

Selection of Student Loans and College Performance

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Student Loans

- Student loan debt outstanding is the second largest stock of consumer debt after mortgages.
- As of the third quarter of 2014, there was a total of \$1.32 trillion in student loan debt outstanding
 - \$955 billion in motor vehicle loans
 - \$680 billion in credit card debt (FRBNY 2014, FRB 2015)

Student Loans

Why do we care?

- Information problem: Are freshmen informed enough to choose the correct loan packages?
- Can student loans affect college performance?
- What levers can universities use to change student loan behavior?

Contributions

- One of the first studies to use individual-level student loan information. (Rothstein and Ross, 2011)
 - Most studies use aggregate data at the school level.
 - National Postsecondary Student Aid Study (NPSAS) one exception, but no student outcomes
- First to study relationship between student loans and student performance.
- Use a natural experiment to determine how financial counseling can change student behavior.

Montana University System Data

Administrative data include:

- HS records (GPA, ACT scores, transcripts)
- demographics (race, gender, age)
- student loan amounts (federal, state, institutional)
- need-based aid, merit-based aid, athletic scholarships, grants, work studies
- college outcomes (GPA, credits, retention, transcripts)
- labor market outcomes for students who stay in Montana

Montana University System Data

- Use data for just the University of Montana and Montana State University.
- Keep only in state students.
- Data span 2002-2013; 33 semesters of data.
- 92,271 students for some part of college career; 454,366 student by semester observations.

Montana University System Data

| | Mean | Std. Dev. |
|--|-------|-----------|
| Average Institutional GPA | 2.95 | 0.68 |
| Semester Credits | 10.49 | 6.87 |
| STEM Major | 0.45 | 0.5 |
| Cumulative Credits | 55.72 | 36.31 |
| Number of Semesters | 7.6 | 3.5 |
| Have loan | 0.51 | 0.5 |
| Amount of Non-Loan Aid | 1.24 | 1.98 |
| Loan Amount if Amount > 0 | 4.12 | 2.69 |
| $\frac{\text{Loan}}{\text{Tuition}}$ if Amount > 0 | 0.95 | 0.14 |
| White | 0.88 | 0.33 |
| Male | 0.51 | 0.5 |
| Pell | 0.30 | 0.46 |
| ACT Score | 23.35 | 4.02 |
| Urban Area | 0.86 | 0.34 |

Diagnostic Regressions

How do student loan amounts affect student academic outcomes?

$$Y_{i,t} = \alpha_0 + \alpha_1 \text{Loan}_{i,t} + \beta_1 \mathbf{X}_{i,t} + \delta_{year} + \gamma_{semester} + \eta_{campus} + \epsilon_{i,t}$$

- $Y_{i,t} \equiv$ Credits, GPA (cumulative), STEM Major
- $\text{Loan}_{i,t} \equiv$ Loan Amount (000s), Non-loan Aid (000s)
- $\mathbf{X}_{i,t} \equiv$ white, male, Pell eligible, credits, semesters, ACT, urban hometown

Student Loans and Student Outcomes

| | Credits | | GPA | | STEM | |
|-------------------------------|---------------------|----------------------|---------------------|----------------------|---------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Amount Non-Loan Aid | 0.049*** (0.001) | | 0.279*** (0.006) | | 0.007*** (0.001) | |
| Loan Amount (if loans > 0) | | -0.018*** (0.001) | | -0.027*** (0.006) | | -0.002** (0.001) |
| N | 209525 | 99915 | 209525 | 99915 | 209525 | 99915 |

Includes: Individual characteristics, campus FEs, year FEs, term FEs

Student Loans and Student Outcomes: Freshmen Only

| | Credits | | GPA | |
|-------------------------------|---------------------|----------------------|---------------------|------------------|
| | (1) | (2) | (3) | (4) |
| Amount Non-Loan Aid | 0.027*** (0.002) | | 0.022*** (0.003) | |
| Loan Amount (if loans > 0) | | -0.008*** (0.002) | | 0.005 (0.003) |
| N | 32510 | 15847 | 32510 | 15847 |

Includes: Individual characteristics, campus FEs, year FEs, term FEs

Counseling

Fall 2012, MSU Office of Student success sent out “Know your debt” letters to encourage intensive financial counseling to:

| Class | Total Debt Level |
|-----------|---|
| Freshmen | \$6,250 |
| Sophomore | \$12,000 |
| Junior | \$18,750 |
| Senior | \$25,000 |
| All | $E[\text{monthly salary}_{\text{major}}] \leq E[\text{monthly loan payment}]$ |

- No comparable program at the University of Montana.

Counseling

- Use a difference-in-difference-in-differences (DDD) strategy to compare across the following groups:
 - students with debt levels exceeding the thresholds to those below the threshold.
 - before and after implementation.
 - across campuses (UMT vs MSU).

$$Y_{i,t} = \alpha_0 + \alpha_1 L_i + \alpha_2 \text{MSU}_i + \alpha_3 (L_i \times \text{MSU}_i) \\ + \alpha_4 (L_i \times \text{MSU}_i \times 2012_t) + \beta_1 \mathbf{X}_{i,t} + \delta_t + \epsilon_{i,t}$$

Counseling Letters: Fall 2012

| | <u>Intended Letter</u> | | <u>No Letter</u> | |
|---------------------------------|------------------------|-------|------------------|-------|
| | MSU | UMT | MSU | UMT |
| Freshmen | 758 | 555 | 1053 | 715 |
| Sophomores | 622 | 642 | 494 | 463 |
| Juniors | 528 | 643 | 564 | 556 |
| Seniors | 947 | 1147 | 567 | 491 |
| <u>Cumulative Loan Amounts:</u> | | | | |
| Fall | 30.05 | 27.3 | 9.41 | 7.69 |
| Spring | 33.21 | 32.84 | 11.71 | 11.79 |

Counseling Decreases Subsequent Loan Amounts

Dependent Variable = Spring Loan Amount (000s)

| | <u>DDD</u> | | <u>DD</u> | |
|----------------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| Letter | 2.337*** (0.027) | 2.441*** (0.036) | 2.270*** (0.028) | 2.363*** (0.036) |
| Letter × MSU × 2012 | -2.619*** (0.095) | -2.687*** (0.112) | | |
| 2012 × MSU | | | -1.623*** (0.107) | -1.823*** (0.126) |
| <u>Includes</u> | | | | |
| Individual Controls | | X | | X |
| Semester FEs | X | X | X | X |
| Campus FEs | X | X | - | - |
| N | 101838 | 53981 | 51286 | 27943 |

Conclusions

- Higher loan amounts are associated with lower GPAs, fewer credits taken, and a lower probability of entering STEM fields, though these effects are modest.
- Counseling appears to advise students to take on less debt in the subsequent semester.
- Need to find out what it does to future credits/GPA.
- Tie into expected future salaries. Is the effect different for those who meet only the future salary and future loan amount criteria?

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