

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

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

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

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

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

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

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.

References

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Cataldi, E. F., Green, C., Henke, R., Lew, T., Woo, J., Shepherd, B., & Siegel, P. (2011). *2008-09 Baccalaureate and Beyond Longitudinal Study (B&B:08/09): First Look (NCES 2011*

Stater, M. (2009). The Impact of Financial Aid on College GPA at Three Flagship Public Institutions. *American Educational Research Journal*, 46(3), 782-815.

Zhan, M. (2014). The Impact of Youth Debt on College Graduation. *The Journal of Sociology & Social Welfare*, 41(3), 133-156.

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

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			

Table 4: GPA and Loan Amount Results

	Dependent Variable: GPA			
	Model 1	Model 2	Model 3	Model 4
<i>amt_value</i>				

Table 6: Degree Completion and Loan Amount Results

Dependent Variable: degreecompletion

Model 1	Model 2	Model 3	Model 4
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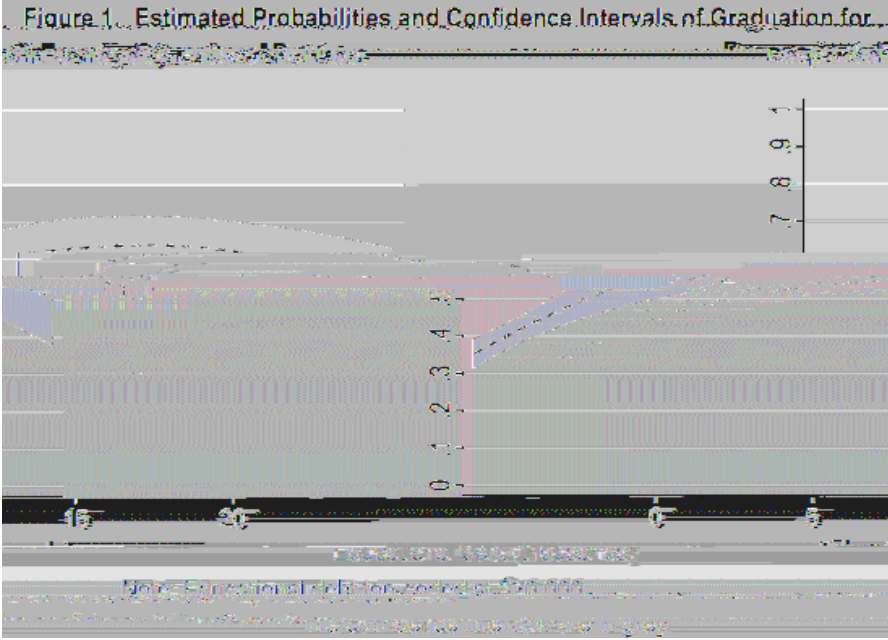


Figure 3. Estimated Probabilities and Confidence Intervals of Graduation for

