Student Willingness to Borrow for Higher Education

Stuart Heckman,[1] Jodi Letkiewicz,[2] and HanNa Lim[3]

Abstract

A human capital model is used to examine students' willingness to borrow to pay for a college degree. We hypothesize direct costs of education and education goals to be positively associated and current income and alternative financial support to be negatively associated with willingness to borrow. Using college student data from the 2020 Study on Collegiate Financial Wellness, we found that 13% of college students are not willing to borrow to pay for school, 31% are willing to borrow up to $20,000, and 27% are willing to borrow up to $50,000. Overall, we find evidence that students' willingness to borrow corresponds to the rational decisions predicted from human capital theory. Higher tuition costs, educational goals, and fields of study with higher expected pay were all positively associated with willingness to borrow. Income is positively correlated with willingness to borrow at the lower end of income, but as income increases, the amount students are willing to borrow is less. Alternative financial support from either scholarships, grants, or family is negatively associated with willingness to borrow, which is all consistent with the two-period human capital model.

Recommended Citation

Heckman, **S**., Letkiewicz, J., & Lim, H. (2025). Student willingness to borrow for higher education. *Financial Services Review*, *33*(2), 74-92.

Introduction

Among policymakers, researchers, and media outlets, concerns abound regarding the diminishing value of a college degree and the widespread borrowing behavior of college students. These are important concerns since current public policy in the U.S. is designed to ensure equal access to post-secondary educational opportunities. While equal access is the intended effect of financial aid, students have diverse economic backgrounds and circumstances which may result in high student debt that can significantly impact long-term financial planning goals for individuals and families.

Federal financial aid policy subsidizes higher education approximately $125 billion per year through grants, loans, and work-study (Federal Student Aid, 2021). This figure does not include other public subsidies through tax credits (i.e., the American Opportunity Tax Credit and the Lifetime Learning Credit), a deduction for student loan interest, and tax advantaged investment accounts (e.g., 529 plans). The justification for this substantial public investment is typically grounded in human capital theory because society benefits from having a more

[1] Corresponding author (stuart.j.heckman@ttu.edu). Texas Tech University, Lubbock, Texas, USA.
[2] California State University-Northridge, Los Angeles, California, USA.
[3] California State University-Fullerton, Fullerton, California, USA.

productive workforce. However, the implications of student borrowing extend beyond individual students to the broader economy, affecting everything from risk assessment in lending practices to the development of financial products tailored to manage educational debt. Understanding students' willingness to borrow is crucial for financial planners and advisors who must help clients navigate the complex interplay between education financing and long-term financial goals, ultimately influencing wealth accumulation and economic stability for both individuals, families, and the economy as a whole.

While the rationale for the public subsidy of higher education is clear from the perspective of policymakers, the rationale for investing (both money and time) in their own college education is less understood from the student perspective. Although there is a rich literature regarding the pecuniary returns and nonpecuniary benefits (Ma & Pender, 2023; Oreopoulos & Salvanes, 2011) of attending post-secondary education, there remains a deficient understanding of student valuations of higher education. Borrowing for college is different from other consumer loans in that while individuals immediately consume the goods purchased with consumer loans such as credit card debt, borrowing for college is usually used for future production over the long-term (Li, 2013). Furthermore, some have argued that the consumption value of higher education could be quite substantial, i.e., students may be willing to pay a high price to simply have the college experience without regard to the financial payoff (Alstadsæter, 2010; Jacob et al., 2013), and it makes the decision to borrow for college education more complicated. The literature gives little guidance regarding the relative importance of these considerations as students make borrowing decisions.

From an economic standpoint, some have suggested that declining to use loans to invest in human capital is an irrational decision (Cadena & Keys, 2013). On the other hand, it may be rational for students to decide not to borrow if they do the calculations and determine their choice of major and labor market prospects will make repaying their loans difficult (Boatman et al., 2017). Regardless of the question of whether borrowing is rational, there is evidence that student wellness may be suffering due to higher education financing decisions. Heckman et al. (2014) found that 71% of college students report feeling financially stressed and that expecting to have debt at graduation was associated with higher likelihoods of financial stress. Perhaps this stress is valid given that many students struggle with repayment (Avery & Turner, 2012) and more than a million students defaulted for the first time in 2016 (Frotman & Williams, 2017). The number of defaults continued to climb until 2020 (U.S. Department of Education, 2020) when the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) halted collection on defaulted loans, credited payments towards income-driven repayment (IDR), and temporarily blocked the accrual of interest for a set period of time (CARES Act, 2020).

Examining students' willingness to borrow for higher education provides crucial insights that can inform financial advisors, institutions, and policymakers about the borrowing behaviors of a key demographic. This research not only reveals the extent to which borrowing decisions align with human capital theory expectations, but also contributes to curriculum development in financial services education, ensuring future professionals are equipped to address the challenges faced by students in financing their education and repaying their debt. The findings offer important perspectives on students' perceptions of the value of a college degree, including the accuracy of information on costs and returns to education. Such insights can inform policies designed to improve access to higher education among prospective students from diverse socioeconomic backgrounds and support the retention of current students in an uncertain economy. Further, findings from this study can be useful in preventing student loan defaults, which is an important concern among policymakers and higher education administrators. In a study of Ohio colleges, approximately 25% of students anticipated defaulting on their loans and students who believed that higher education was a good investment were less likely to anticipate default (Fox et al., 2017). Subsequently, helping students make good borrowing choices could improve the

likelihood of repayment. This study seeks to advance the literature by examining factors related to students' willingness to borrow in order to pay for a college degree, utilizing responses from a national dataset that directly queries current college students about their personal borrowing limits.

Literature Review

Value of College Degree

Current consensus from the economic literature is that the monetary returns to college education outweigh the costs (Oreopoulus & Petronijevic, 2013; Ma & Pender, 2023). The literature also suggests that the wage premium has been growing (Avery & Turner, 2012; Carnevale, Cheah, & Wenzinger, 2021). Recent studies report that those with a bachelor's degree earn 65-75% more than those with no education past a high school diploma and approximately $1.2 million more over their lifetimes (Carnevale, Cheah, & Wenzinger, 2021; Ma & Pender, 2023). In addition to the private returns to education, researchers argue that there are many public benefits to higher education (e.g., see Damon & Glewwe, 2011). For the purposes of our discussion, it is sufficient to keep the focus on the private returns to education, which include many benefits beyond the obvious monetary returns.

Oreopoulus and Salvanes (2011) outline a host of other non-pecuniary private benefits, including improved work environments, sense of accomplishment, autonomy, job security, opportunity for social interaction, and prestige. They also point out that increased education can lead to better marriage opportunities, improved health choices, and an enjoyable college experience, concluding that the combined effect of pecuniary and non-pecuniary returns would be quite large (Oreopoulos & Salvanes, 2011). Those with college degrees also face much lower unemployment rates, although there is substantial variation considering factors such as an institution's reputation, a student's major, and the skills they learn (Sigelman & Selingo, 2021). During difficult economic periods, such as a recession (Hoynes et al., 2012) and the COVID-19 pandemic (Daly et al., 2020), those with college degrees have been found to suffer less from unemployment than those without college degrees. In terms of other non-pecuniary benefits, Ma and Pender (2023) report that those with at least a bachelor's degree are more likely to be engaged in the community, involved with their children's activities, and more likely to live a healthy lifestyle.

Borrowing Decisions

Research on student borrowing decisions has mostly focused on financial resources of students and found some disparity in borrowing decisions depending on their available resources (Baum & Payea, 2012; Cha & Weagley, 2002; Cunningham & Santiago, 2008; Goldrick-Rab & Kelchen, 2015; Perna, 2008). Cha and Weagley (2002) find that students with higher income, which includes parental income for dependent students, are significantly less likely to borrow to pay for college than students with low-income. Similarly, students from low-income families are more likely to borrow (Baum & Payea, 2012; Baum & Schwartz, 2015). This discrepancy results in students from low-income households having more debt (households earning less than $30,000 average debt load =$16,500) compared to those from higher income households (households earning more than $120,000 average debt load = $14,000) (Baum & Payea, 2012). This suggests an unequal debt-to-income burden for low-income families. Although students with more assets were less likely to borrow, they borrowed higher amounts than students with fewer assets when they did borrow (Cha & Weagley, 2002).

In addition to having a direct impact on the available financial resources, research shows that family socioeconomic background has other effects on borrowing choices. For example, several studies (Cunningham & Santiago, 2008; Goldrick-Rab & Kelchen, 2015; Perna, 2008) find evidence of debt aversion among students from lower socioeconomic backgrounds. Goldrick-Rab and Kelchen (2015) explore the topic of debt aversion using a sample of Pell Grant recipients from the Wisconsin Scholars Longitudinal Study. The researchers report that parental education was positively correlated with the decision to take student loans. Students from families with lower socioeconomic status (low-SES) are more loan averse, particularly those

growing up in poverty or lacking financial support from their families. Based on their findings, the authors suggest that an aversion to debt might be related to cultural and community norms and these factors are important to consider when developing college financing interventions (Goldrick-Rab & Kelchen, 2015).

Furthermore, a survey of undergraduate students reports that 45% of the neediest students decided not to take the student loans offered to them, which rendered them unable to cover the expenses needed to complete their education (Cunningham & Santiago, 2008). In an examination of high school students' willingness to borrow for college, Perna (2008) finds that loan perceptions are heavily influenced by the messages students receive from parents and teachers regarding loans. She also finds that low-income students tend to be less informed and to view the use of student loans as riskier compared to students from high-income families. Her analysis shows that students and parents generally thought about student loan borrowing in terms of costs and benefits, as predicted by human capital theory (Perna, 2008).

Results from Boatman and Evans (2017) are consistent with Perna's (2008) finding that student loan borrowing is generally consistent with human capital theory. Boatman and Evans (2017) report that awareness of income-based repayment and higher financial literacy were both associated with a greater willingness to borrow. The authors suggest that knowledge about how federal loans work and repayment options after college alters the cost-benefit analysis and makes borrowing more acceptable (Boatman & Evans, 2017).

Several studies show clear relationships between cost and willingness to borrow. Goldrick-Rab and Kelchen (2015) find that higher net tuition prices were correlated with greater willingness to borrow. In the analysis of Ohio State University's internal data, Hart and Mustafa (2008) find that the net cost of attendance, defined as total costs less aid that does not need to be repaid, is significantly positively related to student loan amounts. Furthermore, they find that higher loan limits, while not affecting low-income borrowers, positively affect the amount that middle- and upper-income students borrowed.

Research has also consistently shown that those who expect higher wages are more willing to borrow. Cha and Weagley (2002) find that higher expected post-graduation wages are related to higher amounts of student loan debt. Goldrick-Rab and Kelchen (2015) find that higher achieving students and those with higher expected earnings in the future are more likely to borrow. This is potentially an important concern for policymakers because previous research reports that earnings expectations are heavily influenced by SES background of individuals. Low-SES students had substantially lower earnings expectations, which may indicate that these students anticipated labor market discrimination or were otherwise systematically underestimating the returns to education (Delaney et al., 2011).

While the research literature shows evidence that students generally make borrowing decisions based on the costs and benefits of higher education, there is concern that students are borrowing too much. Avery and Turner (2012) examine this concern and report that students were not borrowing excessively and suggest that people may be displaying a form of cognitive bias when they put more weight on extreme cases than paying attention to the average student. People tend to pay attention to vivid or extreme cases and extrapolate those to the general population.

There is, of course, evidence that suggests some students experience financial distress due to their student debt (Despard et al., 2016; Heckman et al., 2014; Martin & Dwyer, 2021; McKinnery & Burridge, 2015). Individuals with student loans experience higher likelihoods of material hardships such as trouble meeting basic needs such as food, medical care, and shelter (Despard et al., 2016). Heckman et al. (2014) finds that any debt, including but not exclusive to student loans, is positively associated with financial stress among college students. McKinnery and Burridge (2015) report that community college students with loans are more than twice as likely to drop out as non-borrowers. The effects of debt and stress have been found to be more significant among Black and Hispanic students (Martin &

Dwyer, 2021). Although some literature suggests that students are not systematically over-borrowing and that borrowing generally seems to correspond to costs and benefits of higher education, there is evidence to show that borrowing decisions are associated with financial distress.

Gap

As discussed above, previous researchers were interested in factors related to borrowing decisions, focusing on explaining which individuals borrow or not or which individuals borrow too little or too much. While the current study is still interested in factors related to borrowing, we further the literature by utilizing a national dataset with unique data to examine responses to a hypothetical question about the amount students are willing to personally borrow to pay for their degree. This hypothetical question could give us insight into students' thought processes and valuation of a college degree. To our knowledge, there are currently no studies that ask students directly for the dollar amount of student loan debt that they would be personally willing to accumulate to pay for their college degree. The current literature is primarily based on actual student loan borrowing behavior or hypothetical questions about general loans or debt. Therefore, this study aims to contribute to the growing body of research by studying student willingness to borrow.

Theoretical Framework

The theoretical foundation of this study comes from the economics of education and human capital theory. Human capital theory in the context of education was first introduced by Becker (1964) and examines the relationship between investment in education and training (i.e., human capital) and lifetime earnings. Following human capital theory, individuals are willing to invest in education in line with the expected return on that investment. Investments in education include both direct expenses (i.e., cost of tuition) and the opportunity cost of foregone earnings while obtaining the education. The investment in education will then be made by individuals who expect the benefits will outweigh the costs.

The foundation for our analysis is a basic two-period human capital model presented by Daniele Checchi (2006, pp. 20-23) as a simplification of the well-known Ben-Porath (1967) model. In his model, the optimal fraction of time that should be devoted to education in the first period (*t*) for individual *i*, denoted S_{it}^{*}, is a function of ability, initial endowment of human capital, earnings premium, discount rate, effort, and the direct costs of schooling. Because it is possible for the direct costs of the optimal amount of schooling to be greater than the income available in the first period, individuals may borrow in the first period to maximize lifetime utility or draw upon other financial resources (e.g., personal or family wealth) to finance the human capital investment.

Given that we analyze a sample of college students, presumably there should be no individuals for which $S_{it}^{*} \leq 0$. Assuming that $S_{it}^{*} > 0$, the optimal amount that individual *i* should be willing to invest in the first period, M_{it}^{*}, is equal to the direct cost of education (γ) multiplied by the optimal amount of time for education (S_{it}^{*}). The direct cost of education can be proxied by the tuition cost and the optimal amount of time for education can be proxied by the individual's educational goal. The optimal amount to invest for education may be reduced by either current income or alternative financial resources. Assume that current income is the product of wages (β_t) and the amount of time spent in the labor market $(1 - S_{it}^{*})$. Alternative financial resources, denoted (F_{it}), include but are not limited to, personal or family wealth and non-loan aid. Therefore, M_{it}^{*} is reduced accordingly:

$$M_{it}^{*} = (\gamma S_{it}^{*}) - \beta_t(1 - S_{it}^{*}) - F_{it} \qquad [1]$$

The axiom of a "rational agent" in economic theory proposes that an individual will account for all available information, costs, and benefits when determining a course of action that is in their best interest (Simon, 1955). While there is some controversy over the term "rational" (DesJardins & Toutkoushian, 2005), we use "rational" in this study to simply describe adherence to the economic model outlined above and "irrational" to describe a deviation from the expected model.

Hypotheses

Equation [1] implies the following relationships:

$$M_{it}^{*} = \begin{pmatrix} + & + & - & - \\ \gamma & , S_{it}^{*} & , \beta_t & , F_{it} \end{pmatrix}. \quad [2]$$

Therefore, the following hypotheses are postulated:

H_1: Direct costs of education will be positively associated with willingness to borrow.

H_2: Education goals will be positively associated with willingness to borrow.

H_3: Current income will be negatively associated with willingness to borrow.

H_4: Alternative financial support will be negatively associated with willingness to borrow.

Methodology

Data and Sample

This study uses data from the 2020 Study on Collegiate Financial Wellness (SCFW), previously titled the National Student Financial Wellness Survey (NSFWS). The SCFW is a survey of college students examining the financial attitudes, practices, and knowledge of students from higher education institutions across the US. The online survey was administered by the Center for the Study of Student Life and College of Education and Human Ecology at The Ohio State University and was launched in February 2020. The survey is comprised of a random sample of students from 60 two-year and four-year institutions. In total, 29,883 students responded to the survey and the final sample available for analyses in the current paper includes 24,121 respondents. The institutional data are matched with the Institution Postsecondary Data System (IPEDS) of the National Center for Education Statistics providing information about each institution, such as tuition, faculty-to-student ratios, and rate of students receiving Pell grants.

Two dependent variables are created from the categorical responses on the following question: "Assuming you are paying, or had to pay, for college on your own, how much debt would you be willing to personally accumulate in order to complete your current degree?" First, a categorical variable was created to distinguish between students who are willing to borrow for a college degree, those who are not willing to borrow, and those who do not know if they are willing to borrow. While we recognized that students responding "don't know" to the question may be classified as willing to borrow, we found factors that distinguish this group from the others and decided to keep them as a separate group for the first stage of the analysis. For example, students who responded "don't know," on average, report more support from their parents, lower GPAs, and have higher tuition costs. Second, among those who reported that they are willing to borrow for a college degree, a continuous variable was created to represent how much debt the students are willing to accumulate. We transformed categorical answers to continuous values by taking the midpoint from each range of categories. There were eight possible ranges, ranging from zero (not willing) to "over $60,000." Students responding "don't know" were excluded from the second analysis reducing the sample size for that model.

Empirical Model

Although we are interested in the underlying value or amount that the student is willing to invest, M_i^* is not observed. For convenience, we drop the *t* subscript when discussing the empirical model. M_i, the amount of student loan debt that individual i would be willing to personally accumulate in order to pay for college, is observed in the data. We use two empirical models to test the hypotheses regarding the amount students are willing to borrow. The first is a multinomial regression and the second is a tobit regression. Both models utilize maximum likelihood for parameter estimation.

A multinomial logistic regression is a method that generalizes logistic regression to multiclass problems where there are more than two discrete outcomes. Multinomial logistic regression uses a linear predictor function $f(k, i)$ to predict the probability that the observation i has outcome k as modeled below:

$$f(k, i) = \beta_k . x_i \quad [3]$$

where β_k is the set of regression coefficients associated with outcome k, and x_i is the set of explanatory variables associated with observation i. We use this model to compare three distinct groups – those willing to borrow, those not willing to borrow, and those who do not know if they are willing to borrow. To obtain actual probabilities rather than relative probabilities, we report average marginal effects from the multinomial logistic regression model.

The Tobit model is a hybrid of a probit and an ordinary least squares (OLS) regression and allows us to model both the choice to borrow and the extent to which one is willing to borrow. The Tobit model is particularly suitable for this analysis because it addresses the unique characteristics of the sample, which includes both students who are unwilling to borrow and those who are willing to borrow. In this context, the dependent variable—how much students are willing to borrow—is censored at zero; that is, for those who choose not to borrow, the amount is not just unobserved but is actually zero. By employing a Tobit model, we can simultaneously capture two critical aspects of borrowing behavior – the decision to borrow and the extent of borrowing. Marginal effects are calculated to reflect the change in the average amount someone is willing to borrow, including both those who are willing to borrow (uncensored) and those who are not (censored at zero). We use the following Tobit model to analyze the amount a student is willing to borrow for higher education.

$$M_i = \beta_0 + X\beta + u \qquad [4]$$

$$\text{Where } u|X \sim N\ (0, \sigma^2)$$

$$M = \begin{cases} M_i\ if M_i > 0 \\ 0\ if\ M_i \leq 0 \end{cases}$$

Independent Variables

The independent variables include control variables, cost variables, educational goal variables, current income, and financial support variables.

Several variables control for student characteristics such as students' class rank, gender, race/ethnicity, and whether or not they are first generation or nontraditional students. Research has documented earnings gaps between men and women and between White and racial/ethnic minorities. Therefore, women and non-White students may be less willing to borrow than men and White students. Dummy variables of "male," "female," and "other or prefer not to say" were created for students' gender, with "male" coded as the reference category. Dummy variables of "White," "Black," "Hispanic," "Asian," and "other" were created for students' racial/ethnic identities, with "Whites" coded as the reference category. Dummy variables of "year 1," "year 2," "year 3," "year 4," and "more than 4" were created for students' class rank and "year 1" was used as a reference category. A student is considered first generation if the student reported that the highest level of educational attainment of their parent/guardian was less than a bachelor's degree. A nontraditional student is coded as such if they report supporting a child or family member(s) or if they are at least 24 years old.

Cost. The cost-related variables are the net price for an undergraduate degree and an indicator for tuition type. The net price variable comes from the matched IPEDS data. Net price means the amount that a student pays to attend an institution (tuition and room and board) after adjusting for scholarships and grants. While we do not directly observe the actual amount a student pays for tuition, we believe using the average net price of the institution where they are enrolled is a good proxy for cost of attendance since majority of full-time undergraduate students receive aid (College Board, 2023). The tuition type variable was created using the two variables from SCFW – the administrative variable on whether the institution is public or private and the respondents' response to whether they qualify for in-state tuition or out-of-state tuition (including international student tuition). One variable for tuition type was created with three categories of 1) public in-state, 2) public out-of-state, and 3) private.

Educational Goals. Variables expected to influence the optimal amount of borrowing for education include GPA, major, planned educational attainment, and student perception of tuition as an investment. The variable used for GPA is the student's self-reported GPA. After dropping the outliers in GPA values (GPA above

5.0), GPA variable ranges from 0 to 4.93. Binary variables were created to indicate students' majors based on responses to the broad category of majors. Respondents were able to select multiple categories from a list that includes 1) arts or humanities, 2) business, 3) education, 4) health or medicine, 5) social sciences, 6) STEM (science, engineering, technology, or math), 7) vocational, and 8) other. Next, a binary variable was created to distinguish those who strongly agree or agree that the cost of tuition is a good investment for their financial future from those who disagree or strongly disagree. Finally, students were asked "What type of degree are you currently pursuing?" and "What is the highest degree you plan to obtain?" The options for type of degree they are currently seeking were "2-year degree," "4-year degree," "certificate" and "other." A categorical variable was created to indicate the four categories. If students responded to the question about the highest degree they planned to achieve with "Master's", "Professional', or 'Doctoral," the graduate school variable is coded a 1, zero if otherwise.

Current Income. Students were asked how many hours they work and the hourly rate they earn. From those questions, we create two variables. One is created for employment (yes/no) and the other is a calculated annual income based on hours worked and hourly rate.

Alternative Financial Support. Receipt of scholarships and grants and family financial support were used to measure student access to alternative financial resources. The survey asks students "Please indicate how much of your college/university expenses are paid for by the following: (1) Parents or other family members from their current income or past savings, or (2) Scholarships or grants that don't need to be repaid." Continuous variables were created based on the responses from none (1) to all (4).

Results

Sample Description

This paper explores which students are willing to borrow for their education and how much they are willing to borrow. Just over 70% of the sample indicated a willingness to borrow, 16% said they did not know how much they were willing to borrow, and 13% said they were not willing to borrow. These figures are substantially lower than the percentage of debt averse students, which was 48%, found by Goldrick-Rab and Kelchen (2015), though the sample in their study was exclusively low-income college students. We believe the different proportions between the two studies have to do with the difference in samples (low-income vs. general population) and how the questions were asked. The discrepancy also likely highlights stronger debt-aversion among low-income students, which our broad sample may not adequately capture.

Student rank is fairly well balanced with 26% of the sample in their first year, 23% in their second year, 25% in their third year, 20% in their fourth year and the remaining 6% taking more than four years. Women represent 67% of the sample, men make up 30% and those who prefer not to answer or indicate "other" comprise 3% of the sample. Approximately two-thirds of the sample identify as White, 6% are Black, 11% are Hispanic, 8% are Asian, and 10% responded as a race or ethnicity other than those listed.

On average, tuition (net price) is approximately $19,000 per year and the mean amount students are willing to borrow is just over $27,000 for students who indicated they were willing to borrow. The sample have high educational goals overall with 64% percent indicating they plan to pursue some form of graduate education and the mean GPA is 3.38. Approximately 71% of the sample believe that college is a good investment. This figure drops to 65% for those who are unwilling to borrow. Thirty percent of the sample indicated STEM as their major(s), followed by arts and humanities (21%), health (19%), business (18%), and Social Science (17%). Just over 60% of the sample are employed and the mean earnings for those who work is just over $6,500, which is expected to reduce the amount of money borrowed to pay for college education. Furthermore, students have alternative financial support; the sample mean for scholarship or grants covered is 2.3 (somewhere between "some" and "most"), and for parental support it is 2.01 ("some").

Table 1. Sample Description

Variable	Total Sample N=24,121	Not Willing n=3,095	Willing n=17,050	Don't Know n=3,976
Sample mean	-	0.13	0.71	0.16
Max Debt ($)	$22,942	-	$27,107	-
CONTROLS				
Rank				
Year 1	0.26	0.25	0.25	0.30
Year 2	0.23	0.24	0.23	0.25
Year 3	0.25	0.25	0.25	0.22
Year 4	0.20	0.19	0.21	0.18
More than 4 years	0.06	0.07	0.06	0.05
First Generation	0.41	0.44	0.41	0.37
Non-Traditional	0.15	0.20	0.14	0.12
Gender				
Male	0.30	0.33	0.31	0.22
Female	0.67	0.63	0.67	0.75
Prefer Not to Say	0.03	0.03	0.02	0.03
Race/Ethnicity				
White	0.65	0.56	0.67	0.64
Black	0.06	0.07	0.05	0.07
Hispanic	0.11	0.13	0.10	0.09
Asian	0.08	0.12	0.08	0.09
Other	0.10	0.13	0.09	0.11
COST				
Net Price ($1,000)	1.91	1.84	1.90	2.00
Public In-state Tuition	0.68	0.71	0.69	0.62
Public Out-of-state Tuition	0.18	0.16	0.18	0.21
Private	0.13	0.13	0.13	0.18
EDUCATIONAL GOALS				
GPA	3.38	3.38	3.38	3.34
Good Investment	0.71	0.65	0.73	0.70
Major: Arts & Humanities	0.21	0.24	0.19	0.24
Major: Business	0.18	0.19	0.19	0.13
Major: Education	0.07	0.07	0.07	0.08
Major: Health	0.19	0.15	0.19	0.21
Major: Social Science	0.17	0.16	0.17	0.19
Major: STEM	0.30	0.29	0.31	0.26
Major: Vocation	0.01	0.01	0.01	0.01
Major: Other	0.06	0.07	0.05	0.08
Two Year Goal	0.03	0.04	0.02	0.03
Four Year Goal	0.96	0.94	0.96	0.95
Certificate	0.01	0.01	0.01	0.01
Other	0.01	0.01	0.01	0.02
Grad School Plans	0.64	0.58	0.64	0.64

INCOME				
Employed	0.61	0.58	0.63	0.56
Student Income ($1k)	6.55	7.05	6.70	5.55
ALTERNATIVE FINANCIAL SUPPORT				
Scholarships/Grants (1-4)	2.31	2.40	2.32	2.20
Parental Support (1-4)	2.01	2.07	1.97	2.15

Multivariate Results

The combined results of the multinomial logit and the tobit provide insight into both the decision to borrow and the amount students are willing to borrow. Results from the multinomial logistic regression are presented in Table 2 and the tobit results are presented in Table 3. Marginal effects were computed for the multinomial regression and are presented in Table 2. The results discussed in this section will focus on these marginal effects and the standard coefficients from the Tobit results.

Control Variables. As students progress through school, the likelihood they are willing to borrow or to indicate that they knew, one way or another, increases. The willingness to borrow of students in later years may reflect a recognition of the benefits of education. Compared to the first-year students, the later year students may value the college experience based on their time spent in college. Those who were enrolled for more than four years are 5.4 percentage points more likely to say they are willing to borrow than students in their first year in college. First generation students are not statistically different than their counterparts in terms of willingness to borrow or how much they are willing to borrow. This differs from findings in a study by Furquim et al. (2017) that reported first generation students were both more likely to borrow and willing to borrow more and from the findings by Goldrick-Rab and Kelchen (2015) that more parental education leads to less debt aversion.

Non-traditional students display more reluctance to borrow. They were 3.1 percentage points less likely to say they are willing to borrow and 4.4 percentage points more likely to say they are unwilling to borrow. In addition, the amount they are willing to borrow is negative and significant (ME = -1.424, $p < .001$). This may stem from the fact that they are older, more mature, and may have more financial resources at their disposal.

Women are less likely to be willing to borrow, but also less likely to be unwilling to borrow, and more likely to be unsure about their willingness to borrow (i.e., "don't know"). Students who identify as a race other than White were more likely to be unwilling to borrow than White students and less likely to say they are willing to borrow. This trend continues when looking at how much students are willing to borrow, broken down by race/ethnicity. Students identifying as Black, Hispanic, Asian, or Other are all willing to borrow less than their White counterparts. This is in line with Boatman et al. (2017) who found that Hispanic students were more likely to be debt averse but differs from findings by Goldrick-Rab and Kelchen (2015) who found that Black students were more willing to borrow. This is an important finding that needs further research.

Cost. The findings provide evidence to support H_1 - that the direct cost of education is positively associated with the amount willing to borrow. Net price was negatively correlated with unwillingness to borrow and positively correlated with a willingness to borrow. Students attending universities with higher net price were more likely to say they did not know how much they would borrow. This may reflect an acknowledgement that the high cost of their college creates some uncertainty about the amount of loans that will be required to finish the degree. Students from higher cost schools reported being willing to accumulate significantly more student loan debt (ME = 5.485, $p < .001$).

Students paying out of state tuition at public schools are less likely to be unwilling to borrow, more likely to be willing to borrow, and more likely to be uncertain about borrowing that those

paying in-state tuition. The amount they are willing to borrow is also much higher (ME = 5.631, $p < .001$). These findings are consistent with other studies (Goldrick-Rab & Kelchen, 2015; Hart & Mustafa, 2008) which found that students attending universities with higher net costs were less likely to be debt averse and were willing to borrow more. It's worthwhile to note that students from private schools have opposite results than those paying out-of-state tuition; they are more likely to be unwilling to borrow and less likely to be willing to borrow than students from in-state public schools. They are also willing to borrow less (ME = -2.365, $p < .001$). We think the private school findings are picking up on family affluency rather than cost of attendance.

Educational Attainment. We find partial support for the hypothesis that those with higher educational aspirations are more likely to borrow (H_2), in line with the expectation of human capital theory. GPA is positively correlated with an unwillingness to borrow and those with higher GPA are less likely to be uncertain about borrowing. The second analysis indicates that GPA is negatively associated with the amount students are willing to borrow (ME = -2.142, $p < .001$). This differs slightly from Goldrick-Rab and Kelchen's (2015) findings that students who expressed an unwillingness to borrow had lower GPAs than students who were willing to borrow. The way the question in the SCFW is asked may explain the more nuanced finding and there are other possible explanations for this finding. One possibility is that students with higher GPAs may plan to finish on time or even early, whereas students with lower GPAs may take longer to finish their degree. Students with higher GPAs may receive more financial support (grants/scholarships) or may simply be more pragmatic about their borrowing behaviors. To further this point, students with high GPAs are less likely to respond "don't know" when asked whether they are willing to borrow.

Students who believe tuition is a good investment were 4.3 percentage points more willing to borrow and were willing to borrow more (ME = 3.138, $p < .001$). This supports the notion that they are making rational borrowing decisions premised by human capital theory. Students with an intention to pursue advanced education were less likely to say they were unwilling to borrow and more likely to say they were willing to borrow. This is likely due to the costs associated with many advanced degrees. Students who planned to attend graduate school were willing to borrow more (ME = 2.821, $p < .001$).

Student choice of major and type of institution also show rational decision making by students. Students in more traditionally low-paying majors such as arts and humanities are less likely to be willing to borrow and are willing to borrow less (ME = -1.755, $p < .001$). Student majoring in business, health or medicine, and STEM fields are more willing to borrow for their education. There is some deviation, however, in how much they are willing to borrow with only students in health or medicine majors willing to borrow more (ME = 3.086, $p < .001$). Students pursuing a 4-year degree were willing to borrow far more than students pursuing a 2-year degree (ME = 2.006, $p < .019$).

Current Income. Results from the study provide mixed support for H_3 (current income will be negatively associated with willingness to borrow). The results indicate that employment is positively correlated with willingness to borrow and negatively correlated with an unwillingness to borrow, and students who are employed are willing to borrow more (ME = 1.430, $p = <.001$). However, student income is positively associated with an unwillingness to borrow and students with more income are willing to borrow less (ME = -0.136, $p < .001$). These are somewhat contradictory findings – on the one hand, students who are employed are more willing to borrow and on the other hand, student income is negatively correlated with how much someone is willing to borrow. What we might be picking up on here is that students who are working may be doing so to pay some of their living expenses rather than to pay for their education, a reflection of the high cost of room, board, and tuition and the financial squeeze on families. Students with higher incomes may be working full time and able to pay for their tuition and/or be debt averse, so are working more to pay for their education.

Alternative Financial Resources. The findings on access to alternative financial resources provide support for H_4 (alternative financial

support will be negatively associated with willingness to borrow). Those receiving more financial support from either scholarship/grant were more likely to say they were unwilling to borrow and were willing to borrow less (ME = -3.041, $p < .001$). Likewise, students receiving more financial support from their parents are more likely to say they are unwilling to borrow and are willing to borrow less (ME = -2.192, $p < .001$). This runs counter to the findings by Cha and Weagley (2002) who found that while students with more wealth were less likely to borrow, they tended to borrow more when they did borrow. Interestingly, those with parental support were also more likely to say they did not know how much they were willing to borrow, perhaps showing some uncertainty around continued support, higher educational aspirations, or ignorance of their financial obligations. Similarly, previous study found that college students whose family was the primary source of funding for their expenses were more likely to be unaware about how much student debt they have (Letkiewicz et al., 2019).

Table 2. 2020 Multinomial Results on Willingness to Borrow: Average Marginal Effects

	Not Willing			**Willing**			**Don't Know**		
Variable	dy/dx	S.E.	p-value	dy/dx	S.E.	p-value	dy/dx	S.E.	p-value
CONTROL									
Rank (Ref: Year 1)									
Year 2	.006	.006	.338	.006	.009	.463	-.012	.007	.080
Year 3	.001	.006	.848	.034	.008	<.001	-.035	.007	<.001
Year 4	-.007	.007	.287	.045	.009	<.001	-.038	.007	<.001
More than 4	-.011	.010	.239	.054	.013	<.001	-.043	.011	<.001
First Generation	.008	.005	.101	.005	.007	.475	-.012	.005	.020
Non-traditional	.044	.006	<.001	-.031	.009	.001	-.013	.008	.115
Gender (Ref: Male)									
Female	-.020	.005	<.001	-.036	.007	<.001	.056	.005	<.001
Prefer not to say	021	.015	.155	-.100	.020	<.001	.079	.017	<.001
Race/Ethnicity (Ref: White)									
Black	.038	.010	<.001	-.067	.013	<.001	.029	.011	.008
Hispanic	.039	.008	<.001	-.027	.010	.009	-.012	.008	.126
Asian	.073	.009	<.001	-.066	.011	<.001	-.007	.008	.430
Other	.048	.008	<.001	-.058	.010	<.001	.010	.008	.213
COST									
Tuition Cost (Net Price)	-.036	.005	<.001	.021	.007	.003	.014	.006	.011
Tuition Type (Ref: Public In-state)									
Public Out-of-state	-.025	.005	<.001	.006	.008	.451	.019	.006	.003
Private	.023	.012	.062	-.047	.015	.002	.025	.012	.041
EDUCATIONAL GOALS									
GPA	.016	.004	<.001	.011	.006	.058	-.027	.005	<.001
Good Investment	-.041	.005	<.001	.043	.006	<.001	-.002	.005	.727

Major: Arts & Humanities	.020	.006	.001	-.032	.009	<.001	.012	.007	.094
Major: Business	.003	.007	.662	.056	.010	<.001	-.059	.008	<.001
Major: Education	-.003	.009	.741	.001	.012	.967	.002	.010	.802
Major: Health	-.027	.007	<.001	.024	.009	.010	.003	.007	.728
Major: Social Science	-.012	.007	.080	.010	.009	.281	.002	.007	.781
Major: STEM	-.001	.006	.844	.025	.009	.004	-.023	.007	.001
Major: Vocational	.023	.022	.294	.040	.033	.230	-.063	.030	.036
Major: Other	.027	.009	.003	-.044	.013	.001	.016	.010	.115
Degree goals (Ref: 2 yr)									
4-year	-.012	.013	.373	.019	.019	.323	-.007	.016	.653
Certificate	-.011	.030	.698	.047	.040	.240	-.036	.032	.263
Other	-.039	.022	.081	-.026	.034	.447	.065	.030	.033
Planning on Grad School	-.022	.005	<.001	.025	.006	<.001	-.003	.005	.612
INCOME									
Employed	-.035	.006	<.001	.042	.008	<.001	-.007	.007	.301
Student Income	.002	.000	<.001	-.001	.001	.126	-.001	.000	.003
ALTERNATIVE FINANCIAL SUPPORT									
Scholarship or Grants	.020	.003	<.001	.001	.004	.787	-.021	.003	<.001
Parental Support	.021	.002	<.001	-.032	.003	<.001	.011	.003	<.001

N=24,121

Limitations

This research is not without its limitations. There may be selection effects due to the sampling design. Institutions voluntarily participated in the SCFW which may induce a selection effect if these institutions were systematically different than the population of higher education institutions in the US. Additionally, students were randomly sampled but voluntarily completed the surveys. Although the sample looks comparable to national statistics on the college student population, we cannot rule out selection effects. The distribution of students across different institutions is not in line with national averages. The sample in this study is more heavily weighted towards 4-year public schools when compared to the national average (81% vs. 43%). The sample also excludes students from 4-year for-profit institutions and under-represents 2-year public schools (9% vs. 30%) and 4-year private schools (10% vs. 21%). Our sample might be why we find a significantly smaller number of students who are debt averse as compared to other studies (e.g., Boatman et al., 2017; Goldrick-Rab & Kelchen, 2015).

Table 3. 2020 Tobit Regression Results on Amount Willing to Borrow

Variable	dy/dx (ME)	Std. Err.	*p*-value
CONTROL			
Rank (Ref: Year 1)			
Year 2	-0.109	.373	.770
Year 3	0.338	.372	.363
Year 4	1.049	.397	.008
More than 4	2.520	.621	<.001
First Generation	0.356	.284	.211
Non-traditional	-1.424	.408	<.001
Gender (Ref: Male)			
Female	-0.426	.292	.144
Prefer Not to Say/Other	-2.464	.851	.005
Race/Ethnicity (Ref: White)			
Black	-2.337	.575	<.001
Hispanic	-2.830	.428	<.001
Asian	-4.953	.458	<.001
Other	-2.150	.437	<.001
COST			
Tuition Cost (Net price)	5.485	.311	<.001
Tuition Type (Ref: Public In-state)			
Public Out-of-state	5.631	.366	<.001
Private	-2.365	.603	<.001
EDUCATIONAL GOALS			
GPA	-2.142	.259	<.001
Good Investment	3.138	.290	<.001
Major: Arts & Humanities	-1.755	.386	<.001
Major: Business	0.530	.426	.213
Major: Education	-0.640	.546	.241
Major: Health	3.086	.411	<.001
Major: Social Science	0.317	.396	.423
Major: STEM	0.538	.380	.157
Major: Vocational	-0.092	1.384	.947
Major: Other	-1.662	.608	.006
Degree goals (Ref: 2 yr)			
4-year	2.006	.837	.019
Certificate	2.415	1.839	.184
Other	4.695	1.565	.002
Planning on Grad School	2.821	.278	<.001
INCOME			
Employed	1.430	.358	<.001
Student Income	-0.136	.023	<.001
ALTERNATIVE FINANCIAL SUPPORT			
Scholarship or Grants	-3.041	.161	<.001
Parental Support	-2.192	.148	<.001

N=20,145

Conclusions, Discussion, and Implications

The decision to borrow for college is a complex process and self-assessment of the risk involved in borrowing is one aspect contributing to this complexity (Dowd & Coury, 2006; Heckman & Montalto, 2018). Nevertheless, this research indicates that many students are rational about the amount of debt they are willing to accumulate. As expected from the two-period human capital model (Checchi, 2006), the results show that higher costs of education (i.e., attending at institution with higher tuition, expecting to take longer to complete a degree) and educational goals (i.e., perceiving tuition as a good investment, pursuing more than 2-year degree, planning to attend graduate school, enrolled in a high-paying major) were positively associated with willingness to borrow. Findings on income were mixed. There does appear to be a positive effect of income on willingness to borrow at the lower end of incomes, but as income increases, the amount willing to borrow is less. Alternative financial support (i.e., more financial support from family or financial aid from scholarships and grants) is negatively associated with willingness to borrow, which is also consistent with the two-period human capital model (Checchi 2006). While there have been concerns about whether students choose not to borrow enough for college education (Cadena & Keys, 2013) and whether students over-borrow (Avery & Turner, 2012), our findings showed that students' willingness to borrow is aligned with the directions from the economic model of cost and benefit analysis.

Human capital theory is based on the economic assumption that individuals are rational with full information. Since our findings confirmed that college students' willingness to borrow reflects their rationale given the information, accurate information needs to be available for students to make optimal decisions on borrowing. Evans and Boatman (2019) found that providing information on income-based repayment options to high school students before they decide on college enrollment improved the likelihood of enrollment for populations who are averse to borrowing. Professionals advising families on college planning can leverage tools like the Net Price Calculator to provide comprehensive guidance (U.S. Department of Education, n.d.). These provide information on net price that the family has to pay after accounting for the scholarships and grants from the sticker price. One study found that there still exist some gaps between NPC estimates and actual costs due to the variations in individual financial aid packages, so some caution is needed in accurately pricing an individuals' educational costs (Anthony et al., 2016).

In addition to the cost of attendance, there are information gaps in estimating the benefits from higher education as well. While median earnings for those with a bachelor's degree are approximately $29,000 more than those with a high school degree, considerable heterogeneity exists in incomes of those with college degrees (Ma & Pender, 2023). For example, in 2018 and 2019, mid-career median earnings were $43,700 for early childhood education majors but they were $100,000 for computer science majors (Ma & Pender, 2023). Detailed information not only on the cost but also on the benefit of college degree will help students make optimal decisions regarding college enrollment, major selection, and borrowing decisions. For professionals advising students and their families, their expertise should include realistic income projections based on chosen majors or fields of study along with long-term strategies for managing student debt, incorporating federal tax benefits, income-based repayment options. By integrating these elements, we can equip students and their families with the comprehensive information needed to make informed, rational decisions about higher education investments.

The results confirm many things as expected, however there are bigger questions that need to be investigated. The first question concerns college access. Students who enroll in college seem to make rational borrowing decisions. But, what about the students who decide not to enroll? The finding that students with lower educational attainment goals are less willing to borrow might be rational given the information they are using to make that decision, but is that in their best interest? Are these students systematically underweighting the value of a degree, or making a rational decision based on their career goals and/or knowledge of the declining wage premium

(Valletta, 2017)? The findings that socioeconomic factors are more to blame for dropping out of college and aversion to borrowing point to a potential problem. For example, non-traditional students were found to have lower willingness to borrow in our analysis. If the goal of public financing of education is to allow for equal access, then this population should be examined more carefully and more efforts should be spent on which policy tools are effective to assist them to make rational decisions on attending and borrowing for colleges.

The second question raised by our results concerns persistence. What if the previously 'rational' decision turns out to be sub-optimal when circumstances change? The rise in past due balances and delinquency rates of student loans (Li, 2013; Muller & Yannelis, 2019) casts doubt on previously 'rational' borrowing decisions. For example, the sharp increase in the direct cost for education, depressed future job market, or losing current income or financial support can make college students feel that completing their undergraduate degrees is no longer a good investment. Those who already borrowed heavily for their college education may be struggling with financial stress and may fail to persist. Even if they persist, the debt burden may impact students' post-graduation plans (Valez et al., Bentz, 2019). For those who decided to enroll based on their original rationale, more attention is needed when the circumstances related with borrowing decisions change. On top of all of this are the recent policy decisions affecting student loans since the start of the pandemic including the repayment pause, restarting payments in 2023, and the SAVE plan introduced in 2023. These changes and the inherent complexity of the student loan system in the U.S. may be leading to a sense of overwhelm and confusion for borrowers.

College enrollments have been decreasing since their peak in 2013 (National Student Clearinghouse, 2017). While this trend might be due to economic conditions such as job growth, it might also be due to growing education costs and reluctance to take on debt. This space should be watched closely, particularly by those in public policy. If post-secondary education becomes too expensive for potential students, then the mechanisms used to support higher education ought to be revisited. This might be through increasing public expenditures, restructuring loan programs, reigning in costs, or making some post-secondary education, like community college, free for all students. If the problem is one of risk aversion, then educating students on the specifics of student loans, such as repayment options, might help alleviate concerns.

References

Alstadsæter, A. (2010). Measuring the consumption value of higher education. *CESifo Economic Studies*, *57*(3), 458-479.

Anthony, A. M., Page, L. C., & Seldin, A. (2016). In the right ballpark? Assessing the accuracy of net price calculators. *Journal of Student Financial Aid, 46*(2), 25-50.

Avery, C., & Turner, S. (2012). Student loans: Do college students borrow too much-or not enough? *Journal of Economic Perspectives, 26*(1), 165-192. doi:10.1257/jep.26.1.165

Baum, S., & Payea, K. (2012). *Trends in student aid 2012.* The College Board.

Baum, S., & Schwartz, S. (2015). Student aid, student behavior, and educational attainment. In A.A. Author (Ed.), *Decision making for student success* (pp. 38-62). Routledge.

Becker, G. (1964). *Human Capital*. 2nd edition. Columbia University Press.

Ben-Porath, Y. (1967). The production of human capital and the life cycle of earnings. *The Journal of Political Economy, 75*(4), 352-365.

Boatman, A., & Evans, B. J. (2017). How financial literacy, federal aid knowledge, and credit market experience predict loan aversion for education. *The ANNALS of the American Academy of Political and Social Science, 671*(1), 49-68.

Boatman, A., Evans, B. J., & Soliz, A. (2017). Understanding loan aversion in education: Evidence from high school seniors, community college students, and

adults. *AERA Open, 3*(1), doi: 2332858416683649.

Cadena, B. C., & Keys, B. J. (2013). Can self-control explain avoiding free money? Evidence frominterest-free student loans. *Review of Economics and Statistics*, *95*(4), 1117-1129.

CARES Act, Pub. L. No. 116–136, 134 Stat. 281 (2020).

Carnevale, A. P., Cheah, B., & Wenzinger, E. (2021). *The College Payoff: Not All College Degrees Are Created Equal*. Georgetown University Center on Education and the Workforce. Retrieved from https://cew.georgetown.edu/wp-content/uploads/cew-college_payoff_2021-fr.pdf

Cha, K.-W., & Weagley, R. O. (2002). Higher education borrowing. *Financial Counseling and Planning, 13*(1), 61–73.

Checchi, D. (2006). *The economics of education: Human capital, family background and inequality*. Cambridge University Press.

College Board. (2023). *Trends in college pricing and student aid 2023*. Retrieved from https://research.collegeboard.org/media/pdf/Trends%20Report%202023%20Updated.pdf

Cunningham, A. F., & Santiago, D. A. (2008). *Student aversion to borrowing: Who borrows and who doesn't*. Institute for Higher Education Policy. Retrieved from https://files.eric.ed.gov/fulltext/ED503684.pdf

Daly, M. C., Buckman, S. R., & Seitelman, L. M. (2020). The unequal impact of COVID-19: Why education matters. *FRBSF Economic Letter,* 17(5), 1-5.

Damon, A., & Glewwe, P. (2011). Valuing the benefits of the education provided by public universities: A case study of Minnesota. *Economics of Education Review, 30*(6), 1242-1261. doi:10.1016/j.econedurev.2011.07.015

Delaney, L., Harmon, C., & Redmond, C. (2011). Parental education, grade attainment and earnings expectations among university students. *Economics of Education Review, 30*(6), 1136-1152. doi:10.1016/j.econedurev.2011.04.004

DesJardins, S. L., & Toutkoushian, R. K. (2005). Are students really rational? The development of rational thought and its application to student choice. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 20). Springer. https://doi.org/10.1007/1-4020-3279-X_4

Despard, M. R., Perantie, D., Taylor, S., Grinstein-Weiss, M., Friedline, T., & Raghavan, R. (2016). Student debt and hardship: Evidence from a large sample of low-and moderate-income households. *Children and Youth Services Review*, 70, 8-18.

Dowd, A. C., & Coury, T. (2006). The effect of loans on the persistence and attainment of community college students. *Research in Higher Education*, *47*(1), 33-62.

Fox, J. J., Bartholomae, S., Letkiewicz, J. C., & Montalto, C. P. (2017). College student debt and anticipated repayment difficulty. *Journal of Student Financial Aid*, *47*(2), n2.

Frotman, S., & Williams, R. (2017). New data documents a disturbing cycle of defaults for struggling student loan borrowers. Consumer Financial Protection Bureau. Retrieved from https://www.consumerfinance.gov/about-us/blog/new-data-documents-disturbing-cycle-defaults-struggling-student-loan-borrowers/

Furquim, F., Glasener, K. M., Oster, M., McCall, B. P., & DesJardins, S. L. (2017). Navigating the financial aid process: Borrowing outcomes among first-generation and non-first-generation students. *The ANNALS of the American Academy of Political and Social Science*, *671*(1), 69–91.

Goldrick-Rab, S., & Kelchen, R. (2015). Making sense of loan aversion: Evidence from

Wisconsin. In H. Hershbein & K. Hollenbeck (Eds.), *Student loans and the dynamics of debt* (pp. 317–378). W.E. Upjohn Institute for Employment Research. https://doi.org/10.17848/9780880994873.ch10

Hart, N. K., & Mustafa, S. (2008). What determines the amount students borrow? Revisiting the crisis–convenience debate. *Journal of Student Financial Aid*, *38*(1), 17–39.

Heckman, S. J., Lim, H., & Montalto, C. P. (2014). Factors related to financial stress among college students. *Journal of Financial Therapy*, *5*(1), 19–39. https://doi.org/10.4148/1944-9771.1063

Heckman, S. J., & Montalto, C. P. (2018). Consumer risk preferences and higher education enrollment decisions. *Journal of Consumer Affairs*, *52*(1), 166–196. https://doi.org/10.1111/joca.12139

Hoynes, H., Miller, D. L., & Schaller, J. (2012). Who suffers during recessions? *Journal of Economic Perspectives*, *26*(3), 27–48.

Jacob, B., McCall, B., & Strange, K. (2013). The consumption value of education: Implications for the postsecondary market. *American Economic Association Papers and Proceedings*, *103*(5), 1881-1915.

Letkiewicz, J. C., Lim, H., Heckman, S. J., & Montalto, C. P. (2019). Parental financial socialization: Is too much help leading to debt ignorance among college students? *Family and Consumer Sciences Research Journal*, *48*(2), 149–164.

Li, W. (2013). The economics of student loan borrowing and repayment. *Business Review*, *3*, 1-10.

Ma, J., & Pender, M. (2023). *Education pays 2023: The benefits of higher education for individuals and society*. College Board. Retrieved from https://research.collegeboard.org/media/pdf/education-pays-2023.pdf

Martin, E. C., & Dwyer, R. E. (2021). Financial stress, race, and student debt during the Great Recession. *Social Currents*, *8*(5), 424–445.

McKinnery, L., & Burridge, A. B. (2015). Helping or hindering? The effects of loans on community college student persistence. *Research in Higher Education*, *56*(1), 299–324.

National Student Clearinghouse Research Center. (2017). *Current term enrollment estimates spring 2017*. Retrieved from https://nscresearchcenter.org/wp-content/uploads/CurrentTermEnrollment-Spring2017.pdf

Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of the returns to higher education. *Future of Children*, *23*(1), 41–65.

Oreopoulos, P., & Salvanes, K. G. (2011). Priceless: The nonpecuniary benefits of schooling. *Journal of Economic Perspectives*, *25*(1), 159–184. https://doi.org/10.1257/jep.25.1.159

Perna, L. W. (2008). Understanding high school students willingness to borrow to pay college prices. *Research in Higher Education*, *49*(7), 589–606. https://doi.org/10.1007/s11162-008-9095-6

Sigelman, M., & Selingo, J. (2021). *Making the bachelor's degree more valuable*. The Burning Glass Institute. Retrieved from https://www.burningglassinstitute.org/research/making-the-bachelors-degree-more-valuable

Simon, H.A. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics*. 69(1): 99–118

U.S. Department of Education. (2020). *Direct loans entering default*. Retrieved from https://studentaid.gov/sites/default/files/DLEnteringDefaults.xls

U.S. Department of Education. (n.d.). Net Price Calculator Center. Retrieved from https://collegecost.ed.gov/net-price

Valletta, R. G. (2017). Recent flattening in the higher education wage premium: Polarization, skill downgrading, or both? In *Education, Skills, and Technical Change: Implications for Future US GDP Growth.* University of Chicago Press.