Selection of Student Loans and College Performance

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Abstract

The rapid increase in the number of college students with student loan debt and the amount of debt borrowed to finance post-secondary education has attracted increasing attention as a potential threat to the financial well-being of young adults and a risk to the broader economy. However, little research has focused on pre-graduation interventions that may reduce the total amount of debt accumulated or improve the ability of students to service their debt load by choosing a more lucrative major. Using a rich administrative dataset that contains detailed individual level information on Montana University System students, their academic records, and their student loan debt we exploit a natural experiment whereby students deemed to be at financial risk were provided with counseling to examine the effect on choice of major and debt accumulation. We find counseled students are more likely to switch to a Science, Technology, Engineering, or Math major and to accumulate less total debt than uncounseled students.

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

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Introduction

Over the past decade, the amount of student loan debt outstanding has increased far more rapidly than any other type of consumer credit, replacing motor vehicle loans as 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 relative to $955 billion in motor vehicle loans and $680 billion in credit card debt (Federal Reserve Bank of New York 2014, Federal Reserve Board 2015). When deciding how to finance their college education, young adults are faced with choosing amongst a complex system of financial aid and borrowing options. The decision to take out a student loan is very often the first borrowing decision made by young adults in America. Towards the end of the senior year of high school, when it comes time to decide how to finance post-secondary education, youth have generally had relatively limited exposure to the financial system and credit. For the vast majority of high school senior their primary experience with the financial system will have been through their checking or savings accounts.[1] This lack of experience with credit can lead these young borrowers to make suboptimal decisions about the type and amount of student loans they use to finance their education (Avery and Turner 2012, Lochner and Monge-Naranjo 2015). Moreover, the financial strain caused by suboptimal borrowing to finance college may reduce academic performance or delay college completion (Heckman, Lim, and Montalto 2014). Longer-term, graduation with a significant amount of student loan debt has been associated with numerous adverse outcomes, such as delays in forming independent households and reduced homeownership (cite Meta Brown and anyone else).

Despite the importance of student loan borrowing to both short-term academic performance and long-term economic outcomes relatively little research has focused on the decision to borrow for college, the effect of student loan debt on academic performance, or pre-graduation interventions to help students manage their debt load. The paucity of research is largely due to the limited availability of high quality data on the amount and type of student borrowing, as well as any linkage of that information to information to college major, GPA, college completion, and subsequent economic outcomes. Using an administrative dataset on students of the Montana State University System that contains detailed information on them from secondary school through college and into the labor market we examine how student debt affects academic performance and then study a financial counseling intervention aimed at students whose debt levels given their standing in school and college major suggest that they may have difficulty repaying their student debt with their prospective income.

At Montana State University, the Office of Student Success sent letters to students with relatively high loan amounts informing them of their debt level and encouraging them to seek free one-on-one debt counseling. At the same time, the University of Montana offered no similar program. For our analysis of this intervention, we utilize a difference-in-difference-in-differences

[1] One possible way to promote improved decision-making on borrowing for post-secondary education is to provide instruction on student loans in high school financial education courses. While early research on high school financial education came to differing conclusions about its effectiveness for improving financial behaviors and outcomes (Bernheim, Garrett, and Maki 2001, Mandell 2009, Mandell and Schmid Klein 2009, Tennyson and Nguyen 2001, Walstad and Buckles 2008, Walstad, Rebeck, and MacDonald 2010, Willis 2008, 2011), recent research has shown financial education courses to be effective at improving later life financial outcomes (Brown et al. 2013), particularly when rigorously implemented (Urban et al. 2014).

strategy to exploit three comparisons. First, we compare students who received the letters at Montana State University to those that did not. Second, we compare students who received the letters at Montana State University to those that would have received the letters at the University of Montana had a policy been in place. Third, we compare students who received the letters to those who would have received them the years before the policy was implemented. We find that students who received the financial counseling are substantially more likely to switch their major to one in the higher paying fields of Science, Technology, Engineering, and Math (STEM) in the semester following the counseling than those who did not receive the counseling. Counseled students also reduce their student loan borrowing in subsequent semesters relative to the borrowing of uncounseled students.

Background

Financing Post-Secondary Education

Students can finance their post-secondary education through any combination of a number of different sources: existing savings, parental contributions, employment income, grants, scholarships, subsidized and unsubsidized public student loans, or private student loans. Focusing on the options for borrowing, the federal government offers Subsidized Stafford Loans to undergraduate students based on financial need and Unsubsidized Stafford Loans to undergraduate students at all income levels. Parents can also borrow for their children's education using the Parent PLUS loan program. For academic year 2014-2015, the interest rate on subsidized and unsubsidized Stafford loans for undergraduate students was 4.66 percent and the interest rate on Parent PLUS loans was 7.21 percent. The borrowing limit for Stafford loans increases with each year of college, reaching a maximum of $7,500 per year for college juniors and seniors who are still financially dependent on their parents and $12,500 per year for financially independent students.[2] Since there is no underwriting done on Stafford loans students are able to borrow for their education without consideration of their ability to repay the loan (U.S. Department of Education 2014).

In addition to the Stafford and PLUS loans, students with demonstrated exceptional financial need can borrow from the government through their college using the Perkins loan program. Perkins loans had an interest rate of 5 percent for the academic year 2014-2015 and allowed needy undergraduate students to borrow up to $5,500 per year to a cumulative maximum of $27,500. Students from low-income families can also receive a Pell Grant valued at $5,730 for the 2014-2015 academic year that they do not need to repay.

Students and their parents have the option of borrowing from private financial institutions to finance their post-secondary education. Private student loans are generally more costly than federal student loans and lack much of the flexibility on repayment terms of federal loans (Lochner and Monge-Naranjo 2015). Moreover, private student loans are underwritten and therefore require a co-signer for approval unless the student has established a positive credit record. The underwriting requirements and reduced flexibility suggest that students should generally maximize their borrowing through the federal student loan programs before turning to private loans (Avery and Turner 2012).

[2] The cumulative maximums are $31,000 and $57,500, respectively.

Data

The data for this project are administrative panel data from the Montana University System (MUS). These data include students' high school information, demographic information, the Montana post-secondary campus attended, and the degree pursued. The MUS data are novel for the detailed individual-level college funding information. These data identify the source of funds (federal, institutional, state, etc.), the type and amount of award (need-based, merit-based, athletic payments, work study, loans, etc), and the fraction of tuition covered by the loans. Our data do not include any information on private loans; however private student loans are only a small fraction of student debt at the undergraduate level (find cite). These data also include semester-by-semester enrollment, credits, major, GPA, courses taken, and completion. We are the first researchers to use individual student loan data to examine its effect on post-secondary education outcomes.

Montana State University and the University of Montana are ideal for research into the effects of student loans on post-secondary outcomes because these institutions are roughly comparable to many public institutions throughout the United States. Both are public universities, with student enrollment of about 13,000 undergraduate students at Montana State University and about 15,000 at the University of Montana. About 60 percent of students at both universities come from Montana. These are roughly comparable to average enrollment at public-four year universities in the United States of about 11,000 students. Although tuition rates at these universities are below the national average, they are comparable as a fraction of state median household income. About 60 percent of high school graduates in Montana enroll in degree-granting institutions of higher education, slightly below the national average of 63 percent.

In terms of measures of financial disadvantage, Montana students are similar to the nation: 19 percent of children ages 5 through 17 in the state are in households below the poverty line, compared to 21 percent nationally (US Census Bureau 2012). However, Montana is unique for the rural nature of the state, resulting in many small schools in remote areas. Population density for the state is 6.7 persons per square mile. Furthermore, about 11 percent Montana high school students are American Indians, and access to formal banking in reservation communities tends to be low. According to the FDIC, the percentage of unbanked households in slightly lower in Montana (6.6%) than the national rate (7.7%).

Our data span the years 2002 through 2013, or 33 semesters of data, allowing us to follow 92,271 students for at least some portion of their time in college. Our sample yields a total of 454,366 student-semester observations. For the purpose of this study, we limit our analysis to the two largest four-year campuses in the state of Montana—the University of Montana and Montana State University. We also limit our analysis to in-state students to abstract away from tuition and loan differences due to the choice of an out-of-state institution. However, we are able to examine both the effects of loans and the amount of tuition covered by loans, as relative tuition

charges at the University of Montana and Montana State vary from year to year, with a current difference in tuition of about 15 percent.

Table 1 reports summary statistics on the loan, demographic, and academic characteristics of the students we study. Of these students, 51 percent take out a federal loan, with an average loan amount of $4,120 that covers about 95% percent of annual tuition charges. On average, students receive approximately $1,240 in non-loan aid, such as merit or athletic scholarships, work study payments, and other school specific scholarships or grants. Approximately one in every three students is a Pell grant recipient, meaning that they come from a low-income household.

The average student enrolls in 10.5 credits per semester, which is less than a typical full-time course load of 15 credits per semester. The average number of semesters completed is 7.6, suggesting the average standing is a first semester senior. However, the average number of cumulative credits, 55.7, is significantly lower than one would expect from a first semester senior. This suggests that there is a skewed distribution in the number of credits per semester completed, where it is more likely that students complete only 8 credits per semester. Approximately 45 percent of students declare a STEM major at these two universities. The fraction of STEM majors may seem high at first glance, but given that Montana State is a land grant university with many agriculture-based majors, this is not surprising.

Predictions

Ex ante, there are several channels through which student loans can affect student performance in college. It could be that students with more aggressive loan package are focusing all of their energy on school in hopes of higher lifetime earnings. In this case, we would expect greater student loan amounts to be associated with higher GPAs and an increase in semester credits taken. However, students may feel the burden of the loan and experience significant stress or feel obligated to work while in college (outside of work study). If this were the case, we would anticipate lower GPAs and lower credits per semester. This might be especially true if the student's self-assessed probability of completing college is low.

Another measure we consider in this paper is a student's choice to declare a STEM major as opposed to a major in the humanities. The choice to declare a STEM major suggests that the student may be capitalizing on higher expected future earnings for STEM majors to service their student loan debt. If this is the case, a student with higher loan amounts may be optimally choosing this type of loan package since he/she knows the expected return in terms of future income. However, it could also be the case that students choose higher earning STEM majors after taking on high loan amounts as a strategy to repay the loans in the future. This could yield a poor match of student ability to major and thus poor academic performance. Since these effects are ambiguous, we take the question to the detailed data described above.

Methods and Preliminary Results

We begin by using these individual-level panel data to understand how different loan compositions affect a student's performance in college, as measured by the student's GPA, semester credits, and their choice of major (STEM vs. non-STEM). In these models, it is

important to control for some measure of parental income given its role in the determination of eligibility for grants, loans, and financial aid. The best measure we have for parental income in our data is the student's Pell Grant status, as this is a signal for having come from a very low-income family. We also control for the student's academic ability as measured by the ACT score. We convert the scores of students who took the SAT to ACT units for ease of comparison.[3] We control for race, gender, and urban hometowns, and include year fixed effects, while also controlling for the number of credits taken up to that semester, the number of semester the student has completed (i.e. their standing in school), a campus dummy (University of Montana or Montana State University), and the type of semester (Fall, Spring, or Summer). Specifically, we estimate Equation 1:

$$Y_{\{i,t\}} = \alpha_0 + \alpha_1 X_{\{i,t\}} + \alpha_2 White_i + \alpha_3 Male_i + \alpha_4 Pell_{\{i,t\}} + \alpha_5 Credits_{\{i,t\}} + \alpha_6 Semesters_{\{i,t\}} + \alpha_7 ACT_i + \alpha_8 Urban_i + \delta_{\{year\}} + \beta_{\{semeter\}} + \gamma_{\{campus\}} + \epsilon_{\{i,t\}}$$

In this equation, our independent variables of interest (depicted by $X_{\{i,t\}}$) are alternately: a dummy for whether or not the student got a loan in the given semester; the total amount of non-loan aid the student received (e.g. merit-based scholarships, athletic scholarships, grants, work-study aid, etc.): the total amount of loans the student took on in that given semester (conditional on receiving loans); and the ratio of loans to tuition charges (conditional on receiving loans). We estimate these regressions for the full sample of students, as well as for a sample restricted to first-year freshmen.

The results (Table 2) suggest that on average students with loans have an approximately 0.07 point lower GPA than students without loans. To put this in perspective, this effect is slightly greater than the effect of a one-point increase in a student's ACT score (which ranges up to 34 points). There are also significant effects along the intensive margin: among those with loans, an increase in student loans of $1,000 decreases GPA by 0.018 point (Column (3)) and a 10 percentage point increase in the ratio of loans to tuition reduces GPA by about .051 point (Column(4)). These results remain roughly consistent if we separate the dependent variable into categories of subsidized and unsubsidized loans. However, the effect on GPA of other kinds of financial aid (e.g. merit aid, scholarships, athletic support, work-study, and grants) are starkly different: increasing the amount of non-loan aid by $1,000 *increases* the student's GPA by 0.049 points (Column (2)).

While student performance may be affected by the composition of student loans, it may also be the case that students with greater loan amounts choose to take a different number of credits per semester. The number of credits could be lower if these students are simultaneously working an outside job, although work-study payments are included as part of a student's aid package. The number of credits could also be greater if students are taking on more aid to focus all of their energy on school. In fact, our results show that those with loans take an average of 0.06 fewer credits than those without loans (Table 3, Column (1)). Greater loan balances also have a negative effect on the accumulation of course credits. Conditional on getting a loan, a 10 percent

[3] We also run specifications with and without ACT score, since this variable is missing for a significant portion of the sample. The results remain unchanged.

increase in the amount of tuition covered by loans decreases semester credits by nearly half (0.45) a credit (Table 2, Column (4)). A $1,000 increase in the amount of non-loan aid, on the other hand, increases average credits by 0.3 (Column (3)).

Lower credit accumulation and lower grades may not be indicative of less successful college careers if a student who takes out more loans is choosing to do so to pursue more difficult majors that may lead to better future careers and earnings. These more demanding majors may have lower grades and students may enroll in fewer credits to be successful. To examine this possibility, we look at how financial aid affects the choice of a STEM major.

Students who take out loans are 3.2 percentage points less likely to choose a STEM major (Table 3, Column (1)). This difference in STEM majors is greater in magnitude than the gap in the choice to become a STEM major between white and non-white students, and is roughly comparable to the effect of a 3 point decrease in ACT score. However, conditional on getting a loan, a $1,000 increase in loan balance is only associated with a 0.3 percentage point reduction in the probability of becoming a STEM major (Column (3)). For students with loans, increasing the percentage of tuition covered by loans by 10 percent decreases the probability of becoming a STEM major by 0.7 percentage points (Column (4)). We further find that getting $1,000 more in non-loan aid increases the probability of being a STEM major by 0.7 percentage points. While this is a modest increase, it could be that STEM majors receive more non-loan aid on average than other majors, which results in the need to borrow less to finance their education.

Overall, our results indicate significant academic disparities between students who use loans to finance their education, even after controlling for race, Pell grant status, and academic ability (ACT scores). To see how these gaps evolve over a student's academic career, Tables 6 and 7 present results restricted to incoming freshmen. Table 5 indicates that the effect of student loans on GPA is significant from the first semester of college, although the effect for freshmen is smaller in magnitude than for the full sample of students, suggesting the effect of student loans on GPA accumulates over time. On average, freshmen students who take out a loan have a GPA that is .07 point lower than those without loans. Higher loan values also negatively affect freshman GPA: an additional $1000 of loans in a student's first year is associated with 0.008 lower GPA, and a 10 percent increase in loans relative to tuition decreases GPA by about 0.025 points. These effect sizes are about half the size of the effects reported in Table 2 for the full sample. This is consistent with the possibility that low initial academic performance is compounded as students' progress through school.

Table 6 shows that first semester freshmen, unlike more advanced students, do not appear to be enrolling in reduced course loads as a result of taking on student loans. The presence of a loan and the dollar amount borrowed are not associated with differences in the number of course credits taken in the freshman year. In contrast, $1,000 more in non-loan aid increases the number of credits taken by a modest amount (.02 credit) and the ratio of loans to tuition has a modest negative effect, although this effect is about a tenth of the magnitude in the regressions with all students. We do not examine the effects of student loans on pursuing a STEM major, as the majority of freshmen have not yet declared a major. It appears that students with loans begin their careers with weaker grades and roughly comparable credit loads, and over the course of their academic careers, the negative effect on number of credits completed begins to compound,

coupled with a growing disparity in GPA.

Evaluation of Financial Counseling Intervention

Most institutions have historically targeted financial counseling later in a student's career, typically offering services for students close to graduation. This advice has also historically focused on loan repayment options. However, counseling students far in advance of graduation about the amount of the loans they have accumulated or about how their career choices can affect their ability to repay their loan is less likely to be available. Beginning in Fall 2012, Montana State University began an intervention designed to extend targeted offers of intensive financial counseling to all students who were at risk of graduating with high levels of debt. About 2,300 letters were sent over the course of Fall semester, providing information about how to access one-on-one intensive financial counseling. Letters were sent based on debt as of fall semester relative to a threshold that depended on the student's year in school: freshmen received letters if total debt exceeded $6250 (slightly more than a full year of tuition), sophomores if total debt was more than $12,000, juniors if debt exceeded $18,750 and any student if total debt was greater than $25,000. Letters were also sent to students whose total debt exceeded the median salaries for MSU graduates in their major field.[4] The University of Montana also offers financial counseling services, but advertises these services to the student body at large rather than making targeted offers.

In our data, we determine freshmen, sophomores, juniors, and seniors who would have received the letters based on the criteria established. Table 7 reports the counts of individuals assigned to the letter at Montana State (Bozeman) and those that would have received the letter using the same criteria at the University of Montana (Missoula). We only include students with loans in this set of analysis, as those without loans are systematically different from those with loans.

We examine the impact of these letters on academic outcomes by comparing University of Montana and Montana State students who received loans in Fall 2012 to each other, and to their counterparts who had similar levels of debt in years prior to the letter program. Specifically, we estimate the following regression for students with loans:

$$\begin{aligned} Y_{\{i,t\}} = \alpha_0 &+ \beta_1 Letter_{\{i,t\}} + \beta_2 Montana\ State_{\{i,t\}} + \beta_3 Letter \times Montana\ State_{\{i,t\}} \\ &+ \beta_4 Letter \times Montana\ State \times 2012_{\{i,t\}} + \alpha_2 White_i + \alpha_3 Male_i \\ &+ \alpha_4 Pell_{\{i,t\}} + \alpha_5 Credits_{\{i,t\}} + \alpha_7 ACT_i + \alpha_8 Urban_i + \delta_{\{year\}} + \beta_{\{semeter\}} \\ &+ \epsilon_{\{i,t\}} \end{aligned}$$

Here we are primarily interested in the β_4 parameter, as it captures the difference-in-difference-in-differences estimator of the counseling intervention. We think of this as a measure of intent to treat since it captures the effect on all students who borrowed, not just those who attended the one-on-one counseling sessions. Our $Y_{\{i,t\}}$ measure captures decisions students can make in the subsequent semester after receiving the letter and potentially counseling. First, we look at the

[4] These salaries were based on responses to MSU's Career Destinations Survey given to graduating seniors.

choice of STEM majors. Second, we look at students' subsequent loan packages. Results for these outcomes are reported in Table 8.

We find that students likely to have received one-on-one student loan counseling were 8 percentage points more likely to be a STEM major in the Spring semester following the mailing of the letter than those not subject to the intervention. This result is robust to including controls for demographic characteristics, underlying academic ability, standing in school, and family socioeconomic status. Students subject to the intervention also reduce the amount they borrow in student loans in the semester following receipt of the letter by approximately $2,400. The one-on-one counseling appears to result in students either reducing their spending or finding alternative ways to finance their subsequent semesters in school.

Our results are qualitatively robust to estimating a difference-in-difference model comparing students who did and did not receive letters before and after the implementation of the policy. While these results are qualitatively similar to the cross-campus comparison, the magnitudes are slightly smaller. In Columns (1) and (2), the intervention increases the probability of declaring a STEM major by between 6 and 7 percentage points. In Columns (5) and (6), counseling decreases the student loan amount in the subsequent semester by between $1,197 and $1,783 dollars.

In both Tables (8) and (9), we document that students who were eligible to receive the letters have higher average loan amounts than those that do not by between $3,000 and $4,000. On average, students who received letters are also slightly less likely to declare STEM majors.

Conclusions

This project will next document how financial education in high school, measured by the high school's offering and student high school transcripts, affects student loan decisions and performance in high school. In addition, the MUS data is unique in that it follows students not only from high school through post-secondary education, but also into the labor market. Further, we will be able to document default patterns for those students who are out of school and required to repay student loans. Students are tracked for four quarters in the Montana labor market after graduation (about 80 percent work in Montana post-graduation). The college, award, high school, default, and labor market datasets are available separately, but they can be merged with Social Security Numbers. We plan to make use of all components of these data.

This direction will contribute to a growing literature studying the potential ways to mitigate the complexity of student financial aid through financial education. Dynarski and Clayton (2006) liken the complexity of financial aid to the tax system, explaining how a simplified system would provide more aid to more individuals. Bettinger et. Al. (2010) find that assistance in filling out the FAFSA increases aid amounts and the probability that an applicant attends college. Our study will determine how early access to financial education and institutions determine aid choices. We can further investigate whether students who obtain more preferable aid packages (more scholarships and low-interest loans) perform better in college and have better labor market outcomes.

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Table 1: Summary Statistics

	Observations	Mean	Std. Dev.
Academic Characteristics			
Average Institutional GPA	363,938	2.95	0.68
Semester Credits	454,366	10.49	6.87
STEM Major Indicator	454,366	0.45	0.50
Cumulative Credits	363,938	55.72	36.31
Number of Semesters	454,366	7.60	3.50
Loan Characteristics			
Have loan	454,366	0.51	0.50
Amount of Aid Not from Loans	454,366	1.24	1.98
Loan Amount Conditional on Borrowing	230,293	4.12	2.69
Loan/Tuition Ratio for Borrowers	230,293	0.95	0.14
Student Characteristics			
White	454,366	0.88	0.33
Male	454,366	0.51	0.50
Pell	454,366	0.30	0.46
ACT Score	252,884	23.35	4.02
Urban Area	423,176	0.86	0.34
Observations (unique students)	92,271		
Observations (student-semester)	454,366		

Table 2: Student Loans and Student Average GPAs

	Dependent Variable = Student Average GPA			
	(1)	(2)	(3)	(4)
Loan Dummy	-0.073***			
	(0.003)			
Amount Aid not Loans		0.049***		
		(0.001)		
Loan Amount (if have loans)			-0.018***	
			(0.001)	
Loan/Tuition (if have loans)				-0.507***
				(0.010)
White	0.086***	0.110***	0.104***	0.106***
	(0.005)	(0.005)	(0.007)	(0.007)
Male	-0.241***	-0.232***	-0.218***	-0.216***
	(0.003)	(0.003)	(0.004)	(0.004)
Pell Dummy	-0.009**	-0.141***	-0.061***	-0.052***
	(0.003)	(0.003)	(0.004)	(0.004)
Cumulative Credits	0.003***	0.003***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)
Number of Semesters	0.003***	0.003***	0.009***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
ACT score	0.065***	0.062***	0.059***	0.058***
	(0.000)	(0.000)	(0.000)	(0.000)
From urban area	-0.003	-0.009*	0.011*	0.010+
	(0.004)	(0.004)	(0.005)	(0.005)
Campus FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes
Observations	209525	209525	99915	99915
Adjusted R-squared	0.246	0.257	0.224	0.236

Table 3: Student Loans and Semester Credits

	Dependent Variable = Number of Credits			
	(1)	(2)	(3)	(4)
Loan Dummy	-0.060**			
	(0.021)			
Amount Aid not Loans		0.279***		
		(0.006)		
Loan Amount (if have loans)			-0.027***	
			(0.006)	
Loan/Tuition (if have loans)				-4.486***
				(0.072)
White	0.378***	0.524***	0.460***	0.490***
	(0.035)	(0.035)	(0.050)	(0.049)
Male	-0.801***	-0.762***	-0.706***	-0.685***
	(0.019)	(0.019)	(0.028)	(0.027)
Pell Dummy	-0.312***	-0.915***	-0.542***	-0.537***
	(0.024)	(0.025)	(0.029)	(0.028)
Cumulative Credits	0.027***	0.028***	0.030***	0.033***
	(0.000)	(0.000)	(0.000)	(0.000)
Number of Semesters	-0.093***	-0.090***	-0.079***	-0.089***
	(0.004)	(0.004)	(0.006)	(0.005)
ACT score	0.194***	0.171***	0.176***	0.161***
	(0.002)	(0.002)	(0.004)	(0.004)
From urban area	0.194***	0.164***	0.259***	0.312***
	(0.027)	(0.027)	(0.040)	(0.039)
Campus FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes
Observations	209525	209525	99915	99915
Adjusted R-squared	0.435	0.441	0.181	0.204

Table 4: Student Loans and Choice of STEM major

	Dependent Variable = 1 if STEM major			
	(1)	(2)	(3)	(4)
Loan Dummy	-0.032***			
	(0.002)			
Amount Aid not Loans		0.007***		
		(0.001)		
Loan Amount (if have loans)			-0.002**	
			(0.001)	
Loan/Tuition (if have loans)				-0.066***
				(0.009)
White	0.022***	0.025***	0.028***	0.028***
	(0.004)	(0.004)	(0.005)	(0.005)
Male	0.197***	0.198***	0.198***	0.198***
	(0.002)	(0.002)	(0.003)	(0.003)
Pell Dummy	-0.020***	-0.048***	-0.025***	-0.024***
	(0.003)	(0.003)	(0.003)	(0.003)
Cumulative Credits	0.001***	0.001***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Number of Semesters	-0.002***	-0.002***	-0.001*	-0.001**
	(0.000)	(0.000)	(0.001)	(0.001)
ACT score	0.011***	0.011***	0.011***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)
From urban area	-0.022***	-0.023***	-0.015***	-0.015***
	(0.003)	(0.003)	(0.004)	(0.004)
Campus FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes
Observations	209525	209525	99915	99915
Adjusted R-squared	0.092	0.092	0.093	0.093

Table 5: Student Loans and 1st Semester GPA for Incoming Freshmen

	Dependent Variable = Student GPA			
	(1)	(2)	(3)	(4)
Loan Dummy	-0.067***			
	(0.008)			
Amount Aid not Loans		0.027***		
		(0.002)		
Loan Amount (if have loans)			-0.008***	
			(0.002)	
Loan/Tuition (if have loans)				-0.253***
				(0.030)
White	0.051***	0.067***	0.040*	0.042*
	(0.014)	(0.014)	(0.019)	(0.019)
Male	-0.205***	-0.198***	-0.205***	-0.205***
	(0.008)	(0.008)	(0.011)	(0.011)
Pell Dummy	-0.015	-0.095***	-0.038**	-0.030**
	(0.009)	(0.010)	(0.012)	(0.011)
Cumulative Credits	0.105***	0.104***	0.108***	0.106***
	(0.003)	(0.003)	(0.004)	(0.004)
Number of Semesters	0.041***	0.041***	0.043***	0.043***
	(0.002)	(0.002)	(0.002)	(0.002)
ACT score	0.043***	0.041***	0.038***	0.038***
	(0.001)	(0.001)	(0.002)	(0.002)
From urban area	0.002	0.000	0.024	0.024
	(0.014)	(0.014)	(0.018)	(0.018)
Campus FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes
Observations	32510	32510	15847	15847
Adjusted R-squared	0.434	0.436	0.422	0.423

Table 6: Student Loans and Semester Credits for Incoming Freshmen

	Dependent Variable = Number of Credits			
	(1)	(2)	(3)	(4)
Loan Dummy	0.011			
	(0.015)			
Amount Aid not Loans		0.022***		
		(0.003)		
Loan Amount (if have loans)			0.005	
			(0.003)	
Loan/Tuition (if have loans)				-0.416***
				(0.079)
White	0.020	0.036	0.052+	0.055+
	(0.022)	(0.022)	(0.031)	(0.031)
Male	-0.065***	-0.062***	-0.070**	-0.068**
	(0.016)	(0.015)	(0.022)	(0.022)
Pell Dummy	-0.066***	-0.108***	-0.053*	-0.060**
	(0.019)	(0.020)	(0.023)	(0.022)
Cumulative Credits	0.891***	0.890***	0.883***	0.879***
	(0.009)	(0.009)	(0.013)	(0.014)
Number of Semesters	0.020***	0.020***	0.021***	0.020***
	(0.003)	(0.003)	(0.004)	(0.004)
ACT score	0.037***	0.034***	0.044***	0.042***
	(0.004)	(0.004)	(0.006)	(0.006)
From urban area	0.156***	0.154***	0.214***	0.228***
Campus FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Term FE	Yes	Yes	Yes	Yes
Observations	32510	32510	15847	15847
Adjusted R-squared	0.913	0.913	0.901	0.901

Table 7: Letter Descriptive Statistics

	Data for Fall 2012 Only			
	Intended Letter		No Letter	
	Bozeman	Missoula	Bozeman	Missoula
Number Freshmen	758	555	1053	715
Number Sophomores	622	642	494	463
Number Juniors	528	643	564	556
Number Seniors	947	1147	567	491
STEM major	1482	841	1470	675
Cumulative Loan amount Fall	30.05	27.30	9.41	7.69
Cumulative Loan amount Spring	33.21	32.84	11.71	11.79

Table 8: Financial Counseling Letters

	(1) STEM Major	(2) STEM Major	(3) Loan Amount	(4) Loan Amount
Letter	-0.028***	-0.018+	2.158***	2.556***
	(0.008)	(0.010)	(0.058)	(0.077)
Montana State	0.196***	0.200***	-0.082***	0.005
	(0.003)	(0.004)	(0.016)	(0.020)
Montana State x Letter	-0.047***	-0.046***	0.323***	0.163+
	(0.011)	(0.014)	(0.078)	(0.098)
Montana State x Letter x 2012	0.053*	0.066*	-2.172***	-2.410***
	(0.022)	(0.027)	(0.200)	(0.234)
White		0.032***		0.083*
		(0.007)		(0.034)
Male		0.196***		0.047*
		(0.004)		(0.020)
Pell Dummy		-0.022***		-0.506***
		(0.004)		(0.019)
Cumulative Credits		0.000***		0.008***
		(0.000)		(0.000)
ACT Score		0.011***		-0.024***
		(0.001)		(0.003)
From Urban area		-0.017**		0.479***
		(0.006)		(0.024)
Observations	101838	53981	101838	53981
Adjusted R-squared	0.040	0.099	0.127	0.183

Table 9: Financial Counseling Letters, Montana State University Only

	(1) STEM Major	(2) STEM Major	(3) Loan Amount	(4) Loan Amount
Letter	-0.084***	-0.041***	2.371***	2.488***
	(0.008)	(0.010)	(0.052)	(0.062)
Letter x 2012	0.028	0.040	-0.901***	-1.284***
	(0.023)	(0.029)	(0.203)	(0.236)
White		0.027**		-0.012
		(0.010)		(0.053)
Male		0.230***		0.103***
		(0.006)		(0.028)
Pell Dummy		-0.028***		-0.521***
		(0.006)		(0.027)
Cumulative Credits		0.001***		0.004***
		(0.000)		(0.000)
ACT score		-0.019**		0.575***
		(0.007)		(0.031)
From Urban Area		0.017***		-0.031***
		(0.001)		(0.004)
Observations	51286	27943	51286	27943
Adjusted R-squared	0.005	0.095	0.148	0.198