Simulation Models of The Effects of Race- and Socioeconomic-Based Affirmative Action Policies on Elite College Enrollment Patterns

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Prepared for SREE
Washington, DC
March, 2014

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Background

• Large race and income disparities in college enrollment according to college level and selectivity
• Race-based affirmative action has been used to ameliorate at least part of this disparity
• *Fisher* decision put pressure to show “that no workable race-neutral alternatives [to race-based affirmative action] would produce the educational benefits of diversity”
• “Percent Plans” have been tried in CA, FL, and TX, but have largely been unsuccessful at achieving desired racial diversity
• Class-/income-based affirmative action has been suggested as another possible alternative
Goal

To develop rigorous intuition about how race- or SES-based affirmative action policies will affect the racial and socioeconomic composition of the colleges that use them.
Agent characteristics

- **Students**
  - Attributes:
    - Race
    - Resources (income/SES)
    - Caliber (achievement)
  - New cohort of students apply to colleges each year of our simulation

- **Colleges**
  - Attributes:
    - “Quality”
    - Affirmative action policy
  - Colleges persist throughout simulation; their quality is updated based on caliber of enrolled students
Agent-based Model Simulation

Process Overview

students \[\text{apply}\] \[\text{colleges}\] \[\text{admit}\] \[\text{students}\] \[\text{enroll}\] \[\text{colleges}\]

next year
Three phases

1. Application: Students select application portfolio with highest (perceived) expected utility

2. Admit: Colleges pick “top” n students
   – can include affirmative action consideration
   – n can vary based on enrollment yield

3. Enroll: Students enroll in best perceived college to which they were admitted
Realistic Elements

- Simulations include “noise”
  - Colleges and students observe one another imperfectly
- Student resources can affect process
  - Student resources ALWAYS are correlated (within race) with achievement
  - In some models higher resource students have better information quality, can enhance their apparent caliber, and apply to more colleges
- Students and colleges can learn from prior years’ outcomes and adapt their strategies over time
- Result: a stylized but dynamic model with realistic agent behavior
Simulated Experiments

- Affirmative action operationalized as additional “weight” used in calculating students’ desirability.
  - In units of standard deviation of caliber.
- We run 30-year simulations, varying:
  - Presence/magnitude of racial affirmative action
  - Presence/magnitude of SES affirmative action
  - How student resources affect process
  - Student awareness of which colleges use affirmative action
RESULTS
Simulated college race composition under various affirmative action policies and conditions
Racial Composition of Top Schools by Affirmative Action Policy

Comparing Affirmative Action Schools to Top Non-Affirmative Action Schools
Resource Pathways Off, and Applicant Policy Knowledge Off

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Race Weight: 0 0 0 .75 0 .75 0 .75 1.5 0 1.5 1.5
SES Weight: 0 0 .375 .75 .375 .75 .75 1.5 .375 1.5 .75

- Black
- Hispanic
- Asian
- White

Left Bar of Pair Represents Affirmative Action Schools  Right Bar Represents Top Four Non-Affirmative Action Schools
Racial Composition of Top Schools by Affirmative Action Policy
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RESULTS
Simulated college socioeconomic composition under various affirmative action policies and conditions
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Resource Pathways Off, and Applicant Policy Knowledge Off

Race Weight:
SES Weight: 0 0 0 .375 0 .75 0 .75 0 .75 0 1.5 0 1.5 .375 1.5 .75

Q1 Q2 Q3 Q4 Q5

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Summary

- The correlation between race and socioeconomic status is not strong enough for one to be used as an effective proxy for the other during the admissions process
  - Affirmative action strategies should be crafted to respond directly to diversity goals that colleges have
- Race-based affirmative action is the most effective way to obtain racial diversity in colleges, but on its own yields relatively little socioeconomic diversity
- Socioeconomic-based affirmative action results in only modest gains in racial diversity, but results in considerable socioeconomic diversity
- Information has a substantial impact on policy outcomes
  - Transparency and/or strategic recruitment should be considered vital components of affirmative action policies