

Student Loans, Academic Performance, and Degree Completion

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Abstract:

The majority of college students are turning to student loans to fund their pursuits of attaining higher education. As students use loans as a resource in this pursuit, it is important to understand the impact these loans have on academic performance and degree completion. I use the 2014 National Student Financial Wellness Study to determine the effects of student loans and the amount of accumulated student debt on cumulative grade point average (GPA) and degree completion. The results of my analyses indicate that using student loans has a significant negative effect on academic performance, decreasing GPA by about 0.19 points. I also find that students who are “on track” to graduate with \$10,000 or more in student debt are 20% less likely to graduate and they have GPAs that are 0.27 points lower than those of students who are “on track” to graduate with less than \$10,000 of student debt. As many students will continue to use student loans as a resource, these findings can guide students in their borrowing decisions as they consider the individual importance they place on maintaining a high GPA and graduating on time.

Background

From philanthropic scholarships in colonial times (Fuller, 2014) to Stafford Loans in our day, government involvement in higher education and financial aid as we know it has been years in the making. The initial step towards federal financial aid for post-secondary educational pursuits was taken during the Second World War. The Servicemen’s Readjustment Act of 1944, also known as the G.I. Bill, provided higher education stipends, unemployment benefits, and low-interest housing loans to servicemen. Within the first 12 years of implementation, 2.2 million veterans had accessed the educational financial aid offered through this legislation. A few decades later the Higher Education Act of 1965 officially confirmed the federal

government's role in financially assisting college students. Additionally, it established "higher education as an issue of national interest." The act included a "guaranteed loan program" that stated the U.S. government's promise to back private student loans if students defaulted. Since 1965, the Higher Education Act has been reauthorized many times. The 1972 reauthorization resulted in the basic outline of the federal aid system that operates today including that of "students as the intermediaries of funds between the federal government and institutions" of higher education. Although the basic structure was developed through this reauthorization, there was still more legislation to come (Fuller, 2014).

In 1978, the Middle Income Assistance Act was passed, expanding the availability of Pell Grants and Stafford Loans (formerly known as the Guaranteed Student Loan Program) to more students from middle class families. Under the Clinton Administration, the Student Loan Reform Act of 1993 sought to convert "60% of federally guaranteed student loans to direct loans across the next five years." (Fuller, 2014) This decision was based on research that suggested it was less costly to the Federal government to provide direct loans to students than it was to back loans given by private lenders. The primary reason this would reduce costs is because the direct loans would be included in the current federal budget whereas guaranteed loans wouldn't appear in the federal budget until the future period when the government had to pay the private lenders if students defaulted (McCann, n.d.). The 2008 reauthorization of the Higher Education Act, known as the Higher Education Opportunity Act, put requirements in place for the highest priced universities to propose plans for reducing the cost of attendance for their institution. The culmination of these pieces of legislation is the federal aid system that we know today which provides low-interest lending and federal grants to students. (Fuller, 2014)

Today students can receive federal financial aid in the form of grants, work-study, and loans. Grants, such as Federal Pell Grants, are sums of money that are awarded based on financial need, cost of attendance, and full- or part-time enrollment status. Work-study is a

program that provides jobs and income to students with financial need. A Federal Loan is an amount of money that the U.S. Department of Education lends to students with an interest rate that is “almost always lower than that on private loans” (Federal Student Aid, 2017). This financial aid award must be repaid. There are different categories of loans for undergraduate students, graduate students, and parents of dependent undergraduate students. Most loans are offered based on financial need; however, there is one loan, the Direct Unsubsidized Loan, that does not require students to demonstrate financial need. This study will focus on loans available to undergraduate students—Stafford Loans, also known as Direct Subsidized Loans and Direct Unsubsidized Loans, and Federal Perkins Loans, which are specifically for students with “exceptional financial need” (Federal Student Aid, 2017). Through these loan programs, undergraduate students can borrow “\$5,500 to \$12,500 per year... depending on certain factors” in Stafford Loans and an additional \$5,500 per year in Perkins Loans, if eligible. Students begin repaying federal student loans after they “leave college or drop below half-time.” In order to receive federal financial aid, students must meet the eligibility requirements which include demonstrating financial need, demonstrating U.S. citizenship status, completing and signing the Free Application for Federal Student Aid (FAFSA), enrolling in college classes, and maintaining “satisfactory academic progress” as determined by the school they attend (Federal Student Aid, 2017).

Private student loans are also available to students who choose to borrow to finance their post-secondary education. Private student loans often have higher interest rates and those rates may vary during the life of the loan. These loans are not subsidized, may require payments while in school, and may not offer alternative repayment plan options. In contrast, Federal student loans have a fixed interest rate, some are subsidized, repayment is not required until the student finishes school or drops below half-time enrollment, and there are many repayment plan options available (Federal Student Aid, 2017). In 2011-2012, 6% of undergraduate students borrowed

private student loans. This percentage is down from 14% in 2007-2008 (College Board, 2012). In contrast 37% of undergraduate students borrowed federal student loans in 2010-2011 compared to 29% of those students in 2005-2006 (College Board, 2016). Although the years do not exactly align, we can see that undergraduate students tend to borrow from the Federal government rather than from private lenders.

The Federal government has made continual efforts to support the financial needs of college students. As described above, there are currently multiple types of aid available to students with and without financial need. In the 2014-2015 school year, 60% of Bachelor Degree recipients from public, 4-year universities graduated with student debt. The average debt of these students was \$26,800 per borrower in 2015 dollars (College Board, 2015). In that same year, the average in-state tuition and fees for full-time undergraduate students was \$9,150 in 2015 dollars (Bureau of Labor Statistics, 2017), which is about 42% higher than those a decade earlier in the 2004-2005 academic year, adjusted for inflation (College Board, 2014). Based on trends reported in 2012 by the College Board, the percentage of students with student loan debt increased as the time between enrollment and degree completion increased (College Board, 2012). According to the *2008-09 Baccalaureate and Beyond Longitudinal Study*, the median time to degree for first-time Bachelor's Degree recipients at public, 4-year institutions was 55 months, or approximately 4.6 years. The percentage of students who started and finished their degree in 48 months (4 years) or less was 38.4% (Cataldi, et al., 2011).

The cost of attendance at public 4-year universities is increasing, but the amount of time in a day that one has to spend on academic pursuits is not. Students have to balance their time between work and school and using student loans can often be a way to cover the costs of attendance without sacrificing additional time to work to earn money for college expenses. Students are spending more time in school than the standard 4 years to earn a Bachelor's Degree and the majority of these students are graduating with student debt (College Board, 2012). The

prominence of student loans and the extra time students are taking to earn their degree leaves room to wonder what effect student loans have on academic performance and degree completion.

Literature Review

The literature related to student loans covers a variety of sub-categories. Some sources address questions that focus on the effect of borrowing on specific academic behaviors and outcomes such as semester GPA (Schmeiser, Stoddard, & Urban, 2015), first-year GPA, cumulative GPA (Stater, 2009), likelihood of graduating (Dwyer, McCloud, & Hodson, 2012), number of credits enrolled in, choice of major (Schmeiser, Stoddard, & Urban, 2015), and course grade (Bennett, McCarty, & Carter, 2015). The following sections will present the empirical results of the current research in each of these areas as well as cautions in conducting student loan research.

Effect of Borrowing on GPA

Using a panel data set from the Montana University System that provides 12 years of data on students with student loans, Schmeiser, Stoddard, and Urban (2015) first use ordinary least squares regression analysis and find that on average having a student loan *decreases* semester GPA by approximately 0.05 points. Similar results are found in relation to overall GPA, but are not reported. Because of the panel nature of this data set, the researchers were able to also conduct an individual fixed effects analysis. This analysis removes the effect of student ability (ACT score) and background characteristics, as they do not change over a student's time in college. The results from the individual fixed effects analysis show that semester GPA is 0.1 points *higher* in the semesters when students choose to borrow than in the semesters when students do not borrow. However, the individual fixed effects analysis also shows that when students borrow 10% more in loans relative to tuition, their semester GPA decreases by 0.04 points.

In Stater's (2009) research on data from three public institutions, he finds a positive relationship between need-based aid (grants or loans) and GPA. In a student's first year of college, a \$1,000 increase in need-based aid predicts a 0.10 increase in first-year GPA. In a student's second through fourth year of college, a \$1,000 increase in need-based aid predicts a 0.04 increase in cumulative GPA.

Effect of Borrowing on Likelihood of Graduation

Post-secondary education can be a pathway to an increased standard of living and higher earning potential if a student completes all the necessary requirements and receives a degree. It is important, then, that we understand how student loans as a payment vehicle for higher education affect the final outcome of such an education. Dwyer, McCloud, and Hodson (2012) address this relationship using the National Longitudinal Survey of Youth 1997 Cohort, which includes 11 years of data collected annually. Their sample consists of 1,898 young adults (ages 25 and older) "who have either successfully graduated from college or dropped out." In general, they find that using a student loan increases the likelihood of graduating. The regression model for this analysis includes a squared term for the amount of educational debt in order to test whether or not the effect of debt is non-linear. The results of this test show that at high levels of debt, around \$10,000, the positive effect of student loans on graduation begins to diminish and additional debt accumulated beyond this threshold reduces the likelihood of graduation. Zhan (2014) finds evidence that supports the non-linear effect of student loans on college graduation and the threshold of about \$10,000 that Dwyer, McCloud, and Hodson (2012) found.

Jackson and Reynolds (2013) explore a similar question but with the additional factor of racial differences. Their findings suggest that using student loans increases the likelihood of graduation, particularly for black students. Although the effect of student loans is positive, black students usually accumulate larger amounts of educational debt and are more likely to default on their loans. This finding supports the dual-nature of student loans as presenting both a benefit

and a cost to students. Jackson and Reynolds argue that overall the effect is positive and the benefit outweighs the cost.

Effect of Borrowing on Other Academic Outcomes

Other academic outcomes may be helpful to understand as we move forward with our analysis. Having a student loan increases the number of credits enrolled in by an average of 0.23 credits per semester. When students do not borrow every semester, they enroll in 1.2 more credits in the semesters that they do borrow. With a 10% increase in the ratio of the loan amount to tuition, semester credits decrease by about 0.5 credits (Schmeiser, Stoddard, & Urban, 2015). In relation to choice of major, using a student loan is related to a 3.2 percentage point decrease in the likelihood of choosing a STEM major (Schmeiser, Stoddard, & Urban, 2015).

Bennett, McCarty, and Carter (2012) conducted research on the effect of financial stress on course grades. From the sample of 231 students, 43.7% reported that they were financially stressed and they felt that their financial stress affected their academics. The average course grade of these students was 71.7 compared to an average course grade of 78.3 for students who reported that financial stress did not affect their academic performance. Of the students who reported that financial stress did interfere with their academic performance, “a significantly higher percentage were female and minority” and first-generation students.

Cautions for Student Loan Research

In a synthesis of articles addressing student loans, Hillman (2015) provides cautions for conducting student loan research. Overall, the quality of data is often poor. In some cases this is due to the use of self-reported data. In other cases, the data quality is poor because it is out of date by the time it is reported. I am primarily using self-reported data for my research, which means the quality of my data is likely not the best; however, it can still provide insights in relation to the existing literature.

Another element to consider in student loan research is the fact that students self-select to take out loans. There is not a random sampling of students with loans. Self-selection bias makes it extremely difficult to determine causal relationships between variables therefore I will take extra caution as I draw conclusions from my research.

Theory

Participation in college requires students to choose how much time they spend attending class, studying, learning about financial aid, attending extracurricular events, working at a job, applying for future opportunities, etc. Regardless of the choices a student makes, time and money are both limited resources and they are both required to attain higher education. More time spent by students in class and studying leaves less time for students to work and earn money. More time spent by students working and earning money leaves less time available for students to study and attend class. When students choose to attend college and consider how they will pay for tuition, they must rationally consider the opportunity costs of their decision.

All types of financial aid are designed to reduce the opportunity cost of college attendance by providing money to cover the monetary costs of attendance. This allows students to reduce the amount of time they spend earning money without reducing their ability to pay tuition and other school expenses. In the case of scholarships and grants, money is awarded to students without an obligation to repay. In the case of student loans, money is lent to the student along with an agreement that the student will repay the lender. Thus student loans, a type of credit, are available as a resource to students who choose to attend college.

In addition to making a decision of how to pay for college, students also have a choice of how much money they will borrow. That amount may be zero, it may be the maximum amount they can borrow from their lender, or it may be anywhere in between. The amount of loans and therefore the amount of accumulated debt represents the liability nature of credit. The theory of

attainment states that the relationship between resources and liabilities has an effect on attainment (Dwyer, McCloud, and Hodson, 2012). For our purposes we are interested in educational attainment or degree completion. In the case of student loans, the theory predicts that student loans (credit), as a resource, will have a positive effect on the likelihood of educational attainment. Additionally, the theory predicts that student loans (credit), as a liability, have a negative effect on the likelihood of graduation. The positive “resource effect” of student loans is greater than the negative “liability effect” until the student loan debt has met or exceeded a certain threshold. Once student loan debt has exceeded the given threshold, the “liability effect” of student loans begins to outweigh the “resource effect” (see Figure 1, reprinted from Dwyer, McCloud, and Hodson, 2012).

Under the theory of economic opportunity costs, we expect that when a student uses a loan to pay for his tuition, the short-run need to work and earn money to pay for tuition is reduced. In the long-run, the need to work and earn money will be more prominent as the student will have to repay his loans. This study will test two main hypotheses. First, the use of student loans as the primary source of tuition funding will have a positive effect on cumulative GPA. Second, the use of student loans as the primary source of tuition funding will increase the likelihood that students graduate on time. The secondary analyses will use the theory of educational attainment with credit (student loans) as both the resource and the liability to test the effect of student debt amounts on the dependent variables by testing two hypotheses. First, larger amounts of student debt will have a negative effect on cumulative GPA. Second, larger amounts of student debt will reduce the likelihood that students graduate on time. As previously mentioned, Dwyer, McCloud, and Hodson (2012) find that educational debt amounts over about \$10,000 decrease the likelihood that students will graduate. The \$10,000 threshold is a general debt estimate based on the inflection points of three different figures (see **Figures 1, 2, and 3**, reprinted from Dwyer, McCloud, and Hodson, 2012) that show 1) the general results, 2)

stratified results by type of institution (public or private) and 3) stratified results by class (lower and middle class or upper class). I will create a variable that will measure whether or not a student is “on track” to graduate with \$10,000 or more in student debt based on the number of credits and years of college he has completed. This variable will then be used in my analyses to determine how being “on track” to meet this amount threshold affects each of the dependent variables.

Data and Methods

Data

This study uses an existing data set from The Ohio State University’s 2014 National Student Financial Wellness Study (NSFWS) to answer the research question. The purpose of this study was to gather information regarding “financial attitudes, practices, and knowledge” (McDaniel et al, 2014) of college students. The data for this study was collected through an online survey that was distributed to 52 higher education institutions across the United States. The survey questions fall under the following categories: personal financial management, financial support, financial socialization, credit cards, student loans, entrance counseling for loans, debt, finance-related stress, cost of college, academic plans, financial knowledge, and demographics. Weber State University is one of the institutions that participated in this study with a total of 411 students responding to the survey. In addition to student responses, the university provided institution-reported data on the respondents. I will use the Weber State University data to represent the population of college students at 4-year public universities.

Two different analyses will be performed, one with cumulative GPA as the dependent variable representing academic performance and another with a dummy variable that equals one if the respondent expects to graduate early or on time and equals zero otherwise. This dummy variable will represent degree completion. The focus independent variables are whether or not

student loans are the primary source of funding for tuition, whether or not a student has ever had a student loan, and the amount of student loan money borrowed up to the time the survey was completed. The additional independent variables in these regressions include whether or not the respondent is financially responsible for any other persons, average number of hours worked per week, whether or not the respondent places importance on graduating with a high GPA, whether or not the respondent places importance on graduating on time, whether or not the respondent places importance on graduating without debt, the number of years the respondent has been enrolled in college, whether or not the respondent qualifies for out-of-state tuition, race, gender, whether or not the respondent is a first generation student, and financial knowledge score. The squared term of the amount of student loans will be included in the logit models with degree completion as the dependent variable. An explanation of each variable can be found in **Table 1**. The descriptive statistics for each variable are presented in **Table 2**.

Econometric Model

Using the data and variables described above, I will test my hypotheses using the following econometric model:

$$Y = \beta_0 + \beta_1 X + \beta C + \varepsilon \quad (1)$$

In my first set of analyses the dependent variable of interest, Y , is alternately *GPA* or *degreecompletion*. The focus independent variables, X , are alternately *primarysource_tuition* or *student loan* to indicate whether a student has a student loan. This model will be used to test two hypotheses: first, that using student loans to pay for tuition and other college expenses will have a positive effect on GPA and second, that using student loans to pay for tuition and other college expenses will increase the likelihood of on-time degree completion.

In my second set of analyses the dependent variable of interest, Y , is again alternately *GPA* or *degreecompletion*. The focus independent variables, X , are alternately *amt_category*, *amt_value* or *intensity_credit* as measures of student loan amounts. This model will be used to

test two hypotheses: first, that larger amounts of student loan debt will have a negative effect on GPA and second, that larger amounts of student loan debt will reduce the likelihood of on-time degree completion.

To determine the effect of a student being “on track” to graduate with \$10,000 or more in student loan debt, I will perform an additional analysis on both dependent variables where X is alternately *threshold_credit* or *threshold_year*. The additional independent variables as described in the previous sub-section, and denoted in the econometric model by C , will be included in all the specified models.

Empirical Results

Use of Student Loans

The results for GPA and measures of student loans are reported in **Table 3**. My analyses show that using student loans as the primary source of tuition funding or using student loans in general for any educational expense has a significant negative effect on GPA. On average, we expect to see GPAs that are about 0.19 points lower for students who have student loans compared to students who do not, assuming all else remains the same. It is possible that this negative effect of student loans is due to the financial stress that is often associated with student debt (see Bennett, McCarty, & Carter, 2015). As shown in **Table 5**, both measures of student loan use have negative and insignificant effects on degree completion. These results suggest that having a loan impacts academic performance more than it impacts the attainment of a college degree.

Loan Amounts

The amount of student loans does not have a statistically significant effect on GPA; however, each measure of loan amount has a negative sign (see **Table 4**). Although the amount variables are not significant, the borrowing intensity of the amounts are significant. Recall that

intensity_credit represents how much money a student has borrowed in relation to the number of credits he has completed. My results show that on average, an additional \$100 borrowed per credit completed has a negative effect on GPA. The effect is a decrease in GPA by approximately 0.1 points.

Students who are “on track” to graduate with \$10,000 or more in student debt will have GPAs that are approximately 0.27 points lower than the GPAs of students who are not. This result is significant and suggests that students who have larger amounts of debt, or will have large amounts of debt upon graduation, are likely financially stressed or focused on employment or other non-academic activities that result in lower grades. These findings support my hypothesis that larger amounts of debt have a negative effect on GPA.

Similar results for the effect of loan amounts on degree completion are reported in **Table 6**). All of the variables measuring loan amount are insignificant. The only variable that has a significant effect on degree completion is *threshold_year* which predicts that on average, students who are “on track” to graduate with \$10,000 or more in student debt based on the number of years they have been enrolled in college are 20% less likely to graduate on time than students who are “on track” to graduate with less than \$10,000 in debt. This result supports the theory of attainment and my hypothesis by providing significant evidence that the “liability effect” of student debt is more prominent than the “resource effect” as the amount of student debt gets large.

Conclusions

Overall, I found that using student loans and accumulating large amounts of student debt have negative effects on GPA and on-time degree completion. The use of student loans has a significant impact on GPA, but not on degree completion. The amount of accumulated student debt has a significant impact on both GPA and degree completion. Although these relationships

are supported by my empirical results, we cannot make any causal inferences because of the self-selection nature of student loans. Instead, we can offer suggestions to students based on their preferences. If a student is concerned about graduating with a high GPA, using a student loan may prevent the realization of this goal. These students should either consider alternative methods of funding for college expenses such as grants or academic merit scholarships or set aside the necessary time required to fulfill all their academic responsibilities. If a student is most interested in graduating on time, there is no evidence that having a student loan will prevent them from accomplishing that goal. However, students who persist to graduation need to be cautious about their borrowing decisions as increased levels of debt may reduce the likelihood that the student will graduate in the standard amount of time. Similarly, financial aid counselors and educators should advise students to only borrow what they need when they need it. As students accumulate enough debt to put them “on track” to graduate with \$10,000 or more in student debt based on how long they have been in college, the likelihood that they will graduate on time begins to decline.

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Tables and Figures

Table 1: Variable Descriptions

Variable Name	Description	Data Source
<i>amt_category</i>	Amount of student loan using a category indicator (= 1 for loan amounts between \$1-\$9999, etc.)	Generated from NSFWS 2014
<i>amt_categorysq</i>	Squared term of <i>amt_category</i>	Generated from NSFWS 2014
<i>amt_value</i>	Dollar amount of student loan using median value from amount category interval* (= \$5000 for amount category \$1-\$9999, etc.)	Generated from NSFWS 2014
<i>amt_valuesq</i>	Squared term of <i>amt_value</i>	Generated from NSFWS 2014
<i>complete_highgpa</i>	True (= 1) if it is moderately or very important to the student that he/she graduates with a high GPA	NSFWS 2014
<i>complete_nodebt</i>	True (= 1) if it is moderately or very important to the student that he/she graduates with no student debt	NSFWS 2014
<i>complete_ontime</i>	True (= 1) if it is moderately or very important to the student that he/she graduates on time	NSFWS 2014
<i>degreecompletion</i>	True (= 1) if student expects to graduate early or on time (2 years or less for Associate's degree, 4 years or less for Bachelor's degree)	NSFWS 2014
<i>female</i>	True (= 1) if student is female	NSFWS 2014
<i>fin_responsibleany</i>	True (= 1) if student is financially responsible for any family member	NSFWS 2014
<i>finknowledge_SCORE</i>	Total number of correct responses to 5 financial word problems	NSFWS 2014
<i>firstgen</i>	True (= 1) if student is a first generation student	NSFWS 2014
<i>GPA</i>	Cumulative grade point average (GPA) as reported by student	NSFWS 2014
<i>hispanic</i>	True (= 1) if student identified his/her race as Hispanic	NSFWS 2014
<i>hourswork_value</i>	Average number of hours worked per week using the median value of the hours worked category interval* (= 3 for average hours worked category of 1-5 hours per week, etc.)	Generated from NSFWS 2014
<i>INSTREPORTED_Credits_Completed</i>	Number of credits completed at time of survey as reported by Weber State University	NSFWS 2014
<i>INSTREPORTED_CumGPA</i>	Cumulative grade point average (GPA) as reported by Weber State University	NSFWS 2014

Variable Name	Description	Data Source
<i>intensity_credit</i>	Ratio of <i>amt_value</i> to <i>INSTREPORTED_Credits_Completed</i> indicating borrowing intensity	Generated from NSFWS 2014
<i>intensity_creditsq</i>	Squared term of <i>intensity_credit</i>	Generated from NSFWS 2014
<i>intensity_year</i>	Ratio of <i>amt_value</i> to <i>years_enrolled</i> indicating borrowing intensity	Generated from NSFWS 2014
<i>intensity_yearsq</i>	Squared term of <i>intensity_year</i>	Generated from NSFWS 2014
<i>outofstate</i>	True (= 1) if student pays out-of-state tuition	NSFWS 2014
<i>primarysource_tuition</i>	True (= 1) if student loans are the primary source of funding for tuition	NSFWS 2014
<i>studentloan</i>	True (= 1) if student has ever had a student loan	NSFWS 2014
<i>threshold_credit</i>	True (= 1) if <i>intensity_credit</i> is greater than or equal to \$83.33*	Generated from NSFWS 2014
<i>threshold_year</i>	True (= 1) if <i>intensity_year</i> is greater than or equal to \$2500**	Generated from NSFWS 2014
<i>white</i>	True (= 1) if student identified his/her race as White	NSFWS 2014
<i>years_enrolled</i>	Number of years enrolled in college	NSFWS 2014

*Based on a threshold amount of \$10,000 and a standard of 120 credits required to graduate with Bachelor's degree

**Based on a threshold amount of \$10,000 and a standard of 4 years to complete Bachelor's degree

Table 2: Descriptive Statistics

Variable Name	Mean	Standard Deviation	Minimum	Maximum
<i>amt_category</i>	2.364	1.556	1	9
<i>amt_categorysq</i>	7.993	11.444	1	81
<i>amt_value</i>	18,964	16,958	5000	110,000
<i>amt_valuesq</i>	6.45E+08	1.38E+09	2.50E+07	1.21E+10
<i>complete_highgpa</i>	0.844	0.363	0	1
<i>complete_nodebt</i>	0.796	0.404	0	1
<i>complete_ontime</i>	0.862	0.346	0	1
<i>degreecompletion</i>	0.415	0.494	0	1
<i>female</i>	0.651	0.478	0	1
<i>fin_responsibleany</i>	0.422	0.495	0	1
<i>finknowledge_SCORE</i>	3.038	1.297	0	5
<i>firstgen</i>	0.471	0.500	0	1
<i>GPA</i>	3.319	0.494	1	4
<i>hispanic</i>	0.073	0.260	0	1
<i>hourswork_value</i>	24.869	14.903	0	43
<i>INSTREPORTED_Credits_Completed</i>	93,741	49,082	0	215,340
<i>INSTREPORTED_CumGPA</i>	3.256	0.647	0	4
<i>intensity_credit</i>	249.776	350.058	25.510	3103.448
<i>intensity_creditsq</i>	183,664.9	984,784.8	650.771	9,631,391
<i>intensity_year</i>	5623.214	4355.258	1000	27500
<i>intensity_yearsq</i>	5.05E+07	9.05E+07	1,000,000	756,000,000
<i>outofstate</i>	0.038	0.192	0	1
<i>primarysource_tuition</i>	0.235	0.425	0	1
<i>studentloan</i>	0.484	0.501	0	1
<i>threshold_credit</i>	0.763	0.428	0	1
<i>threshold_year</i>	0.771	0.421	0	1
<i>white</i>	0.844	0.363	0	1
<i>yearsenrolled</i>	3.159	1.496	1	5

Table 3: GPA and Student Loans Results

Dependent Variable: GPA		
	Model 1	Model 2
<i>primarysource_tuition</i>	-0.197** (-3.16)	--
<i>studentloan</i>	--	-0.191** (-3.36)
<i>hourswork_value</i>	-0.006** (-2.70)	-0.006** (-2.69)
<i>complete_highgpa</i>	0.379*** (4.54)	0.405*** (4.73)
<i>complete_nodebt</i>	0.097 (1.32)	0.070 (0.95)
<i>female</i>	-0.028 (-0.47)	-0.035 (-0.58)
<i>finknowledge_SCORE</i>	0.047* (2.19)	0.046* (2.16)
<i>fin_responsibleany</i>	0.002 (0.04)	0.035 (0.57)
<i>firstgen</i>	-0.021 (-0.38)	-0.020 (-0.36)
<i>white</i>	0.167 (1.63)	0.130 (1.25)
<i>hispanic</i>	-0.165 (-1.24)	-0.199 (-1.49)
<i>outofstate</i>	0.118 (0.94)	0.089 (0.72)
<i>yearsenrolled</i>	0.038 (0.64)	0.391 (1.97)
<i>constant</i>	2.751*** (14.48)	2.815*** (14.69)
Number of Observations	287	287
R-squared	0.2119	0.2166

Note: t-statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 4: GPA and Loan Amount Results

	Dependent Variable: GPA			
	Model 1	Model 2	Model 3	Model 4
<i>amt_value</i>	-9.38E-06 (-1.80)	--	--	--
<i>amt_valuesq</i>	9.97E-11 (1.77)	--	--	--
<i>amt_category</i>	--	-0.113 (-1.46)	--	--
<i>amt_categorysq</i>	--	0.012 (1.16)	--	--
<i>intensity_credit</i>	--	--	-0.001** (-3.55)	--
<i>intensity_creditsq</i>	--	--	3.56E-07** (3.24)	--
<i>threshold_credit</i>	--	--	--	-0.272** (-2.89)
<i>hourswork_value</i>	-0.006* (-2.17)	-0.006* (-2.19)	-0.006 (-1.61)	-0.005 (-1.46)
<i>complete_highgpa</i>	0.232** (2.81)	0.233** (2.81)	0.280** (2.95)	0.330*** (3.65)
<i>complete_nodebt</i>	0.055 (0.61)	0.053 (0.59)	0.027 (0.28)	-0.022 (-0.23)
<i>female</i>	-0.034 (-0.37)	-0.039 (-0.41)	0.034 (0.30)	-0.021 (-0.19)
<i>finknowledge_SCORE</i>	0.066 (1.72)	0.065 (1.70)	0.046 (1.15)	0.046 (1.15)
<i>fin_responsibleany</i>	0.057 (0.68)	0.056 (0.66)	0.059 (0.63)	0.030 (.32)
<i>firstgen</i>	-0.097 (-1.18)	-0.101 (-1.22)	-0.041 (-0.47)	-0.085 (-0.91)
<i>white</i>	0.080 (0.55)	0.082 (0.56)	0.238 (1.32)	0.261 (1.53)
<i>hispanic</i>	-0.145 (-0.81)	-0.144 (-0.80)	-0.032 (-0.16)	-0.104 (-0.49)
<i>outofstate</i>	0.288* (2.04)	0.291* (2.05)	0.083 (0.61)	0.157 (1.01)
<i>yearsrolled</i>	0.048 (1.63)	0.048 (1.64)	0.002 (0.05)	0.021 (0.63)
<i>constant</i>	2.872*** (10.48)	2.936*** (10.37)	2.983*** (9.10)	2.916*** (8.89)
Number of Observations	138	138	94	94
R-squared	0.1685	0.1645	0.2918	0.2351

Note: t-statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

Table 5: Degree Completion and Student Loans Results

Dependent Variable: degreecompletion		
	Model 1	Model 2
<i>primarysource_tuition</i>	-0.110 [†] (-1.47)	--
<i>studentloan</i>	--	-0.069 [†] (-1.08)
<i>hourswork_value</i>	-0.005 (-0.56)	-0.007 (-0.70)
<i>complete_ontime</i>	1.627** (3.33)	1.636** (3.32)
<i>complete_nodebt</i>	-0.779* (-2.20)	-0.771* (-2.11)
<i>female</i>	-0.432 (-1.49)	-0.461 (-1.61)
<i>finknowledge_SCORE</i>	0.493 0.47	0.044 (0.42)
<i>fin_responsibleany</i>	-0.345 (-1.23)	-0.266 (-0.94)
<i>firstgen</i>	-0.447 (-1.60)	-0.464 (-1.68)
<i>white</i>	0.365 (0.76)	0.283 (0.59)
<i>hispanic</i>	-0.454 (-0.69)	-0.550 (-0.83)
<i>outofstate</i>	1.327 (1.69)	1.239 (1.56)
<i>yearsrolled</i>	-0.224 (-2.40)	-0.236* (-2.58)
<i>constant</i>	-0.075 (-0.09)	0.099 (0.12)
Number of Observations	290	290
Pseudo R-squared	0.1098	0.1069

Note: z-statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

[†] Average marginal effect

Table 6: Degree Completion and Loan Amount Results

Dependent Variable: degreecompletion					
	Model 1	Model 2	Model 3	Model 4	Model 5
<i>amt_value</i>	-1.13E-05 [†] (-2.08)	--	--	--	--
<i>amt_valuesq</i>	9.63E-11 [†] (1.78)	--	--	--	--
<i>amt_category</i>	--	-0.127 [‡] (-1.53)	--	--	--
<i>amt_categorysq</i>	--	0.028 [‡] (1.07)	--	--	--
<i>intensity_credit</i>	--	--	-0.001 [†] (-1.23)	--	--
<i>intensity_creditsq</i>	--	--	1.16E-07 [†] (0.75)	--	--
<i>threshold_credit</i>	--	--	--	-0.162 [†] (-1.51)	--
<i>threshold_year</i>	--	--	--	--	-0.205 ^{*†} (-2.10)
<i>hourswork_value</i>	-0.001 (-0.10)	-0.001 (-0.10)	-0.014 (-0.72)	-0.013 (-0.67)	-0.002 (-0.12)
<i>complete_ontime</i>	1.556 [*] (2.17)	1.561 [*] (2.18)	3.058 ^{**} (2.72)	3.097 ^{**} (2.77)	1.532 [*] (2.16)
<i>complete_nodebt</i>	-1.052 [*] (-2.36)	-1.057 [*] (-2.39)	-1.310 [*] (-2.30)	-1.486 [*] (-2.57)	-0.997 [*] (-2.37)
<i>female</i>	-0.152 (-0.36)	-0.177 (-0.42)	-0.201 (-0.37)	-2.764 (-0.52)	-0.132 (-0.32)
<i>finknowledge_SCORE</i>	0.082 (0.51)	0.078 (0.49)	-0.005 (-0.02)	-0.006 (-0.03)	0.115 (0.72)
<i>fin_responsibleany</i>	0.143 (0.35)	0.138 (0.34)	-0.239 (-0.44)	-0.276 (-0.50)	0.041 (0.10)
<i>firstgen</i>	-0.622 (-1.55)	-0.630 (-1.57)	-0.675 (-1.33)	-0.724 (-1.45)	-0.561 (-1.43)
<i>white</i>	-0.442 (-0.64)	-0.431 (-0.63)	-1.849 (-1.96)	-1.746 (-1.90)	-0.398 (-0.61)
<i>hispanic</i>	-0.906 (-0.86)	-0.902 (-0.86)	-2.144 (-1.40)	-2.172 (-1.46)	-0.904 (-0.88)
<i>outofstate</i>	0.441 (0.34)	0.450 (0.35)	1.139 (0.79)	1.504 (0.94)	0.505 (0.36)
<i>yearsenrolled</i>	-0.069 (-0.49)	-0.069 (-0.49)	-0.249 (-1.29)	-0.213 (-1.17)	-0.239 (-1.71)
<i>constant</i>	0.255 (0.20)	0.552 (0.40)	1.797 (1.04)	1.821 (1.08)	0.719 (0.54)
Number of Observations	141	141	97	97	141
Pseudo R-squared	0.1144	0.1116	0.2466	0.245	0.1159

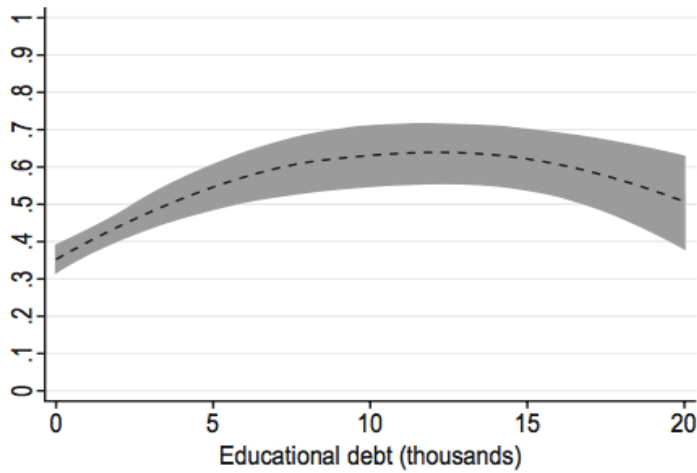
Note: z-statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

† Average marginal effect

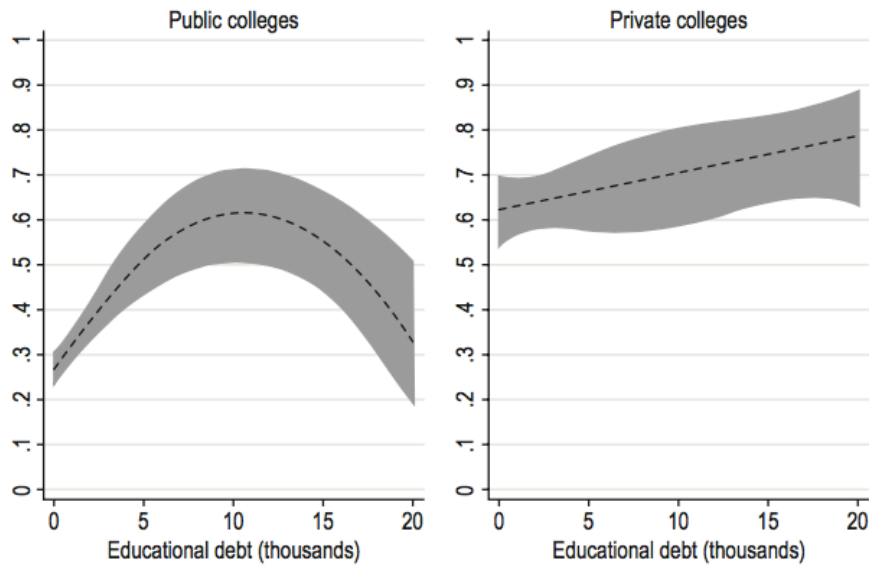
‡ Average marginal effect when category increases from 1 to 2

Figure 1. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in College by Educational Debt



Note: Educational debt top-coded at \$20,000.
The confidence intervals are in grey.

Figure 2. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in College by Educational Debt, by Institution



Note: Educational debt top-coded at \$20,000.
The confidence intervals are in grey.

Figure 3. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in a Public College by Educational Debt, by Class



Note: Educational debt top-coded at \$20,000.
The confidence intervals are in grey.