JUNE 2017

Experimental Evidence on the Impact of Student Debt Letters on Borrowing, Financial Literacy and Academic Progress

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This report is available online at: https://www.website.com

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ACKNOWLEDGEMENTS

This report was made possible by support from Lumina Foundation. The views expressed in this report are those of its author and do not represent the views of Lumina Foundation, their officers, or employees.

The author thanks Matthew Chingos for collaboration in the initial stages of this project, and Katherine Lindquist and Ellie Klein for skilled research assistance. She is also grateful for the cooperation, support and insights provided by the financial aid administrators who were instrumental in carrying out the interventions examined in this paper.

Attending college is often a pivotal financial event in an individual's life. With so much at stake, it would be reasonable to think that students are making decisions about college enrollment and finances with their eyes wide open. After all, even slight changes in decisions regarding where to go, how much to borrow and which classes to take, can have a substantial impact on a student's financial future. But the reality is that students often lack an astute awareness of their financial circumstances and make decisions without full information.

Recognition of this deficiency has prompted the higher education community to develop new approaches to help students make more informed decisions about college finances. One approach that has received much attention from college administrators, policy makers and the media is the student debt letter – the practice of sending students periodic summaries of their accumulated student debt.

In this paper, I provide evidence from a new experimental study on effectiveness of a student debt letter in affecting student financial literacy and decision making regarding borrowing and academic progress. The findings indicate that, despite previous evidence to the contrary, sending periodic debt letters may not be an effective strategy for reducing student borrowing or improving academic progress.

Key Takeaways:

- In an experimental intervention, debt letters had no impact on borrowing behavior and did not increase academic achievement, even instances when the letter succeeded in improving financial literacy.
- Debt letters succeeded in improving financial literacy among Black and Hispanic students, causing them to be able to more accurately report how much they'd borrowed.
- Interventions designed to affect student decision making should be tailored to the population that are intended to serve. Informational interventions that simply provide information but do not recommend a specific change in in behavior may not succeed in affecting student decision making.

Background

Deciding if and how much to borrow for college is a complex and challenging task. Benjamin Castleman, Assistant Professor of Education and Public Policy at the University of Virginia, described it aptly in a recent report[1]:

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1. Castleman, Benjamin. (2015). "When it comes to student loans, there's no simple nudge." *Brookings Institution*. https://www.brookings.edu/blog/brown-center-chalkboard/2015/09/01/when-it-comes-to-student-loans-theres-no-simple-nudge/. Accessed 7 June 2017.

> "Choosing whether and how much to borrow is a highly complex decision to navigate. In an ideal decision-making process, students would simultaneously consider a multitude of important factors—like the probability that they will graduate from the college where they're planning to enroll; the earnings return they can expect from a degree in their field of study; the likelihood that they will stay motivated and focused on coursework even when faced with many competing interests for their time and attention—and borrow if the benefits of doing so outweigh the costs."

It's unrealistic to think that every student is going to use this "ideal decision-making process" when they decide if and how much to borrow. But we'd hope that the general notion - taking on debt only if repayment is likely to be affordable - plays a role in the decision-making process for most students.

Unfortunately, a growing body of evidence suggests that this probably isn't the case. Research has shown that students are often unaware of how much they've borrowed for college. In a study looking a representative sample of first-year students in the United States, about half of all borrowers seriously underestimated how much student debt they had, and less than one-third could provide an accurate estimate within a reasonable margin of error. And perhaps even more concerning is that many students did not even realize they were borrowing. Among the students in the study who were using federal loans, twenty eight percent reported having no federal debt and 14 percent said they didn't have any student debt at all.[2]

Many are concerned that this lack of information means that students aren't making optimal decisions regarding borrowing. While misinformation could be causing students to either borrow too much or too little, the most frequently voiced concern is that students are borrowing excessively.[3] For instance, financial aid officers and other staff who work with students often indicate concerns that borrowing is being driven up by spending on unnecessary luxury goods and housing. This concern about unaffordable borrowing has even driven some community colleges to deny their students access to federal student loans.

It goes without saying that reducing borrowing also reduces the future burden of debt repayment. But there is another, less frequently discussed, tradeoff. Students who borrow too little may end up dropping out of college due to financial constraints or having their academic progress hindered by working too much.

So, while it's likely that many students are making suboptimal decisions regarding borrowing, overborrowing is not the only mistake they are making. Unfortunately, this means that getting students to make better decisions about borrowing is not as simple as encouraging them to borrow less. It is imperative that student's decisions regarding borrowing consider the future cost of debt repayment but also the role of debt in their

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2. Akers, Beth, and Matthew M. Chingos. (2014). "Are college students borrowing blindly?" *Brookings Institution*. https://www.brookings.edu/research/are-college-students-borrowing-blindly/. Accessed 7 June 2017.

3. McArdle, Megan. (14 March 2016). "A new trend in college luxury that is built on debt." *Newsday*. http://www.newsday.com/opinion/a-new-trend-in-college-luxury-that-is-built-on-debt-1.11571709. Accessed 7 June 2017.

academic success. The best solution, though difficult to accomplish, is getting students to think critically about borrowing.

Students aren't on their own when it comes to making these difficult decisions. Under current law, students are required to complete online entrance counseling before they can borrow from the Federal Direct Loan Program. The training aims to explain the basics of borrowing, including interest accumulation and borrowing limits, and covers in-school budgeting and loan repayment. But after completing entrance counseling and signing a Master Promissory Note, students are not required to undergo any additional counseling until they graduate or withdraw. And surprisingly, student borrowers generally do not receive any sort of periodic notices about their accumulated (and sometimes accumulating) debt balance.

Recognizing this deficiency in the provision of information to students, some institutions have adopted the practice of sending periodic loan statements, often called "debt letters", to their student borrowers. This strategy gained notoriety in 2014 when Indiana University (IU) reported that introducing debt letters on their campus led to a significant reduction in borrowing from one year to the next. Policy makers took note of the news and in the following two years, two states, Indiana and Nebraska[4], passed legislation that made debt letters mandatory at all institutions. The idea has even reached the national policy agenda, with bipartisan legislation that would expand the mandate nationally proposed earlier this year.[5]

The expectation, of course, is that these mandates will result in reductions in borrowing like the ones seen at IU. Unfortunately, the existing evidence does not necessarily suggest that this will be the case. It's indisputable that borrowing at IU dropped significantly from one year to the next, but it's not clear that this was caused entirely, or even in part, by the introduction of the debt letter. Debt letters were just one piece of an institution wide initiative to reduce overborrowing[6] and it's quite possible that the observed reduction in borrowing was caused by the other changes in institution policy that took place during the initiative. If that was the case, then the debt letter mandates may be ineffective at bringing about the anticipated changes in borrowing.

Recognizing both the public interest in the issue of debt letters as well as the limitations on inference from the IU program, researchers have begun to investigate the causal impact of debt letters on borrowing and other outcomes.

For instance, researchers Maximilian Schmeiser, Christiana Stoddard, and Carly Urban examined the impact of a debt letter program that was employed at Montana State

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4. Quinton, Sophie. (19 May 2016). "What happens when colleges warn students about loan debt?" *PBS News Hour*. http://www.pbs.org/newshour/rundown/what-happens-when-colleges-warn-students-about-loan-debt. Accessed 7 June 2017.

5. Letter of Estimated Annual Debt for Students Act of 2017, H.R. 1429, 115th Congress. (2017-2018).

6. Indiana University. (2016). *Indiana University initiatives continue to pay off in reduced student borrowing* [Press Release]. http://archive.news.iu.edu/releases/iu/2016/09/student-loan-reductions.shtml. Accessed 7 June 2017.

University (MSU).[7] The letters, which were only delivered to high balance borrowers, told students about their debt balance but also encouraged them to borrow less and offered them twenty dollars to meet with an advisor. They found that the program both reduced borrowing and improved academic success. However, they were not able to determine whether the changes were caused by the provision of information, the suggestion to reduce borrowing, the financial incentive to meet with an advisor, or a combination of these factors.

Another study, which was conducted by Rajeev Darolia at large flagship public land-grant research university[8], used an experimental design and found that debt letters had no impact on borrowing. Unlike the debt letters at IU and MSU, the debt letter used in this intervention was not part of a broader campus initiative. Rather, it was implemented as an experiment with the intention to measure the impact of the debt letters on student outcomes.

The combination of these findings suggests that the changes in borrowing and academic outcomes observed at the other institutions may have been driven by other factors like the simultaneous changes in institutional policy at IU and incentives to meet with advisors used at MSU.

This paper reports the findings from a new set of experimental interventions that were designed to contribute to this literature. A description of the intervention and a summary of the findings is provided in the following section. A discussion of the findings and implications for policy follows.

Evidence from an Experimental Debt Letter Intervention and Survey

Over the course of two years, a new debt letter intervention was implemented at three, four-year public institutions. (Selected characteristics of the institutions are provided in Table 1.) The intervention was designed to test the hypothesis that reminding students about their indebtedness periodically with a letter can improve student literacy about college finances and lead to different decision-making regarding borrowing and academic progress toward graduation.

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7. Schmeiser, Maximilian, Christiana Stoddard, and Carly Urban. (2016) "Public Economics Student Loan Information Provision and Academic Choices." *The American Economic Review* 106.5 (2016): 324-328.

8. Darolia, Rajeev. (2016). An Experiment on Information Use in College Student Loan Decisions. FRB of Philadelphia Working Paper No. 16-18. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2805857. Accessed 7 June 2017.

Table 1: Selected Institution Characteristics

	Institution A	Institution B	Institution C
Setting	Suburb	City	City
Census Region	Northeast	Northeast	West
Undergraduate Enrollment	15,000	10,000	25,000
6-year Graduation Rate	80%	40%	40%
Average Net Price	$16,000	$11,000	$11,000
Percent borrowing (federal)	50%	70%	30%
Average federal borrowing	$6,000	$6,000	$5,000
Percent Receiving Pell Grants	30%	60%	40%
Percent students over age 25	0%	20%	30%

Source: NCES College Navigator, accessed Spring 2017

Note: Price and financial aid data is based on full-time beginning students. Figures are rounded to preserve anonymity of the institutions.

On each of the campuses, the intervention was implemented with an experimental design - rather than delivering debt letters to all students, they were delivered only to a randomly selected group of students. Implementing the intervention in this manner made it possible to easily and accurately measure the impact of the debt letter on student outcomes. Since the students who were selected to receive the debt letters were similar, at least on average, to the students who did not receive the letter, the differences between outcomes observed across the two groups could be interpreted as the causal effect of the debt letter. Another way to say this is that the students who did not receive debt letters effectively functioned as a control group for the study.

In addition to carrying out the experimental intervention, the participating institutions also administered a student survey that was later linked to administrative records for analysis. Carrying out a survey in tandem with the intervention enabled us to learn more about how the debt letter impacted financial literacy. In previous studies, researchers have only been able to observe outcomes and have had to make assumptions about why debt letters impact decision making. The survey used in this study allowed us to directly observe indicators of financial literacy and measure whether they were impacted by the debt letters.

Implementation

The study began with a pilot version of the debt letter intervention at one institution (Institution A) during the 2013-14 academic year. Debt letters were delivered to a randomly selected group of first year students drawn from the population of full-time students who had completed the Free Application for Federal Student Aid (FAFSA). The following fall (academic year 2014-15), the program was introduced at two additional institutions, where the treatment group was drawn from the population of first and second year students who had been enrolled full time and completed a FAFSA during their first year of study. Institution A also added a new cohort of students to the debt letter program so that all

participating institutions were delivering debt letters to both first and second year students. The study population excluded part-time students because of a concern that highlighting the costs of extended enrollment might discourage degree completion.

The full-scale intervention, operating at all three institutions with two cohorts of students, ran throughout the 2014-15 academic year and into the fall of 2015. Students received letters in the of the Fall 2014, Spring 2015 and Fall 2015 semesters.

Students who were selected to participate in the intervention received a letter in both electronic and paper form that contained personalized information about their finances and academic progress.[9] The letter indicated their total cost of attendance, accumulated debt, estimated future monthly payments and an indicator of whether they were on-track to graduate on-time (based on completed credits). The letter also provided personalized estimates of how much the student would likely borrow over the course of their enrollment conditional on whether they would complete their degree in four, five or six years. These sums were also converted into estimated monthly payments to give the student a sense of how much extended enrollment would impact their monthly financial obligation after college.

The letters did not indicate a normative judgement regarding the students' borrowing behavior. This was an intentional strategy because the goal of the intervention wasn't to necessarily discourage students from borrowing, but rather to measure whether simply informing them about the annual costs they were facing and the debt they'd accrued would have an impact on later outcomes. Since the hypothesis was that the information would prompt more thoughtful decision making regarding finances and academics, information on where to obtain additional advising was also included in the letters.[10]

Students received the letters once per semester throughout the duration of the intervention. The financial aid offices were advised to deliver the letters to students in the week or so prior to course enrollment. The intention was to have students be reminded of their financial circumstances and progress toward degree completion shortly prior to them having to make decisions regarding course taking in the next semester. The letters were sent to students from their institution's office of financial aid.

Surveys and Administrative Data

At the end of the 2014-15 academic year, students in the study population (both treatment and control groups) received an email invitation from their institution's financial aid office to participate in an online survey about college costs, financial aid and student debt.[11] Students were offered ten dollars in compensation for completing the survey. At one campus (Institution C) the reward was delivered as an Amazon gift card while at the other

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9. Letter templates are available upon request.

10. Some campus administrators were initially concerned that this might cause their advisors to be overwhelmed with inquiries from students and parents. While we did not collect detailed information on the frequency of follow-up calls, the partner institutions reported that there wasn't a substantial increase in the volume of student requests for meetings with financial aid staff.

11. Copies of the surveys are available upon request from the author.

two campuses (Institutions A and B) students received it as a credit on their student ID which could be used to make purchases on campus.

The survey asked students about their accumulated debt, expectations regarding repayment, management of their finances, work experience, expectations regarding graduation and use of academic and finial aid advisors.[12]

While only about thirty percent of the study population completed the survey, the group of students who did complete the survey were not largely dissimilar from the general study population. This makes it reasonable to assume that the responses provided by the survey participants are representative of the general study population. (The characteristics of the survey respondents and the study population are summarized in appendix tables A3, B3 and C3.)

After the study concluded, the partner institutions provided anonymized administrative data on student financial aid and academic progress matched with survey response data for all students in the study population.

Empirical Findings

Since the debt letters were only delivered to a randomly selected group of students, the treatment effect of the debt letters is easily measured. When a treatment group is chosen randomly from the study population, it is reasonable to assume that the students in the treatment group (those who received the letters) are not different, at least on average, from the students in the control group (those who didn't receive letters).[13] Since the groups were not dissimilar to start, any differences in average characteristics observed after the intervention can be interpreted as the treatment effect of the debt letters.

To estimate the impact of the debt letters on borrowing, the average amount of cumulative debt held by borrowers in the treatment group at the end of the study period was compared to that of the control group. On average, students who received the debt letter accumulated as much debt as students who didn't receive the letter; no more and no less. This was true when all students were examined together using pooled data from all three institutions (Table 1) and when data from each institution was examined separately (Tables A2, B2 and C2 in the appendix).

There was also no evidence to suggest that any subgroup of students changed their borrowing behavior as result of the letter. Estimating the treatment effect separately for each racial category, gender and dependency status indicated that the letter did not impact borrowing significantly for any of those groups. There were also no differential impacts of the letters across the income and borrowing distribution. The letters seemed to have no impact on borrowing, regardless of the students' level of family income or accumulated debt.

To determine whether the debt letter had an impact on progress toward degree completion, student academic outcomes were also examined. The study period was not

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12. Survey is available upon request.

13. Average characteristics of students in the control and treatment groups are provided in tables A3, B3 and C3 in the appendix.

long enough to measure total time to degree completion for the study participants, so academic progress was measured using other intermediate outcomes including (1) whether the student had declared a major, (2) the student's accumulated credits and (3) cumulative GPA. If the letter had caused a student to accelerate (or decelerate) their pace toward completing their degree then it would likely be reflected in these measures of academic progress.

Based on pooled data from two institutions[14], regression estimates indicate that the debt letters no impact on credit completion in the last semester of the study. However, subgroup analysis suggests that receipt of the debt letter had a very slight negative effect on credit accumulation for African American students (Table 3). Institution level analysis showed no indication that students who received the debt letter were more likely to have declared a major by the end of the study period (Tables A2, B2 and C2). At the same time, the letter seems to have caused an improvement in grade point average at Institution B (Table B2). The inconsistency of these estimates makes interpretation of these findings challenging, but we can reject the hypothesis that debt letters had a ubiquitously positive effect on academic achievement.

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14. Credit completion during this semester was not available for institution B.

Table 2: Regression Estimates of Treatment Effect on Cumulative Borrowing

Student Population	Treatment Effect	Constant	n
All	-92.86	12,810***	6,251
	(290.7)	(206.5)	
Financial Dependence			
Dependent	-53.61	13,875***	4,863
	(347.3)	(246.7)	
Independent	-152.9	9,031***	1,329
	(438.6)	(311.6)	
EFC			
Zero	246.0	10,618***	1,283
	(435.8)	(311.8)	
Non-Zero	-135.7	13,399***	4,916
	(349.6)	(247.9)	
Race/ Ethnicity			
Caucasian	-259.2	14,784***	2,133
	(540.2)	(382.2)	
African American	-118.9	12,837***	777
	(829.6)	(591.5)	
Asian American or Pacific Islander	436.6	12,474***	1,041
	(721.5)	(509.0)	
Native American	3,052	10,523***	43
	(3,631)	(2,823)	
Hispanic	-492.3	12,604***	1,011
	(786.0)	(562.6)	
Accumulated Debt			
1st quartile	-67.33	3,531***	1,228
	(73.13)	(51.88)	
2nd Quartile	-63.24	6,693***	1,878
	(65.25)	(46.31)	
3rd Quartile	-71.63	12,203***	1,558
	(88.24)	(63.19)	
4th Quartile	119.2	27,679***	1,587
	(670.9)	(474.0)	
Gender			
Female	27.17	12,446***	3,566
	(377.1)	(270.9)	
Male	-210.1	13,268***	2,685
	(455.3)	(318.6)	

*** p<0.01, ** p<0.05, * p<0.1

Note: excludes students with zero cumulative borrowing as of Spring 2015, standard errors in parentheses

Table 3: Regression Estimates of Treatment Effect on Credits Completed in Final Semester of Intervention

Student Population	Treatment Effect	Constant	n
All	-0.0680	12.16***	5,927
	(0.150)	(0.106)	
Financial Dependence			
Dependent	0.0780	13.09***	4,196
	(0.161)	(0.113)	
Independent	-0.398	8.818***	1,397
	(0.328)	(0.231)	
EFC			
Zero	0.425	11.26***	710
	(0.456)	(0.322)	
Non-Zero	-0.115	12.14***	4,882
	(0.164)	(0.116)	
Race/ Ethnicity			
Caucasian	0.139	13.15***	2,809
	(0.202)	(0.142)	
African American	-0.988*	9.640***	523
	(0.547)	(0.382)	
Asian American or Pacific Islander	-0.0896	12.16***	1,277
	(0.320)	(0.225)	
Native American	0.611	9.167***	45
	(1.887)	(1.461)	
Hispanic	-0.265	10.45***	1,038
	(0.367)	(0.259)	
Accumulated Debt			
1st quartile	-0.372	9.988***	985
	(0.398)	(0.279)	
2nd Quartile	0.0375	9.866***	1,078
	(0.383)	(0.271)	
3rd Quartile	-0.196	12.34***	1,066
	(0.344)	(0.246)	
4th Quartile	0.0904	12.76***	1,377
	(0.292)	(0.206)	
Gender			
Female	0.000614	12.12***	3,234
	(0.207)	(0.147)	
Male	-0.150	12.21***	2,693
	(0.219)	(0.153)	

*** p<0.01, ** p<0.05, * p<0.1

Note: excludes students with zero cumulative borrowing as of Spring 2015, standard errors in parentheses

Table 4: Regression Estimates of Treatment Effect on Absolute Value of Percent Error in Reporting Cumulative Debt

Student Population	Treatment Effect	Constant	n
All	-0.0458	0.456***	1,210
	(0.0319)	(0.0225)	
Financial Dependence			
Dependent	-0.0505	0.473***	937
	(0.0363)	(0.0258)	
Independent	-0.0377	0.401***	272
	(0.0667)	(0.0461)	
EFC			
Zero	0.00422	0.395***	375
	(0.0634)	(0.0449)	
Non-Zero	-0.0681*	0.483***	835
	(0.0363)	(0.0257)	
Race/ Ethnicity			
Caucasian	-0.00114	0.438***	234
	(0.0708)	(0.0492)	
African American	-0.123*	0.476***	219
	(0.0682)	(0.0492)	
Asian American or Pacific Islander	-0.101	0.490***	138
	(0.105)	(0.0701)	
Native American	-0.121	0.519	7
	(0.309)	(0.261)	
Hispanic	-0.194***	0.473***	191
	(0.0624)	(0.0433)	
Accumulated Debt			
1st quartile	-0.152*	0.478***	228
	(0.0793)	(0.0558)	
2nd Quartile	0.00564	0.471***	496
	(0.0589)	(0.0417)	
3rd Quartile	-0.0463	0.427***	301
	(0.0433)	(0.0304)	
4th Quartile	-0.0535	0.435***	185
	(0.0628)	(0.0448)	
Gender			
Female	-0.0355	0.448***	819
	(0.0400)	(0.0280)	
Male	-0.0681	0.474***	391
	(0.0523)	(0.0378)	

*** p<0.01, ** p<0.05, * p<0.1

Note: excludes students with zero cumulative borrowing as of Spring 2015, standard errors in parentheses

One advantage of this study over others before it is that the survey component allows for direct examination of the impact of the letters on financial literacy, which is the mechanism by which the letters could affect other outcomes. Survey participants were asked to indicate how much they were paying annually for enrollment and how much debt they had accumulated. They were urged to provide their best guess if they were unsure of the exact amounts. These estimates were compared the actual amounts that were recorded in the administrative data provided by the institutions to determine how precisely the students had reported this information. The precision of estimates from students in the treatment group was then compared to the precision of estimates from students in the control group to determine whether the letter had an impact on the students' ability to accurately recall this financial information.

The analysis revealed that students in the treatment group were generally not able to report their cost and accumulated with more precision that students who did not receive the letter (Table 4). The mean absolute value of the difference between the students' estimates of their indebtedness and the true value was the same for both the treatment and control group, suggesting that the letter had no effect on this dimension of literacy. However, subgroup analysis revealed that the letter did succeed in affecting literacy for certain groups of students. African American and Hispanic students who received the letter demonstrated more precision in reporting their accumulated debt balance than students who did not receive the letter (Table 4). (Institution specific estimates can be found in Tables A1, B1 and C1.)

Conclusion

The findings from this experimental study indicate that the debt letter intervention succeeded in improving financial literacy for Black and Hispanic students, had no impact on student borrowing and did not generally produce improved academic outcomes. These results confirm the findings from a similar experiment which concluded that debt letters which are not part of a broader initiative to reduce borrowing do not succeed in changing borrowing behavior. The lack of impact on borrowing contradicts the widely held belief that the provision of information through debt letters can succeed to reducing overborrowing.

The new evidence provided in this paper also indicates that the lack of impact on borrowing is likely driven by the fact that the letters failed to generate overall improvements in financial literacy regarding college costs and borrowing. But interestingly, even the borrowers who did gain improved literacy from the intervention did not alter their borrowing decisions as a result. This suggests that even if an intervention was more broadly successful at improving students' knowledge of their college finances that it would not necessarily result in changes in decision making regarding borrowing.

This could be explained in two ways. First, it is possible that students are already making optimal decisions regarding borrowing. That is, new information does not change their borrowing strategy because they were already borrowing appropriately even without full information. (This could occur if a student had received counseling, from a parent of financial aid professional, to help determine how much to borrow.) Second, it might be

that students do not know how to use information they receive from the debt letter to improve their borrowing decisions. Since previous debt letter interventions that encouraged changes in borrowing strategy were more effective in altering borrowing behavior, it seems likely that students may lack an ability to translate information into improved decision making.

It's important to note that even though the debt letter campaign examined here did not produce changes in borrowing and literacy outcomes during the study period, there may be other effects that are unobservable (such as attitudes toward borrowing and repayment) or take longer than the study period to materialize (such as reduced rates of default).

As such, the findings presented here do not imply that mandates for institutions to deliver student debt letters will necessarily be without benefit. Instead, they suggest that policy makers should not consider debt letters to be a silver bullet solution for overborrowing. Getting more information into the hands of students and helping them use it to make better decisions is the correct goal. The challenge now, is to determine effective methods for achieving it.

The intervention tested here did not largely succeed in affecting literacy or borrowing behavior, but that does not mean that future interventions with alternative designs will also fall short of this goal. As institutions and policy makers work to expand the use of debt letters, and debt notifications more generally, they should implement policy changes in ways that will allow for research to assess the effectiveness of the intervention. It is only through an iterative process of trying and assessing interventions that the higher education community will learn what works to improve student financial literacy, decision making and later outcomes.

Appendix

Table A1: Estimating the Effect of Literacy Outcomes (Institution A)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Indicator: Student Reports		Indicator: Student Reports		Indicator: Student Reports		Student Error on Loan	
VARIABLES	Wrong Cost		Wrong Debt Level		False Negative on Loans		Payment Estimate	
Treatment	0.00218	0.0121	-0.00957	0.00821	-0.00283	0.00733	-116.6	-132.4
	(0.0113)	(0.0154)	(0.0114)	(0.00789)	(0.0153)	(0.0236)	(81.40)	(92.81)
Constant	0.889***	0.883***	0.892***	1.074***	0.0631***	0.0172	251.0***	225.0
	(0.00799)	(0.225)	(0.00807)	(0.116)	(0.0107)	(0.0701)	(57.62)	(292.9)
Controls		X		X		X		X
Observations	3,068	1,645	3,068	1,645	988	565	495	415
R-squared	0.000	0.019	0.000	0.090	0.000	0.058	0.004	0.061

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table A2: Estimating the Effect of Treatment on Student Outcomes (Institution A)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Cumulative Student Debt		Indicator: Declared Major					
VARIABLES	(Spring 2016)		by Spring 2016		Earned GPA 2015-16		Credits Earned 2015-16	
Treatment	233.6	857.0	0.00560	-0.00365	-0.00610	-0.0171	0.480*	0.652**
	(747.9)	(794.0)	(0.00906)	(0.0103)	(0.0229)	(0.0307)	(0.285)	(0.302)
Constant	22,630***	17,993	0.930***	0.969***	3.294***	3.697***	30.38***	28.49***
	(529.6)	(11,629)	(0.00640)	(0.151)	(0.0162)	(0.448)	(0.201)	(4.429)
Controls		X		X		X		X
Observations	1,849	1,645	3,068	1,645	2,908	1,626	3,068	1,645

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table A3: Mean Student Characteristics by Group (Institution A)

	All	Group: Control	Group: Treatment	Survey: Nonrespondent	Survey: Respondent
Cost of Attendance 2015-16	$24,635	$24,680	$24,591	$24,535	$24,826
Cumulative Student Debt Spring 2016	$22,747	$22,630	$22,863	$22,884	$22,474
Zero EFC	0.12	0.12	0.13	0.11	0.15
EFC 2014	$31,637	$31,178	$31,994	$31,085	$32,444
Female	0.50	0.48	0.51	0.46	0.57
Dependent	1.00	1.00	1.00	1.00	1.00
White	0.63	0.62	0.64	0.65	0.59
n	3087	1537	1531	2082	1005

Table A4: Summary Table - Mean Literacy Outcomes by Student Characteristics (Institution A)

	Indicator: Student Reports Wrong Cost	Student Reports Wrong Debt Level	Student Reports False Negative on Loans	Student Error on Loan Payment Estimate	n
All	0.89	0.89	0.06	$193	3087
Who will pay back debt?					
A family member or friend will pay on my beha	0.63	0.96	na	$344	73
I don't think I'll be able to repay my loans.	1.00	1.00	na		1
I expect to be eligible for loan forgiveness.	0.67	1.00	na	-$604	3
None of the above.	0.56	1.00	na	$315	9
Self	0.70	0.89	na	$144	456
Who manages college finances?					
A family member	0.62	0.60	0.09	$275	387
Both you and a family member	0.67	0.65	0.05	$172	479
Other	0.50	0.50	0.00	$82	6
You	0.77	0.84	0.01	$139	124
Dependency Status					
Independent	1.00	0.80	0.00		5
Dependent	0.88	0.90	0.06	$193	2729
Zero EFC					
0	0.87	0.89	0.06	$159	2393
1	0.97	0.95	0.05	$337	340
EFC 2014					
$0	0.95	0.91	0.01	$105	363
$1-$5,000	0.88	0.89	0.03	-$39	427
$5,001-$25,000	0.89	0.86	0.07	$172	339
$25,001-$50,000	0.93	0.83	0.07	$190	224
$50,001-$100,000	0.88	0.89	0.08	$294	1734
Race					
American Indian or Alaskan Native	1.00	1.00	0.00	$357	5
Asian or Pacific Islander	0.90	0.88	0.05	$190	575
Black Non-Hispanic	0.86	0.91	0.03	$36	94
Hispanic	0.90	0.92	0.03	$174	268
Unknown	0.89	0.89	0.00	$324	180
White Non-Hispanic	0.89	0.88	0.08	$183	1906
Gender					
Male	0.90	0.91	0.07	$179	1542
Female	0.88	0.87	0.06	$203	1526
High School GPA					
80-85	0.88	0.96	0.00	$438	25
85-90	0.93	0.95	0.05	$486	296
90-95	0.90	0.90	0.07	$220	1199
95-100	0.88	0.86	0.06	$123	1567

Table A5: Summary Table - Mean Debt and Academic Outcomes by Student Characteristics (Institution A)

	Cumulative Student Debt Spring 2016	Declared a Major by Spring 2016	Credits Earned 2015-16	Earned GPA 2015-16	n
All	$22,747	0.93	30.43	3.29	3087
Who will pay back debt?					
A family member or friend will pay on my beha	$19,712	0.95	31.51	3.28	73
I don't think I'll be able to repay my loans.		1.00	34.00	3.75	1
I expect to be eligible for loan forgiveness.	$31,156	0.67	22.00	3.49	3
None of the above.	$16,068	1.00	32.56	3.29	9
Self	$24,110	0.92	30.41	3.33	456
Who manages college finances?					
A family member	$20,271	0.92	30.63	3.34	387
Both you and a family member	$23,430	0.93	31.41	3.34	479
Other	$37,456	1.00	32.50	2.89	6
You	$22,978	0.92	29.65	3.36	124
Dependency Status					
Independent	$27,476	0.80	23.40	3.16	5
Dependent	$23,066	0.94	30.83	3.29	2729
Zero EFC					
0	$23,754	0.94	30.91	3.30	2393
1	$19,503	0.93	30.19	3.24	340
EFC 2014					
$0	$24,428	0.96	31.01	3.35	363
$1-$5,000	$26,623	0.92	30.06	3.31	427
$5,001-$25,000	$26,584	0.93	30.18	3.31	339
$25,001-$50,000	$21,570	0.92	30.27	3.29	224
$50,001-$100,000	$20,512	0.92	30.47	3.27	1734
Race					
American Indian or Alaskan Native	$27,627	1.00	24.60	3.10	5
Asian or Pacific Islander	$18,698	0.92	31.31	3.26	575
Black Non Hispanic	$28,176	0.95	29.82	3.13	94
Hispanic	$23,931	0.93	29.96	3.18	268
Unknown	$24,640	0.94	30.19	3.21	180
White Non Hispanic	$23,350	0.93	30.61	3.33	1906
Gender					
Male	$22,751	0.91	29.71	3.23	1542
Female	$22,743	0.95	31.53	3.35	1526
High School GPA					
80-85	$21,865	0.68	25.68	2.82	25
85-90	$19,032	0.87	28.33	3.04	296
90-95	$22,950	0.92	30.17	3.20	1199
95-100	$23,368	0.95	31.10	3.41	1567

Table B1: Estimating the Effect of Treatment on Financial Literacy (Institution B)

VARIABLES	(1) Student Error: Cost of Attendance (Spring 2015)	(2) Student Error: Cost of Attendance (Spring 2015)	(3) Student Error: Cumulative Loan Balance (Spring 2015)	(4) Student Error: Cumulative Loan Balance (Spring 2015)	(5) Student Reports False Negative on Having Loans	(6) Student Reports False Negative on Having Loans	(7) Student Error: Predicted Monthly Loan Payment	(8) Student Error: Predicted Monthly Loan Payment
Treatment	936.1	825.4	-0.0466	-0.0537	-0.0111	-0.0107	-109.7	-118.4
	(612.6)	(594.3)	(0.0436)	(0.0436)	(0.00716)	(0.00754)	(80.61)	(80.98)
Constant	-4,337***	-4,439	0.476***	-0.0753	0.0368***	-0.0606*	251.9***	414.0
	(445.5)	(2,941)	(0.0320)	(0.227)	(0.00513)	(0.0352)	(60.09)	(401.3)
Controls		X		X		X		X
Observations	745	745	710	707	2,350	2,228	592	590

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table B2: Estimating the Effect of Treatment on Student Outcomes (Institution B)

VARIABLES	(9) Cumulative Student Debt (Spring 2015)	(10) Cumulative Student Debt (Spring 2015)	(11) Indicator: Declared Major by Spring 2016	(12) Indicator: Declared Major by Spring 2016	(13) Cumulative GPA Spring 2016	(14) Cumulative GPA Spring 2016	(15) Cumulative Credits Earned Spring 2016	(16) Cumulative Credits Earned Spring 2016
Treatment	-95.64	92.78	0.00557	-0.00495	0.0596*	0.0447	1.800	1.093
	(277.6)	(266.7)	(0.0194)	(0.0195)	(0.0307)	(0.0307)	(1.129)	(1.072)
Constant	7,034***	-3,956***	0.671***	0.647***	2.658***	2.619***	55.42***	53.38***
	(199.1)	(1,242)	(0.0139)	(0.0911)	(0.0220)	(0.144)	(0.809)	(5.008)
Controls		X		X		X		X
Observations	2,350	2,228	2,350	2,228	2,292	2,180	2,331	2,217

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table B3: Mean Student Characteristics by Group (Institition B)

	All	Group: Control	Group: Treatment	Survey: Non-Respondent	Survey: Respondent
Cost of Attendance 2014-15	$20,324	$20,459	$20,196	$19,826	$21,117
Cumulative Student Debt Spring 2015	$6,985	$7,034	$6,939	$6,491	$7,811
Zero EFC 2014	0.37	0.36	0.38	0.34	0.41
Female	0.58	0.57	0.59	0.53	0.68
Dependent	0.97	0.97	0.97	0.97	0.97
White	0.15	0.15	0.14	0.16	0.12
n	2350	1142	1208	1470	880

Table B4: Summary Table - Mean Literacy Outcomes by Student Characteristics (Institution B)

	Student Error: Cost of Attendance (Spring 2015)	Student Error: Cumulative Loan Balance (Spring 2015)	Student Reports False Negative on Having Loans	Student Error: Predicted Monthly Loan Payment	n
All	-$3,842	-$514	0.03	$191	2350
Who will pay back debt?					
Self	-$3,543	-$218	na	$161	565
A family member of friend	-$4,296	-$207	na	$100	56
Expecting loan forgiveness	-$7,111	-$2,681	na	$996	12
I don't expect to be able to pay	-$1,412	$634	na	$236	14
Other	-$1,710	-$1,029	na	$967	13
Who manages finances?					
A family member	-$4,615	-$1,657	0.13	$208	172
Student and a family member	-$4,238	-$885	0.09	$306	393
Other	-$3,840	-$1,858	0.00	$130	7
Student	-$2,916	-$72	0.04	$36	299
Dependency					
Independent	-$1,826	$240	0.00	$111	59
Dependent	-$3,897	-$552	0.03	$194	2236
Zero EFC					
0	-$5,862	-$490	0.03	$249	1488
1	-$1,499	-$551	0.03	$117	862
EFC					
$0	-$2,729	-$389	0.03	$126	1493
$1-$5,000	-$8,111	-$1,004	0.03	$356	639
$5,001-$25,000	-$5,935	-$690	0.04	$83	125
$25,001-$50,000	-$4,033	$1,185	0.00	$2,268	31
$50,001-$100,000	$1,467	-$42	0.00	.	62
Race					
American Indian or Alaskan Native		$0	0.00		5
Asian or Pacific Islander	-$5,752	$173	0.00	$315	51
Black Non-Hispanic	-$2,853	-$78	0.05	$282	332
Hispanic	-$3,635	-$1,404	0.05	$228	153
Other	-$1,423	-$345	0.02	$152	44
White Non-Hispanic	-$5,183	-$893	0.04	$160	345
Gender					
Female	-$3,738	-$658	0.03	$167	1370
Male	-$4,081	-$272	0.03	$246	980
High School GPA					
<70	-$2,277	-$411	0.03	$260	375
70-80	-$3,809	-$610	0.03	$201	1548
>80	-$4,832	-$289	0.03	$99	427

Table B5: Summary Table - Mean Debt and Academic Outcomes by Student Characteristics (Institution B)

	Cumulative Student Debt (Spring 2015)	Indicator: Declared Major by Spring 2016	Cumulative GPA Spring 2016	Cumulative Credits Earned Spring 2016	n
All	$6,985	0.67	2.69	56.35	2350
Who will pay back debt?					
Self	$9,724	0.78	2.83	63.72	565
A family member of friend	$8,373	0.71	2.69	56.79	56
Expecting loan forgiveness	$10,864	0.92	2.75	69.08	12
I don't expect to be able to pay	$12,116	0.93	3.09	77.00	14
Other	$8,499	0.69	2.49	51.77	13
Who manages finances?					
A family member	$7,602	0.80	2.84	65.35	172
Student and a family member	$7,688	0.82	2.87	63.87	393
Other	$7,558	1.00	2.86	64.43	7
Student	$8,117	0.78	2.84	64.49	299
Dependency					
Independent	$8,760	0.59	2.53	48.36	59
Dependent	$7,075	0.68	2.69	56.20	2236
Zero EFC					
0	$7,276	0.69	2.73	58.52	1488
1	$6,483	0.64	2.61	52.59	862
EFC					
$0	$6,771	0.66	54.25	2.64	1493
$1-$5,000	$8,020	0.70	58.77	2.76	639
$5,001-$25,000	$7,500	0.74	62.93	2.90	125
$25,001-$50,000	$4,786	0.74	53.77	2.66	31
$50,001-$100,000	$1,538	0.63	69.45	2.76	62
Race					
American Indian or Alaskan Native	$6,302	0.80	2.63	52.60	5
Asian or Pacific Islander	$3,949	0.67	2.74	56.06	51
Black Non-Hispanic	$8,961	0.71	2.65	57.34	332
Hispanic	$8,243	0.67	2.67	56.17	153
Other	$6,465	0.61	2.35	47.37	44
White Non-Hispanic	$6,127	0.68	2.87	60.50	345
Gender					
Female	$7,267	0.71	2.79	59.66	1370
Male	$6,591	0.62	2.54	51.68	980
High School GPA					
<70	$7,452	0.60	2.32	47.30	375
70-80	$7,275	0.67	2.64	55.33	1548
>80	$5,525	0.75	3.18	67.91	427

Table C1: Estimating the Effect of Treatment on Financial Literacy (Institution C)

VARIABLES	(1) Student Error on Cost of Attendance (Spring 2015)	(2) Student Error on Cost of Attendance (Spring 2015)	(3) Student Error on Cumulative Loan Balance (Spring 2015)	(4) Student Error on Cumulative Loan Balance (Spring 2015)	(5) Student Reports False Negative on Having Loans	(6) Student Reports False Negative on Having Loans	(7) Student Error on Loan Payment Estimate	(8) Student Error on Loan Payment Estimate
Treatment	132.7	-411.0	-0.0547	-0.0286	0.0120	0.000403	-3.926	-3.500
	(446.7)	(612.6)	(0.0464)	(0.0592)	(0.00793)	(0.0110)	(31.95)	(48.29)
Constant	-3,751***	-1,054	0.432***	0.259	0.0145***	-0.0220	108.1***	276.0*
	(301.7)	(2,001)	(0.0310)	(0.173)	(0.00533)	(0.0359)	(19.94)	(143.8)
Controls		X		X		X		X
Observations	1,142	549	500	247	1,254	550	755	346

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table C2: Estimating the Effect of Treatment on Student Outcomes (Instititon C)

VARIABLES	(1) Cumulative Student Debt (Spring 2016)	(2) Cumulative Student Debt (Spring 2016)	(3) Indicator: Student Declared Major by Spring	(4) Indicator: Student Declared Major by Spring	(5) Cumulative GPA (Spring 2016)	(6) Cumulative GPA (Spring 2016)	(7) Credits Earned (Spring 2016)	(8) Credits Earned (Spring 2016)
Treatment	98.45	-703.4	-0.0170	-0.00804	-0.00151	-0.00547	-0.376	-0.715
	(378.3)	(616.0)	(0.0114)	(0.0149)	(0.0188)	(0.0219)	(0.333)	(0.438)
Constant	8,044***	-13,257***	0.767***	0.764***	2.818***	2.723***	31.63***	26.36***
	(267.6)	(2,008)	(0.00804)	(0.0490)	(0.0133)	(0.0724)	(0.235)	(1.441)
Controls		X		X		X		X
Observations	5,664	2,366	5,664	2,366	5,378	2,343	5,664	2,366

Standard errors in parentheses
Controls: White, Dependent, Female, EFC , Zero EFC, Cumulative Debt (omitted from specifications 9 and 10), Cost of Attendance
*** p<0.01, ** p<0.05, * p<0.1

Table C3: Mean Student Characteristics by Group (Institution C)

	All	Group: Control	Group: Treatment	Survey: Non-Respondent	Survey: Respondent
Cost of Attendance (Spring 2016)	$9,592	$9,538	$9,647	$9,615	$9,523
Cumulative Student Debt (Spring 2016)	$7,796	$8,044	$8,142	$8,468	$5,776
Zero EFC (Fall 2014)	0.13	0.14	0.14	0.13	0.12
EFC (Fall 2014)	$8,672	$8,301	$9,044	$8,891	$7,871
Female	0.58	0.59	0.61	0.58	0.57
Dependent Student	0.45	0.46	0.46	0.47	0.38
White	0.28	0.29	0.29	0.30	0.24
n	5880	2830	2834	4411	1469

Table C4: Summary Table - Mean Literacy Outcomes by Student Characteristics

	Student Error: Cost of Attendance (Spring 2015)	Student Error: Cumulative Loan Balance (Spring 2015)	Student Reports False Negative on Having Loans	Student Error: Predicted Monthly Loan Payment	n
All	-$3,691	$791	0.02	$107	5880
Who will repay debt?					
Expecting loan forgiveness	-$4,549	-$1,914	na	$18	9
Family member of friend will pay	-$898	$519	na	$208	115
I won't be able to repay	-$298	-$186	na	-$263	7
Other	-$4,738	$473	na	$56	161
Self	-$2,991	$1,446	na	$86	774
Who manages finances?					
Student	-$4,921	$920	0.01	$90	819
A family member	$258	-$927	0.08	$135	97
Student with family member	-$2,387	$874	0.02	$127	532
Other	-$92	$706	0.00	$255	5
Dependency Status					
Independent	-$3,362	$1,078	0.02	$122	3263
Dependent	-$4,080	$324	0.02	$88	2617
Indicator: Zero EFC					
0	-$3,471	$855	0.02	$113	5106
1	-$4,929	$320	0.01	$68	774
EFC Category					
$0	-$4,888	$256	0.01	$107	1598
$1-$5,000	-$3,429	$870	0.02	$83	867
$5,001-$25,000	$210	-$1,018	0.05	$57	209
$25,001-$50,000	-$5,197	$540	0.00	$50	65
$50,001-$100,000	-$3,254	$1,076	0.02	$118	3141
Race					
Black	-$1,874	-$760	0.00	$22	580
Asian	-$3,436	$430	0.02	$129	1137
White	-$3,863	$252	0.03	$103	1656
Hispanic	-$4,510	$183	0.01	$86	1827
Native American	-$2,942	$4,670	0.00	-$34	76
Pacific Islander	-$2,154	-$2,868	0.08	$308	355
Missing	-$6,020	-$620	0.04	$213	249
sex					
F	-$3,847	$199	0.02	$93	3389
M	-$3,371	-$179	0.03	$136	2275
HS GPA Category					
<3.03	-$2,583	$458	0.01	$82	1369
3.03-3.30	-$3,105	$47	0.02	$133	1372
3.30-3.60	-$3,985	$69	0.02	$79	1369
>3.6	-$4,558	-$180	0.03	$124	1373

Table C5: Summary Table - Mean Debt and Academic Outcomes by Student Characteristics

	Cumulative Student Debt (Spring 2016)	Indicator: Student Declared Major by Spring 2016	Credits Earned (Spring 2016)	Cumulative GPA (Spring 2016)	n
All	$7,796	0.77	30.29	2.82	5880
Who will repay debt?					
Expecting loan forgiveness	$10,189	0.56	29.89	2.72	9
Family member of friend will pay	$7,468	0.87	30.59	3.02	115
I won't be able to repay	$17,957	1.00	37.29	2.94	7
Other	$1,521	0.87	29.49	3.05	161
Self	$8,893	0.87	29.59	2.97	774
Who manages finances?					
Student	$5,070	0.87	30.22	3.01	819
A family member	$8,328	0.86	32.25	3.03	97
Student with family member	$6,525	0.87	32.48	3.02	532
Other	$10,770	0.80	18.40	2.33	5
Dependency Status					
Independent	$5,659	0.74	29.16	2.74	3263
Dependent	$10,460	0.80	31.70	2.91	2617
Indicator: Zero EFC					
0	$7,946	0.77	30.36	2.82	5106
1	$6,804	0.75	29.84	2.82	774
EFC Category					
$0	$6,866	0.78	30.44	2.86	1598
$1-$5,000	$14,618	0.81	32.70	2.96	867
$5,001-$25,000	$19,366	0.86	33.72	2.98	209
$25,001-$50,000	$12,995	0.85	33.65	3.03	65
$50,001-$100,000	$5,508	0.74	29.25	2.73	3141
Race					
Black	$13,338	0.72	28.16	2.57	580
Asian	$6,121	0.81	34.00	2.96	1137
White	$8,711	0.75	32.18	2.89	1656
Hispanic	$6,335	0.74	30.46	2.76	1827
Native American	$8,407	0.68	28.59	2.67	76
Pacific Islander	$12,094	0.77	30.78	2.77	355
Missing	$846	0.95	4.32	2.78	249
sex					
F	$7,923	0.77	32.12	2.88	3389
M	$8,346	0.75	30.45	2.73	2275
HS GPA Category					
<3.03	$10,179	0.67	25.88	2.42	1369
3.03-3.30	$8,380	0.73	29.30	2.66	1372
3.30-3.60	$7,440	0.77	32.91	2.89	1369
>3.6	$5,454	0.86	38.02	3.27	1373

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