Student Loans and Social Mobility

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Total student loan balances, 2020q1: $1.5T.

Tuition & fees: $100B ~ 30% of families’ income.

Half of students finance college via student loans, \( \frac{\text{loan}}{\text{tuition}} \approx \frac{1}{3} \).

Debt financing and inequality:

“... as working families take on increasing amounts of [student] debt, higher education may actually be increasing social and economic inequality... For those [low-income] children, the idea of getting a college education and making it into the middle class is as likely as going to the moon.”

– Bernie Sanders
Facts

- Low- and high-income students take out similar amounts of loans
  - many just at the federal Stafford loan limits

- Lower-income students systematically invest less in higher education
  - bottom versus top income quartile students:
    - payment for tuition: $9,000 versus $14,500
    - dropout ratio: 30% versus 10%
    - enrollment likelihood: 40% versus 80%
Research Question

- Why don’t students from low-income families, take out more student loans, so they can invest equally in college education?
  - M&M explanation: gap in college preparedness, preferences, geography
  - Financing frictions: debt overhang, adverse selection and moral hazard

- Structural estimate an IO/finance model of college choice with financing frictions, using a representative panel of US college students

- Counterfactual analysis:
  - What if low-income students had ‘sufficient’ cash-in-pocket?

- Policy experiments:
  1. Expanding federal loan programs?
  2. Making public colleges tuition-free?
Environment

- Students have heterogeneous college-related ability and cash-in-pocket
- Two stages in a life: college-going ages, adulthood

1. College-going age:
   - choose to enroll in a college
   - finance college tuition via
     - cash-in-pocket (internal financing)
     - student loans (external financing); relatively costly
   - learn more about ability during college; drop out or finish degree

2. Adulthood: earn the education premium; enjoy nonpecuniary benefit of college studies. The value-added of college depends on
   - student’s college-related ability (a linear combination of SAT, high-school GPA, parents’ education and income, plus a noise term)
   - college’s quality
   - a complementary effect (high-ability students benefit more from high-quality colleges)
Students: Life-time Utility Maximization

A two period setup (no degree choice)

- College choice ($u$), student loan amount ($L$):
  \[
  \max_{u,L} \log(c_1) + \beta [\log(\bar{y}_s) - R_l L/\bar{y}_s + \Delta y_{su}/\bar{y}_s + v_{su}] + \text{college value added}
  \]
  - first period consumption: $c_1 = m_s - p_{su} + L$
  - second period consumption: $\bar{y}_s + \Delta y_{su} - R_l L$

- Value added of college education:
  \[
  \Delta y_{su}/\bar{y}_s + v_{su} = \omega A_s + \alpha H_u + \theta A_s H_u + \xi_s + \xi_u - \chi d_{su} + \zeta \epsilon_{su}
  \]
  - $\theta$: controls complementarity
  - $\epsilon_{su}$: iid logit shock; $\zeta$ determines price-elasticity

- Financing friction: $R_l > R_0 := 1 - \beta^{-1}$, if $L > 0$
  - friction wedge $\eta := R_l - R_0$
Simulated method of moments

Identification:
- perceived cost of private student loans (friction wedge):
  - Mass (total loans = Stafford loan limit)
- the value of college education in dollar units:
  - Cov (in- vs. out-of-state enrollees, in-state tuition discount)
- heterogeneous value for college education:
  - Cov (SAT score, faculty salaries at selected colleges)

Point estimates:
- significant financing friction wedge; interest margin $\sim 5\%$
- significant complementary effect (high-SAT students ‘benefit’ more from higher quality colleges)
Results

1. Financing frictions cause real and financial distortion ($5B welfare loss per year)
   - But, the key determinant of the investment gap is college preparedness
   - Financing frictions mainly impact financing structure
   - Subsidy on loans won’t have much effect on education inequality

2. Making public colleges tuition-free cause inefficiencies and mostly benefits the rich
   - Reduces student debt by $\sim 50\%$
   - Total budget: $60B$. Entails $20B$ deadweight loss
   - Students of families in the top income quartile get $15B$ more subsidy than the bottom quartile

3. Expanding federal Pell grants is much more cost-effective
   - The same benefit to low-income students with one sixth of the cost
Appendix
Financing Frictions and Price Elasticity of Demand

A two period setup (no degree choice)

- [FOC] private loan amount, given enrolling in college $u$:

\[
\frac{\bar{y}}{m - p_u + L^*} = 1 + \frac{\eta}{R_0}
\]

- optimal loan is decreasing with $\eta$
- low-income students who go to expensive colleges take more loans

- College choice, with private loan:

\[
\max_{u \in U} \quad - (1 + \frac{\eta}{R_0}) p_u + \theta A H_u + \alpha H_u + \xi_u - \chi d_u + \zeta \epsilon_u
\]

- Note: $\zeta^{-1}$ determines the ‘frictionless’ price elasticity

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Disutility to Pricey Colleges

\[ 1 + \frac{\eta}{R} \]

- \( \text{loan} < \bar{L} \)
- \( \text{loan} = \bar{L} \) (federal loan limit)
- \( \text{loan} > \bar{L} \)

Legend:
- Blue: high cash \((m)\)
- Red: low cash \((m)\)
Identification: Financing Friction Wedge

The value of lifetime wealth in today’s dollar unit

- Optimal loan policy:

Frictionless World

- Friction wedge for private loans \(\Rightarrow\) bunching on the Federal loan limit

mass \( (total\ loan = Stafford\ limit) \sim \eta_p \)