

The Life-Cycle Impacts of Federal Student Loans: A Brief Literature Review

By Siddhartha Biswas¹

Abstract

This research paper surveys the literature on the impacts of federal student loans in the United States at different life stages, from college enrollment to debt repayment. More students face credit constraints over time, which prevents them from borrowing as much as they wish. Allowing students to borrow more increases overall college enrollment slightly but provides larger benefits on the intensive margins of the types of institutions students attend, the number of years or college credits they complete, and whether they eventually earn a degree.

After college, higher student debt levels lead students to choose higher-paying jobs, but they report lower job satisfaction. The effects of student debt on homeownership and credit outcomes are less clear. Student loan default rates have improved over time, driven by the reductions in the availability of federal loans for institutions with high dropout rates and low earnings premia. Income-driven repayment plans offer a potential solution for the remaining default risk and other detrimental effects of student debt.

¹ This commentary was written by Siddhartha Biswas, economist at the Federal Reserve Bank of Philadelphia. The views expressed here are solely of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

1 Introduction

At almost \$1.6 trillion of outstanding balances from over 45 million borrowers, student debt is the second largest class of consumer debt in the United States.² Student debt has steadily increased from 3 percent to 11 percent of total household debt balances over the last 19 years.³ As the prevalence of student debt has grown, so have concerns about a potential debt crisis and calls for debt forgiveness. However, to arrive at a sound policy, understanding the complete effect of student debt on individuals' lives is critical.

The student loan environment, mostly determined by federal policies, affects a student's welfare from the moment she leaves high school. Loan availability and loan terms inform her decision to borrow, which in turn finances the types of investments she makes to develop human capital. While human capital accumulation presents returns, the student also carries the resulting student debt, which can impact major life decisions, such as career choice and homeownership, and consumer finance, such as utilization of different types of credit. This research paper investigates these life-cycle effects of student loans through a survey of the related literature on federal student loans⁴ in the United States.⁵

In addition to understanding the effects of student loans at various life stages, a key motivation for this survey is that data related to student loans are surprisingly limited. Researchers are rarely able to trace the same individual from the initial loan borrowing to final repayment of student debt. Representative longitudinal data sets, such as the National Longitudinal Surveys of Youth, provide relatively long panels, but cohort sizes are small, and the student loan data is self-reported. Administrative sources for student loans, from the National Center for Education Statistics and public college systems in states such as Texas and Utah,

² The College Board provides helpful statistics on college pricing, student aid, and debt composition in a series of annual reports on "Trends in College Pricing and Student Aid" (Ma and Pender, 2021).

³ Source: Federal Reserve Bank of New York, Quarterly Report on Household Debt and Credit, 2021:Q4.

⁴ This review will focus on federal student loans since the government is the primary lender for students and data that can link private loans with college enrollment are limited. Nonfederal loans represent 7 percent to 14 percent of student debt volume in most years, with a peak of 25 percent in the mid-2000s (Ma and Pender, 2021).

⁵ While research on student loans spans the international context with studies in Chile (Solis, 2017; Card and Solis, 2022), Sweden (Joensen and Mattana, 2021), and others, differences between those education systems and that of the United States make it difficult to draw meaningful conclusions from comparisons.

include larger cohorts and richer data on borrowing, but generally have short panels and lack repayment information. Last, credit bureau data have detailed measures of student debt levels, repayment, and other types of credit utilization, but they do not provide information regarding the individual's education, which would help link factors that determine the initial borrowing behaviors to subsequent repayment. Since data availability limits a comprehensive analysis of student loans in one setting, a survey of the literature provides the closest alternative to understand the impact of student loans on a representative life cycle.

In Section 2, we highlight the evidence on whether student loans help students invest in higher education, show that student loans relax budget constraints in the short term, and find that loans can be effective in helping students build human capital. After students leave college, the resulting student debt may have detrimental effects. Section 3 addresses these concerns by discussing research on the impact of student debt on post-college outcomes and choices, such as labor market decisions, homeownership, and utilization of other credit types. Section 4 specifically examines the literature on student debt repayment to understand the credit risk of student loans and potential solutions.

2 Student Loans as Investments in Undergraduate Education

From 2000 to 2017, federal loans were the single largest source of undergraduate aid, representing 30 percent to 40 percent, that collectively help students invest in higher education (Ma and Pender, 2021).⁶ This investment in a college education generates substantial earnings gains that compensate for debt from student loans (see reviews by Avery and Turner, 2012; Barrow and Malamud, 2015). However, borrowing for higher education presents a challenge in that human capital cannot serve as collateral to secure student loans. As a result, private markets will provide less-than-efficient levels of credit (Friedman, 1955). This prediction motivates the social benefits for government involvement in credit markets for education; consequently, the federal government originates a large majority of student loans.

⁶ Institutional grants and federal Pell grants were the second and third largest source. Since the 2018–2019 academic year, institutional grants have eclipsed federal loans as the largest source of undergraduate aid.

To access any form of federal aid, students must complete the Free Application for Federal Student Aid (FAFSA). After receiving the FAFSA, the office of Federal Student Aid uses a legally defined formula to calculate a student's expected family contribution (EFC), based on her household's finances and number of additional family members who may be enrolled in college currently or in the future. The gap between an institution's cost of attendance (tuition, fees, and room and board, net of any scholarships or grants) and the student's EFC defines her financial need. Only students who have a positive financial need may borrow subsidized federal loans, where the government pays for the interest accrued during enrollment. In comparison, unsubsidized loans are available to all students who complete the FAFSA. For both loans, repayment is deferred until after students leave college (by graduating or dropping out), and a federal loan limit binds or constricts the amount students can borrow each year and cumulatively.

The first empirical question that economists have considered is whether credit constraints in higher education bind. Studies of earlier cohorts from the 1980s found little evidence for the existence of credit constraints, concluding that factors related to academic preparedness are the primary barriers to a college education (Keane and Wolpin, 2001; Carneiro and Heckman, 2002; Cameron and Taber, 2004). Analysis of younger cohorts, however, shows that credit constraints, such as federal loan limits, bind more often than in the past.

Because of consistent tuition growth coupled with stable federal loan limits, more students in recent cohorts face binding credit constraints, which result in persistent enrollment disparities by family income and wealth even after conditioning for student ability (Lochner and Monge-Naranjo, 2011). Using administrative data from Utah public colleges and a discontinuity in college credit accumulation that increases the loan limit, Denning and Jones (2019) find that raising loan limits increases borrowing for at least 26 percent to 37 percent of borrowers. An examination by Hai and Heckman (2017) similarly finds that credit constraints bind and shows that two types of students are credit constrained. The first group, characterized by low endowments,⁷ poor family backgrounds, and little human capital accumulation, is constrained

⁷ Endowments signify cognitive and noncognitive abilities. The paper measures cognitive abilities using the Armed Services Vocational Aptitude Battery (ASVAB) scores in four components of math and reading and measures noncognitive abilities using adverse behaviors at early ages, such as violence, theft, and sexual intercourse.

throughout their life cycle. The other group of students have high initial endowments but are constrained early in their life cycles.

The second question economists have researched is whether relaxing credit constraints increases demand for higher education. On the extensive margin, relaxing federal loan limits has a small effect on college enrollment. An increase of loan limits that represent 30 percent of the net cost of attendance increases enrollment at age 21 by up to 4 percentage points, which is about an 8 percent increase in enrollment (Johnson, 2013; Hai and Heckman, 2017). Research on more recent cohorts finds a slightly smaller but positive enrollment effect of raising federal loan limits (Biswas, 2021).

Other studies highlight the importance of the intensive margins of college enrollment. Dynarski (2003) and Biswas (2021) find a larger impact of increasing federal loan limits on the student's choice of the type of college she attends instead of her decision to attend college at all using changes to federal policy in the early 1990s and late 2000s, respectively. Specifically, increasing loan limits shifts students toward four-year institutions. Two additional studies examine the effect of greater availability of loans on the persistence in college and degree completion using administrative data for Texas public university students from the Texas Higher Education Coordinating Board.

First, Denning (2019) finds that older students, who are classified as independent⁸ and can borrow more federal loans and receive more Pell grants, attempt more credits and graduate faster than dependent students below the cutoff age. Black, Denning, Dettling, Goodman, and Turner (2020) examine the most recent increase to federal loan limits in 2007 and 2008 and find that credit-constrained borrowers in cohorts exposed to higher loan limits had significantly higher year-to-year college persistence and bachelor's degree attainment.⁹

⁸ Students are considered independent if they are one of the following: at least 24 years old by January 1 of the year in which school starts, a graduate or professional student, someone with legal dependents other than a spouse, a veteran, and several other criteria listed at studentaid.gov/apply-for-aid/fafsa/filling-out/dependency.

⁹ The benefits of student loans are further supported by evidence from community colleges, where greater access to loans increases credit completion, year-to-year reenrollment, and transfers to four-year colleges (Wiederspan, 2016; Marx and Turner, 2019; Barr, Bird, and Castleman, 2021).

Last, recent research examines the determinants of student borrowing with a particular focus on behavioral channels. Specifically, Marx and Turner (2018) find that borrowing is reduced substantially in settings where students incur costs to actively opt into a federal loan. Other studies analyze interventions that ease information frictions by nudging students to ensure they are well informed regarding borrowing options. Bird, Castleman, Denning, Goodman, Lambertson, and Rosinger (2021) provide a comprehensive review of nudges that encourage application for federal aid and note that nearly all interventions that had positive effects were small in scale and partnered with a local organization. The results do not seem to scale up as demonstrated by the authors' findings of no enrollment impacts of similar interventions at the state and federal levels.

3 Student Debt and Post-College Outcomes

While student loans finance investments in human capital that generate large labor market returns, student debt itself has a direct effect on post-college outcomes. These effects are often referenced as criticisms of student debt and motivate public calls for debt forgiveness, claiming that holding student debt can delay important life decisions and reduce welfare long after students take out their first loan. A small but growing area of the literature studies the effects of student debt on career choices, homeownership, and utilization of other types of credit.¹⁰

On the labor market, evidence suggests that higher levels of student debt led graduates to take higher-paid jobs and forgo lower-paid “public interest” jobs, such as teaching. Rothstein and Rouse (2011) first document this effect using a natural experiment at an anonymous university, which introduced a “no-loans” policy that replaces loans that used to be offered as part of the university’s financial aid with grants. These impacts on career choice are too large to be rationalized by standard life-cycle models because student debt represents a small portion of the

¹⁰ Accumulation of student debt is also linked to delaying marriage among bachelor’s degree recipients, M.B.A. students, and law students (Addo, 2014; Bozick and Estacion, 2014; Gicheva, 2016; Sieg and Wang, 2017). While evidence on the impact of student debt on graduate studies is limited, Chakrabarti, Fos, Liberman, and Yannelis (2022) find that a large increase in tuition of \$5,000 leads to \$1,500 in higher total student debt and a 3.1 percentage point reduction in graduate degree attainment. This effect is partially driven by credit-constrained students dropping out of college. However, the results are similar for students who are not credit constrained, suggesting a link exists between higher student debt and lower rates of graduate degree completion. Last, Ambrose, Cordell, and Ma (2015) find a negative correlation between student debt and net small business formation.

lifetime earnings gain associated with college completion. Debt aversion provides one explanation. Evidence from an experiment at a law school shows that students were significantly less likely to pursue a public interest job when presented with the option of taking a loan that would be forgiven if they worked in public interest, in comparison to a monetarily equivalent tuition subsidy (Field, 2009).¹¹ Luo and Mongey (2019) offer another explanation through the view of a search model in which workers value wages and job amenities. The model predicts that workers with higher student debt (and lower net worth) are more likely to accept jobs that pay more and offer fewer amenities; the authors confirm this prediction in the data and estimate that increasing student debt by \$10,000 would increase annual salary by \$2,110 one year after graduation but leads to lower job satisfaction.

Another concern is that student debt can reduce consumption for students early in their careers after they leave college. The potential of student debt to reduce homeownership is particularly worrisome as home purchases represent the largest use of consumer credit. Mezza, Ringo, Sherlund, and Sommer (2020) find that a \$1,000 increase in total student loan debt before age 23 lowers the homeownership rate by 1.8 percent. This estimate translates to a one-year delay in homeownership for the average increase in student debt by age 23 between 2005 and 2014. The authors test the mechanism that student debt makes mortgage credit more difficult to obtain and confirm that higher student debt balances have a negative impact on credit scores.

In a related study, Mezza, Ringo, and Sommer (2021) find that increased student debt simultaneously increases borrowers' demand for additional consumer debt and restricts their ability to access it. The magnitude of the net effect varies by consumer credit market. In the least tightly underwritten markets, such as auto loans, the demand channel dominates, and higher student debt leads to higher utilization of consumer debt. In the most tightly underwritten markets, higher student debt leads to a lower probability of having a credit card. Both studies use a unique data set that combines anonymized individual credit bureau data with administrative information on federal aid utilization, college enrollment, education attainment,

¹¹ As another example of debt aversion, one out of six undergraduate students decline the “free money” from uncollected interest payments in subsidized loans. Cadena and Keys (2013) estimate and rationalize a similar effect within a framework that students avoid loans in an act of self-control to avoid the temptation of overspending.

and major choice.¹² Bleemer, Brown, Lee, Strair, and van der Klaauw (2021) similarly estimate that the average increase in student debt from 2003 to 2011 could explain 35 percent of the decline in homeownership for ages 28 to 30 over the same period.

In contrast to these studies relying on variation in tuition that changes the cost of education, the following two analyses examine changes in the supply of credit to arrive at a different conclusion. Black et al. (2020) do not find any evidence of negative spillovers of student debt to other credit markets. Using the FRBNY/Equifax Consumer Credit Panel and a rare increase in federal loan limits, the study shows that those who were able to borrow more because of the policy change have a similar likelihood of holding a mortgage or auto loan and of having any delinquent debt as did their peers who were not affected by the policy change. Goodman, Isen, and Yannelis (2021) exploit a discontinuity that allows students to borrow more after their 24th birthday and find that higher student loan borrowing leads to a small increase in homeownership. Student loans relax liquidity constraints as shown by an increased likelihood of saving among students eligible for higher loan limits.

The previous two sets of analyses find opposing evidence for the effect of student debt on homeownership and other credit utilization, but the identifying variation used in each study rationalizes the contrast. The first group of studies uses changes in tuition that lead to changes in student debt. Using this variation, debt levels increase because of a shift in the demand for credit: Students who are not credit constrained borrow more to finance the higher cost of education, while those who are credit constrained look toward other sources of funding.

Results from these studies capture only the negative long-term effects of student debt; the higher debt levels do not imply a relaxation of credit constraints since students borrow more to pay higher costs. The second group of studies uses policies that increase the supply of credit by relaxing loan limits, which allows constrained students to borrow more while theoretically not affecting unconstrained students. These policies therefore relax credit constraints and provide liquidity in the short term through borrowed funds, which can be beneficial for students who expect long-term earnings gains from education. Results from the second group of studies that

¹² To the best of my knowledge, these two studies and Chakrabarti, et al. (2022) are the only analyses that can observe investment in higher education and credit outcomes for the same individual, both from administrative sources.

do not find any negative effects of student debt on homeownership and other credit utilization suggest the long-term detrimental effects of student debt do not outweigh the benefits of short-term liquidity from relaxing credit constraints.

4 Student Debt Repayment

Specifically understanding student debt repayment is important to assess the credit risks of student loans that affect both individual student welfare and social welfare since the government is the primary lender. Ma, Pender, and Libassi (2020) document that, prior to the pandemic, 19 percent of federal loan borrowers and 13 percent of student debt dollars were in default (more than 360 days delinquent). While the narrative of students struggling to repay large debt balances is appealing, the data support the opposite story. In fact, the average balance of loans in default is 56 percent that of loans in active repayment. Furthermore, the default rate measured within three years of entering repayment is the highest for students with balances less than \$5,000. Trends show that default rates peaked in 1990 and again toward the end of the recession in 2010. These trends seem to be driven by changes in the composition of borrowers since default rates are highest among students attending for-profit and two-year institutions. Enrollment at these institutions surged toward the end of the recession — changes in composition and observable student characteristics accounted for one-half to two-thirds of the increase in default between 2000 and 2011 (Looney and Yannelis, 2015). As regulation of for-profit institutions became stricter, the default rate improved by 25 percent from 2011 to 2017, driven by large reductions in default rates at for-profit and two-year institutions (Ma, Pender, and Libassi, 2020).

Looney and Yannelis (2022) raise the concern that increases to credit supply through federal policies increase default rate. The authors conclude that almost all the historical time series variation in student debt default rates is driven by the entry and exit of high-risk institutions, such as for-profit colleges that have high dropout rates and low earnings premia, directly after federal policies that expanded or contracted credit supply to these schools. Furthermore, increases in federal student loan supply result in high growth in for-profit college tuition (Cellini and Goldin, 2014). In turn, this higher cost of education is the largest observed predictor of variation in student loan utilization at for-profit colleges (Cellini and Darolia, 2017).

Outside of the for-profit education sector, increased supply of federal loans can crowd out private credit markets, which makes the borrower pool riskier and leads to higher default rates for private student loans (Ionescu and Simpson, 2016).

A potential solution to student loan default exists in the design of repayment plans. Theory suggests that the optimal structure of loan repayments must include a flexible income-based repayment schedule (Lochner and Monge-Naranjo, 2016). Income-driven repayment (IDR) plans gained popularity in the United States¹³ after the Great Recession, in which repayment is capped by a share of discretionary income to provide insurance against negative shocks. Enrollment in an IDR plan results in lower student loan default and lower sensitivity to home price fluctuations (Mueller and Yannelis, 2019).

While the complexity of these IDR plans has restricted enrollment of borrowers who could otherwise benefit, nudges such as prepopulated applications for IDR plans have large enrollment effects (Mueller and Yannelis, 2022).¹⁴ The trends are encouraging as IDR plan enrollment has dramatically increased and accounts for 54 percent of debt dollars and 32 percent of borrowers in 2021 (Ma and Pender, 2021).

5 Conclusion

This research report surveys the literature on student loans and their impact at various stages of student lives. Most recent evidence supports the availability of student loans as facilitating productive investments in human capital development. However, the resulting student debt does create some negative effects that suggest student loans as a welfare enhancing policy represent a double-edged sword. Effects include distortions of post-college behaviors, such as career choice, as well as default on repayment that hurts the borrowers' future access to credit. Many

¹³ Historically, the Standard plan, which equalizes monthly payments over 10 years, has been the default and most common repayment plan among borrowers.

¹⁴ Cox, Kreisman, and Dynarski (2020) find similar evidence from a laboratory experiment. Setting the default repayment option to be an IDR plan decreases the likelihood of students choosing the riskier Standard plan.

of these concerns seem to be addressed by the growth of IDR plans and restriction of credit supply to high-risk institutions.¹⁵

A prevailing theme that should guide future research is that student characteristics, often unobserved, and the institutions they attend matter greatly for the welfare effects of student loans. Two findings highlight the need to identify which students benefit from the expansion of student loans and which students face higher risk of default, such as those who have low returns to college, are more likely to drop out, or are less informed about repayment options.

First, concerns over students graduating with large amounts of debt do not provide the correct image of the individual and the social costs of student debt since those with the lowest balances default at the highest rates. Second, the welfare gains associated with a greater supply of federal loans is concentrated among students who enjoy large earning gains from college completion (Biswas, 2021). Identifying these students would allow for a more targeted policy that reduces the detrimental effects for students who are less likely to complete college and more prone to struggle with debt repayment. Further areas that need more research include the private student loan market, utilization of loans for graduate studies, and the impact of the COVID-19 pandemic and related moratorium on student loan payments.¹⁶

¹⁵ Luo and Mongey (2019) find that, while student debt pushes students toward higher paying jobs with lower job satisfaction, IDR plans increase welfare and represents the preferred plan for most students.

¹⁶ To offer debt relief during the COVID-19 pandemic, the CARES Act automatically placed federal student loans into administrative forbearance and paused the accrual of interest. The temporary zero interest period has been extended several times and is currently set to expire in August 2022. Cherry, Jiang, Matvos, Piskorski, and Seru (2021) document the impact of the CARES Act and show that forbearance in student debt jumped from 50 percent to 92 percent of loans from April to October in 2020.

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