Does Salient Financial Information Affect Academic Performance and Borrowing Behavior Among College Students?

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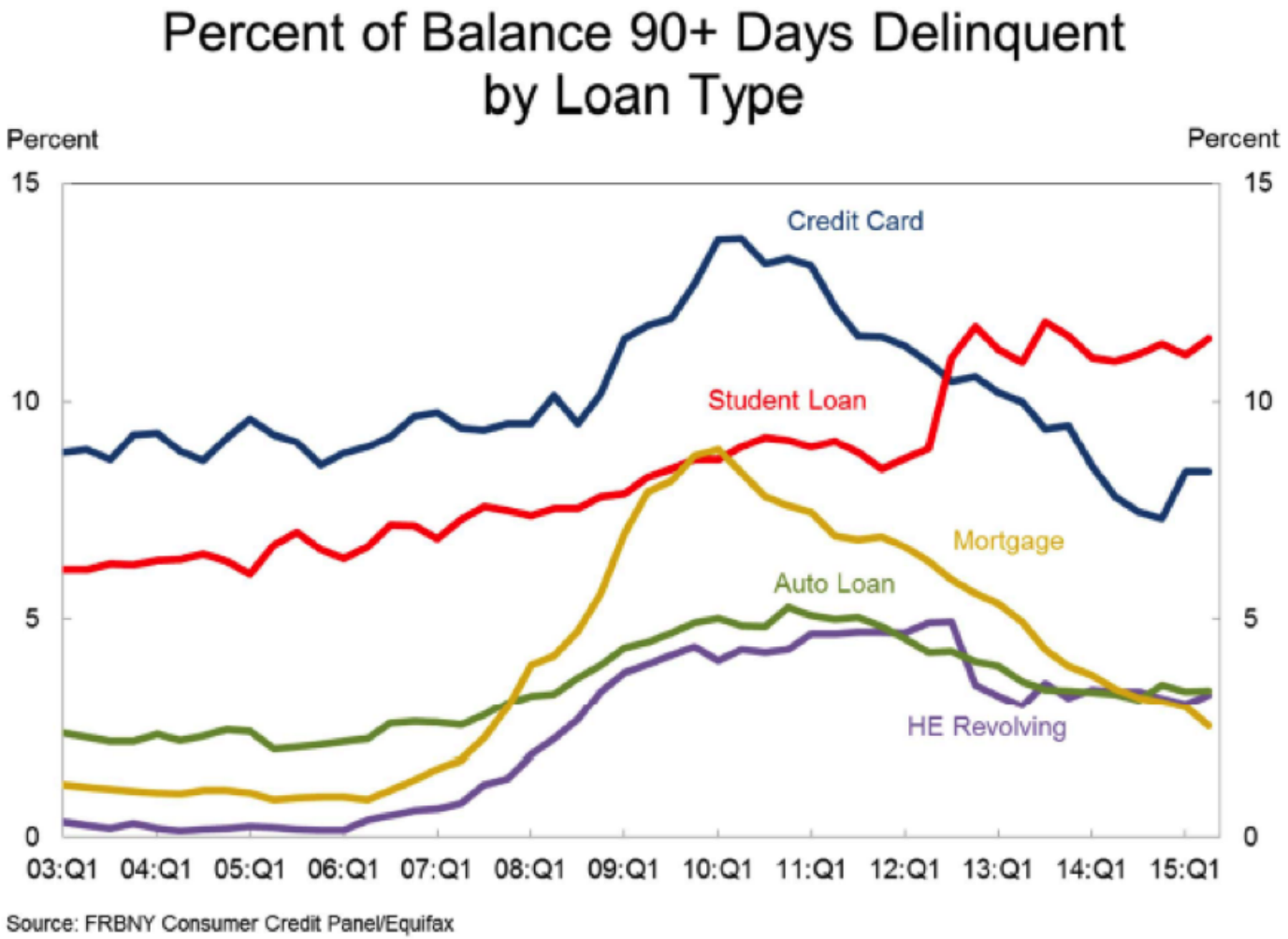
The views expressed are those of the authors and do not represent those of the Federal Reserve Board, the Federal Reserve System, or their staff.

Background

- Student loan debt reached $1.19 trillion in June 2015, second only to mortgage debt (FRBNY, 2015).
  - Only type of debt to increase during Great Recession.
- Average college student left school with over $28,000 in debt in 2013 (ICAS, 2014).
- Three year cohort default rate of 14 percent for FY2011 (U.S. Department of Education, 2014).
  - Highest 90+ day delinquency rate of any consumer credit.

Background


Percent of Balance 90+ Days Delinquent
by Loan Type
Percent
Percent
15
10
5
0
Credit Card
Student Loan
Mortgage
Auto Loan
HE Revolving
03:Q1
04:Q1
05:Q1
06:Q1
07:Q1
08:Q1
09:Q1
10:Q1
11:Q1
12:Q1
13:Q1
14:Q1
15:Q1
Source: FRBNY Consumer Credit Panel/Equifax

Motivation

- Choosing whether and how much to borrow for college is among the first significant financial decisions young adults make.
- Students could make suboptimal decisions about college financing.
- Decisions may be impaired by limited financial knowledge or availability of clear information on student loan borrowing and repayment.

Can a targeted intervention that provides salient information to college students change future loan choices and academic behaviors?

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Can a targeted intervention that provides salient information to college students change future loan choices and academic behaviors?

Motivation

Does limited or high cost information affect choices?

- FAFSA and the borrowing process are confusing–affects enrollment
  - Dynarksi and Scott-Clayton 2006
  - Bettinger, Long, Oreopoulos and Sanbonmatsu 2009
- Most information about student loans provided online or focused on repayment (Fernandez. et. al. 2015).
- Timely information can affect decisions
  - Salience matters: Chetty, Looney and Kroft 2009, Finkelstein 2009

Contribution

Use administrative data from Montana on individual-level student loan borrowing linked to academic records.

Estimate the causal effect of an information-based intervention on subsequent borrowing & academic performance.

Novel context to study the effects of information.

Related loan literature:

- Schmeiser, Stoddard and Urban (2015)
- Scrivner and Coghlan (2011), Scrivner and Au (2007)
- Rothstein and Rousse (2011)
- Booji, Leuven and Oosterbeek (2012) in Netherlands

MUS Data

The Montana University System (MUS) data contain administrative information on all individuals attending a 2 or 4 year public university in Montana.

- Student loan amounts and categories for every individual
- All student awards (grants, scholarships, work study, etc.)
- Academic outcomes each semester (GPA, credits, retention, major)
- For students from MT, have hometown ZIP code and high school information
- Data from 2002-2014 (36 semesters).

MUS Data

Sample Restrictions

- Keep all in-state students, remove out-of-state, to keep a homogeneous sample of tuition amounts.
- Keep only students at the University of Montana and Montana State University.
  - Campuses are comparable in tuition and student population.
  - Some sorting into universities across majors (e.g., UM specializes in humanities and MSU specializes in science and agriculture).

  ▸ Details
- Look only at undergraduates.
- Keep only students who borrow at some point.

Summary Statistics

	Mean	Std. Dev.
Semester GPA	2.79	1.03
Semester Credits	12.23	4.44
STEM Major	0.42	0.49
Retention next semester	0.798	0.401
Retention next year	0.759	0.428
Loan Amount for Borrowers ($000s)	4.20	2.75
Non-loan Aid for Borrowers	1.283	2.040
White	0.87	0.33
Male	0.48	0.50
Pell	0.50	0.50
Unique Students	57,334	

Intervention

The Center for Student Success at MSU sent “Know Your Debt Letters" beginning in Fall 2012. Debt thresholds for letter:

Class Standing	Debt Level
Freshmen	$6,250
Sophomore	$12,000
Junior	$18,750
Senior	$25,000

- These amounts exceed the federal subsidized loan limits, but not the combined subsidized and unsubsidized federal limits for sophomores, juniors and seniors.
- Some students also received letters because their total loan amount exceeded their projected median annual salary by major.

The Letter

- You have accepted $XX in student loan debt at MSU.
- Current federal loans for undergraduates have interest rates as high as 6.8%.
- Provided information on maintaining borrowing eligibility.
- Mentioned strategies for reducing amount borrowed.
- Emphasized financial benefits of graduating from college.
- Incentivized offer to see a CFP ($20 gift card).
- Encouraged to meet with a career coach.

Intervention

Context of the intervention

- At the same time, the UM had no comparable policy in place, though they did have blanket financial counseling (as did MSU).
- Federal financial counseling happens at entry and exit. This is exclusively online.

Compare students who did and did not receive the letters before and after the implementation and across campuses.

Methods

We employ a difference-in-difference-in-differences (DDD) strategy to estimate the effect of the intervention on student behavior:

- Compare students with loans at MSU to those at UM, where there was no intervention.
- Compare students with loan amounts above and below the requirements for receiving a letter.
- Compare students within campus before and after 2012 (10 years of data before and two years after intervention).

Intended Letters

	Intended Letter		No Letter	
	MT State	Univ MT	MT State	Univ MT
# Freshmen	1,584	967	1,863	1,373
# Sophomores	1,204	1,110	909	882
# Juniors	1,105	1,155	960	1,048
# Seniors	1,369	1,473	1,159	1,228
Fall Cumul Loan Amount	28.9	28.9	8.7	9.0
Spring Cumul Loan Amount	33.1	34.9	11.8	12.8

▸ Pre and Post

Empirical Specification

We estimate the following equation:

$$\begin{aligned} Y_{i,t} &= \alpha_0 + \beta_1 \text{Letter}_{i,t} + \beta_2 \text{MSU}_{i,t} + \beta_3 \text{Letter} \times \text{MSU}_{i,t} \\ &+ \beta_4 \text{Letter} \times \text{MSU} \times 2012_{i,t} + \alpha_1 \text{White}_i + \alpha_2 \text{Male}_i \\ &+ \alpha_3 \text{Pell}_{i,t} + \alpha_4 \text{Credits}_{i,t} + \alpha_5 \frac{\text{Loan}}{\text{Tuition}_{i,t}} + \alpha_6 \text{Non Loan Aid}_{i,t} \\ &+ \delta_{\text{year}} + \boldsymbol{\alpha_7} \text{Zip}_{\boldsymbol{i}} + \alpha_8 \text{Semesters}_{i,t} + \gamma_{\text{semester}} + \epsilon_{i,t} \end{aligned}$$

- Coefficient of interest will be the DDD estimator, β_4. Think of this as an “intent to treat" measure.
- Cluster standard errors at individual level.

Intervention

The letter provided the following information:

GPA *...you must pass 67% of your classes each semester to meet the Satisfactory Academic Progress requirements to continue receiving student loan financing.*

Credits *At MSU, tuition doesn't cost a penny more after you've registered for 12 credits in a semester. Please consider registering for more credits to graduate sooner and spend less on tuition!*

Intervention

Loan Amount *If you continue to accept student loans at this rate you will accrue a debt level that may become difficult to repay, which may place you at risk for defaulting on your loans.*

Major Choice *We also recommend you meet with a Career Coach. Outside of earning a degree, we believe one of the most important steps you can take to secure a solid financial future is to develop an internship and career plan. Your Financial Coach will refer you to a Career Coach during your first meeting to assist with this effort.*

Results

Effect of Letters on Outcomes in Next Semester

	GPA	Semester Credits	STEM Major	Loan Amount	Loan Amount Fell
β_4	0.045*	0.066	0.019+	-1.361***	0.178***
	(0.019)	(0.087)	(0.010)	(0.065)	(0.008)
N	203,237	203,237	203,984	203,984	203,984

Notes: Standard errors are clustered at the individual student level and are reported in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Results

Effect of Letters on Outcomes in Next Semester, Freshmen

	GPA	Semester Credits	STEM Major	Loan Amount	Loan Amount Fell
β_4	0.007	0.303	0.106***	-1.882***	0.280***
	(0.053)	(0.246)	(0.024)	(0.214)	(0.022)
N	21,560	21,560	21,562	21,562	21,562

Notes: Standard errors are clustered at the individual student level and are reported in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Current Semester Predictions

Potential Financial “Mistakes" Students Could Make:

- Students who take ≤ 12 credits and withdraw from a class still have to pay a portion of the tuition for the credits started (even 2 weeks in).
- Students must complete 67% of credits started. Students who go from 9 to 6 credits would no longer be eligible for aid in the subsequent semester.

The intervention should increase the credits completed in the current semester, but the effect on current semester GPA is ambiguous.

Results

Effect of Letters on Current Semester Outcomes

	All Students		Freshmen	
	GPA	Credits	GPA	Credits
β_4	0.051**	0.135+	0.115*	0.680***
	(0.017)	(0.072)	(0.046)	(0.205)
N	236,200	236,200	23,993	23,993

Notes: Standard errors are clustered at the individual student level and are reported in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Effect of Letters on Distribution of Credits

	Current Semester		Next Semester	
	≥ 9 Credits	≥ 15 Credits	≥ 9 Credits	≥ 15 Credits
β_4	0.017*	0.023**	-0.003	0.025**
	(0.007)	(0.009)	(0.007)	(0.009)
N	122,370	122,370	107,023	107,023
Freshmen				
β_4	-0.013	0.047*	-0.012	0.022
	(0.015)	(0.019)	(0.019)	(0.022)
N	23,994	23,994	21,562	21,562

Notes: Standard errors are clustered at the individual student level and are reported in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Additional Predictions

The letter provided the following information:

Retention *Again, we want you to know we think you made an excellent decision to invest in your future. Generally, college graduates earn more, have a lower unemployment rate, and live longer than those who do not have a college degree. We want to be sure you find the right balance so that student loan debt isn't going to negatively affect your financial future.*

Effect of Letters on Retention

	All Students		Freshmen Only	
	Retained 1 Semester	Retained 1 Year	Retained 1 Semester	Retained 1 Year
β_4	0.018+	0.011	0.045*	0.036**
	(0.009)	(0.008)	(0.019)	(0.012)
N	55,127	59,914	22,057	23,845

Notes: Standard errors are clustered at the individual student level and are reported in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Heterogeneity

	Future GPA	Future Credits	Future STEM	Future Amount
Baseline				
β_4	0.045*	0.066	0.019+	-1.361***
	(0.019)	(0.087)	(0.010)	(0.065)
Above Stafford Subsidized Amounts				
β_4	0.065**	0.206*	0.034**	-1.490***
	(0.021)	(0.096)	(0.011)	(0.069)
Pell Recipients				
β_4	0.061*	0.284*	0.034*	-1.359***
	(0.031)	(0.136)	(0.015)	(0.072)
Female				
β_4	0.082**	0.139	0.016	-1.668***
	(0.030)	(0.129)	(0.016)	(0.095)
Non-White				
β_4	-0.005	0.108	0.016	-1.159***
	(0.061)	(0.273)	(0.031)	(0.200)

Heterogeneity

	Current GPA	Current Credits	Retained 1 Semester	Retained 1 Year
Baseline				
β_4	0.051**	0.135+	0.018+	0.011
	(0.017)	(0.072)	(0.009)	(0.008)
Above Stafford Subsidized Loan Amounts				
β_4	0.057**	0.231**	0.013	0.017+
	(0.019)	(0.079)	(0.008)	(0.009)
Pell Recipients				
β_4	0.072**	0.232*	0.007	0.028*
	(0.027)	(0.110)	(0.012)	(0.014)
Female				
β_4	0.050+	0.082	0.009	0.018
	(0.026)	(0.105)	(0.011)	(0.013)
Non-White				
β_4	0.006	0.298	0.028	0.030
	(0.055)	(0.229)	(0.023)	(0.028)

Conclusions

- When targeted information is provided, students respond by reducing their loan amounts.
- They do not do this at the cost of their academic performance (GPA, credit completion).
- If they work additional hours to cover cost, they also choose to take more credits.
- Know Your Debt Letters are a relatively simple and low-cost intervention that could improve financial well-being of college students.

Generalizability

- MSU and UM comparable to many public universities
- 65 percent at MSU have loans; 62 percent at UM; 69 percent USA
- MSU average debt at exit of $27,000; UM $30,000; USA $28,400
- About half have Pell grants; 40 percent USA
- Survey (756 Students in ECON 101 & 202):
  - 25% just subsidized, 56% both unsubsidized and subsidized, 20% did not know type or thought was only unsubsidized
  - $\frac{1}{3}$ borrow entire amount of eligibility, 26% just covered tuition, 8% calculated ability to repay, 24% created a budget

Caveats

External Validity MT is not the entire US. However, UM and MSU are comparable institutions to other US public 4-year institutions. ▸ Representativeness

Letter Assignment We do not know who received the letters. Given the Office of Student Success' counts of how many letters went out, we are over-stating the number of letters sent. This would bias us against finding an effect.

Private Loans We do not observe private loans ($\approx$ 14% of loans). Understate loan amounts. This should be uncorrelated with the assignment into treatment.

Contact

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Differences between MSU and UM

2014-2015 School Year Student Body Characteristics

	MSU	UM
Tuition	$6,800	$6,330
% Get Loans	65%	62%
Graduation Debt	$27,000	$30,000
Undergrad Enrollment	15,000	14,000
HS GPA Requirement	2.5	2.5
ACT Requirement	22	22
Percent In State	60%	60%
6-year Grad Rate	45%	45%

Out-of-state tuition is 5% higher at UM. MSU is the land grant instution, with larger colleges of agriculture and engineering. UM has a larger liberal arts program.

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National Representativeness of Sample

Comparing UM & MSU to US Public 4-year Institutions

- Enrollment at UM, MSU ($\approx 14,500$) is slightly higher than national average (11,000).
- Tuition rates in MT are lower than national average, but similar when tuition is adjusted for median income.
- Fraction of students graduating with debt comparable (national average is 69%).
- Graduation student loan debt comparable to national average ($28,400).
- MT sample has more Pell recipients ($\approx$ 50%) compared to national average (40%).

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Descriptive Statistics Before and After Intervention

	Montana State		University Montana	
	Pre	Post	Pre	Post
Semester GPA	2.777	2.804	2.807	2.812
Semester Credits	12.202	12.164	12.299	12.119
STEM Major	0.506	0.558	0.331	0.298
Retained 1 Semester	0.827	0.636	0.821	0.658
Retained 1 Year	0.785	0.478	0.777	0.537
Loan Amount for Borrowers	4.071	5.692	3.885	5.195
Non-loan aid for borrowers	1.410	2.062	1.446	2.105
White	0.894	0.860	0.858	0.850
Male	0.506	0.519	0.455	0.444
Pell	0.485	0.490	0.510	0.555
N	107,693	19,371	109,307	19,414

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