time-to-enrollment Trajectories

Time-to-Enrollment Trajectories by Income

Low inc.

High inc.

Analysis Time in Year

Time-to-Enrollment Trajectories by Race

Black

White

Asian

Hispanic

Analysis Time in Year

Low inc.

Middle

High

White

Black

Hispanic

Asian
Changes in the Prob. of Enrollment Over Time: All Students

- **State Aid=$0**
  - **No Aid**
  - **2-yr college**

- **State Aid=avg**
  - **Avg. Aid**
  - **2-yr college**

The graphs show the probability of enrollment over time for different levels of state aid and types of college, with 2-year enrollment and 2-year college being the focus.
Prob. of Enrollment by Type of Institutions: African American

3-1. Blacks Low Income: No Aid

Low inc: No Aid

Non Comp

2-yr college

3-2. Blacks High Income: No Aid

High inc: No Aid

Private Comp

Pub Comp

3-3. Blacks Low Income: Middle Aid

Low inc: Avg. Aid

Non Comp

2-yr college

3-4. Blacks High Income: Middle Aid

High inc: Avg. Aid

Non Comp

2-yr college
Prob. of Enrollment by Type of Institutions: Hispanic

4-1. Hispanics Low Income: No Aid

Low inc: No Aid

Non Comp

2-yr college

4-2. Hispanics High Income: No Aid

High inc: No Aid

Non Comp

Pub Comp

2-yr college

4-3. Hispanics Low Income: Middle Aid

Low inc: Avg. Aid

2-yr college

4-4. Hispanics High Income: Middle Aid

High inc: Avg. Aid

Non Comp

Pub Comp

2-yr college
Discussions & Implications

- Increases in state aid only promoted the prob. of enrollment in two-year or non-competitive institutions, having no substantial effect on enrollment in competitive institutions.

- African Americans and Hispanics (even among upper-income students) still lagged behind in terms of attending selective colleges even when more state aid was available.

- FA policy implemented in isolation with other postsecondary encouragement programs (e.g., providing information or academic prep) may not close socioeconomic and racial gaps in attending selective colleges.

- Importance of comprehensive approach to expand equal access to competitive colleges