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Abstract

At a time when the returns to college and graduate school are at historic highs, why do so many students struggle with their student loans? The increase in aggregate student debt and the struggles of today's student loan borrowers can be traced to changes in federal policies intended to broaden access to federal aid and educational opportunities, and which increased enrollment and borrowing in higher-risk circumstances. Starting in the late 1990s, policymakers weakened regulations that had constrained institutions from enrolling aid-dependent students. This led to rising enrollment of relatively disadvantaged students, but primarily at poor-performing, low-value institutions whose students systematically failed to complete a degree, struggled to repay their loans, defaulted at high rates, and foundered in the job market. As these new borrowers experienced similarly poor outcomes, their loans piled up, loan performance deteriorated, and with it the finances of the federal program. The crisis illustrates the important role that educational institutions play in access to postsecondary education and student outcomes, and difficulty of using broadly-available loans to subsidize investments in education when there is so much heterogeneity in outcomes across institutions and programs and in the ability to repay of students.

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Between 2000 and 2020, the total number of Americans owing federal student loans more than doubled from 21 million to 45 million, and the total amount they owed more than quadrupled from \$387 billion to \$1.8 trillion, growing much faster than any other form of household debt. Figure 1 shows the growth in student loan borrowers and balances. Prior to 2020, when payments were temporarily frozen, a million students defaulted each year, and millions more struggled with their loans and failed to make payments. As recently as 2018, the Congressional Budget Office expected taxpayers to earn a profit on federal student lending programs (Congressional Budget Office 2024). It now expects new loans issued over the next decade will instead cost \$302 billion—more than will be spent on Pell grants for low-income undergraduates. Moreover, that prospective cost estimate excludes hundreds of billions of write-downs on existing loans expected because of new policies that will reduce borrowers’ payments and provide debt forgiveness. Compounding these financial costs, many students left college without a degree or with a degree of dubious value, having missed out on the opportunity to rise up the economic ladder. What went wrong?

Since federal student lending programs started in the 1950s, such programs have exhibited boom-and-bust credit cycles. Legislation expanding financial aid to increase educational opportunities led to increased enrollment, but also to the proliferation and expansion of institutions providing low-quality education to riskier students. The subsequent deterioration of student outcomes—and reports of scandals—causes Congress to limit lending using so-called “accountability rules” regulating how postsecondary institutions participate in federal lending programs. When these new rules constrain opportunities for some would-be students, Congress then whittles away at the rules, allowing student loans to expand again, until a new range of concerns appears.

After a previous student loan crisis in the 1980 was arrested by new accountability rules passed by Congress, those rules were gradually loosened in the late 1990s. Almost immediately, college enrollment and student borrowing accelerated, particularly among groups that had historically been underrepresented at traditional institutions—students who were lower-income; first-generation students; Black and Hispanic; older; enrolled less than full time; pursuing degrees other than a BA; and much more likely to rely on federal aid not just for tuition but also for other costs of attendance, like living expenses. Expanding educational opportunities for these groups is clearly desirable and a key purpose of financial aid programs. But from the perspective of student

lending, these new borrowers were much riskier, partly because of their socioeconomic backgrounds and also because of the institutions they attended.

The institutions that enrolled this new wave of borrowers were disproportionately not traditional four-year institutions with strong educational and economic outcomes. Starting around 2000, for-profit institutions tripled their enrollment and community college students tripled their rate of borrowing. In 2000, only one of the top ten schools in terms of aggregate student loan volume was for-profit. By 2014, for-profits accounted for eight of the ten schools whose students owed the most (Looney and Yannelis 2015). In general, the schools that enrolled the surge of new students were those with high default rates and low student loan repayment rates, where few students complete their intended degrees, or where graduates' earnings are the lowest. This influx of disadvantaged borrowers to lower-quality schools was catastrophic for those students' finances, aggregate student loan outcomes, and the federal student loan budget. Between 2000 and 2014, the student loan default rate rose by 75 percent (Looney and Yannelis 2015).

Today's student loan crisis—and the fact that it is one of a series—highlights the challenges of using a student loan financial aid system to promote access to educational opportunities that vary enormously (but in opaque ways) in their quality, value, and student outcomes. Today, the student loan program is the most costly federal program for subsidizing higher education. In contrast to other federal aid to students, however, loan eligibility is not means tested, and few guardrails exist to prevent using loans to pursue low-quality or excessively costly programs. As a result, the program's budget cost and its distributional effects are delegated to the program's beneficiaries themselves—the institutions that enroll students and set the cost of attendance, and the students who decide where to enroll and how much to borrow. Schools' payments are only very weakly linked to students' outcomes. As a result of these misaligned incentives, students—particularly disadvantaged students and those historically underrepresented at universities—face high costs, variable quality, and inequity in who goes to college and graduate school.

Overview of the U.S. Student Loan System

The legislative history of federal student lending has been driven by efforts to achieve two opposing goals: to expand access to higher education by increasing grant aid and loan eligibility

and take-up, and to contain the associated and sometimes unanticipated budget costs of those programs. Today's student lending "crisis" is only the latest iteration in a repeated pattern in which Congress expands aid eligibility to accommodate access to higher education for specific groups (like military veterans, "non-traditional" postsecondary students, online students, or students facing rising costs, the availability of aid causes an influx or expansion of lower-quality or "predatory" or high-cost programs, student loan outcomes deteriorate and budgetary costs rise, and policymakers implement new rules to curtail abuses and reduce the cost—but also constraining aid availability.

Early Steps

The first major federal effort at supporting students in the pursuit of a college degree the passage of the Servicemen's Readjustment Act of 1944. The "GI Bill," as it was commonly known, was not a loan program, but instead covered the costs of higher education for veterans. The GI Bill set a precedent for the benefits and concerns about the student loan programs that followed: it caused a surge in postsecondary attainment (Stanley 2003), but also led to a wave of for-profit schools established to cash in on federal aid, without providing much or any education (Whitman 2017a).

While the for-profit sector represents only a small share of enrollment, its expansion and contraction provides a barometer of the incentives facing marginal postsecondary institutions to enroll aid-dependent students. Unlike the non-profit or public sector, for-profit colleges exhibit significant entry and exit. Despite the misperception that for-profit schools rely on the free market, the vast majority of their revenue comes from government loans and grants (Deming, Goldin and Katz 2012). In general, for-profits spend little on instructional expenses, while their students are reliant on federal aid and have poor educational and employment outcomes. Hence, their expansion or contraction—and associated student outcomes—is a visible indicator of the risk-taking stance of federal credit policy. Indeed, the vast majority of the time series variation in student loan defaults is driven by the expansion and contraction of for-profit colleges (Looney and Yannelis 2022).

Soon after passage of the GI Bill in 1944, rules were enacted to limit eligibility to certain schools and to create accountability standards. When the first federal loans were enacted to support students pursuing technical fields in response to fears of technological dominance by the Soviet Union, following the launching of the Sputnik satellite in 1957, these funds were limited to state-run and nonprofit schools. The landmark 1965 Higher Education Act (HEA) then expanded the student loan program to other fields, creating modern federal student loan programs through the Federal Family Education Loan program.¹ Title IV of the Higher Education Act established general rules governing the eligibility of postsecondary educational institutions to participate in federal student aid programs: that is, institutions must be accredited by a recognized accrediting agency, be authorized to operate in their respective state, and offer eligible programs leading to a degree or providing training for gainful employment in a recognized field. Institutions are required to adhere to regulations regarding their financial responsibility, administrative capability, and accountability rules intended to reduce abuse of federal aid programs and promote quality student outcomes, particularly in the for-profit sector.

In 1965, when tuition levels were lower, policymakers viewed grant aid as sufficient for lower-income families. Students from high-income families were expected to pay their own way. Federal student loans were for students in the middle—those whose incomes were too high for grant aid but below a means-tested limit.

Under the Federal Family Education Loan program, private banks provided the loans, but their role as credit intermediaries was purely superficial. Loan eligibility and terms were set by federal law. The banks did not underwrite the loans, they were not authorized to assess the creditworthiness or ability-to-pay of the borrower, and thanks to a federal guarantee, the private banks were not on the hook for any subsequent losses in the event of default. In 1992, the Direct Lending program was introduced, in which student loans were issued directly by the Department of Education, using funds from the US Treasury. The eligibility and credit terms were identical to those offered by banks under the Federal Family Education Loan program. The introduction of the

¹ In 1988, Congress renamed the federal loan program the Robert T. Stafford Student Loan program, in honor of a US Congressman (from 1961 to 1971) and Senator (from 1971 to 1989) from Vermont who championed the program. Federal student loans are sometimes referred to as Stafford loans.

Direct Loan program had no effect on credit outcomes, but saved taxpayers billions of dollars in fees paid to banks. Starting in 2010, all federal loans are now issued under the Direct Loan Program.

A disadvantage of the original lending system was that access to federal loans was a patchwork, because it depended on whether a student's local bank elected to participate in the federal program. To encourage more banks to offer loans, Congress passed legislation in 1972 to establish the Student Loan Marketing Association to service and securitize federal loans, relieving banks of these costs and responsibilities. Sallie Mae, as it was widely known, was among the original "government-sponsored enterprises" established to increase credit to a specific sector. Later amendments to the Higher Education Act provided states with incentives to create their own institutions to guarantee student loans, and also increased guaranteed returns for banks, liberalized access for students, created parent loans, and increased loan limits. Sallie Mae was allowed to make loans directly to students. The cumulative effect of these amendments was to allow any qualified student at any accredited institution to take federal student loans. By the late 1980s, the vast majority of students had access to federal student loans (Looney and Yannelis 2021).

In the late 1980s, the student lending system plunged into its most severe crisis involving a series of scandals involving for-profit schools, correspondence programs, and skyrocketing default rates on federal loans. Congress again legislated changes tightening institutional oversight. The most significant change was the Cohort Default Rate rule enacted in 1989, which prohibited schools from accessing federal aid if their borrowers had systematically high default rates. Congress passed the so-called 85/15 financing rule, which limited the share of revenue that for-profit schools could obtain from federal aid to 85 percent. Congress also banned institutions that enrolled more than 50 percent of students in distance learning programs (which later prohibited online programs); prohibited aggressive recruiting methods; and allowed the Department of Education to garnish the wages of students with delinquent student loan debt and prohibited loans from being discharged in bankruptcy. Those rules barred most of the worst-performing schools from participating in the program. When the rules went into effect in the early 1990s, it caused more than 1,000 institutions to close or otherwise exit the program (Cellini, Darolia, and Turner 2016) and a dramatic decline in the student loan default rate (Looney and Yannelis 2021).

Lead-In to the Current Student Loan Predicament

Less than a decade later, starting in 1998, Congress defanged the key accountability provisions that it had just enacted. The 85/15 rule was changed to 90/10, so that proprietary schools could obtain a higher share of their revenue from Title IV federal student aid programs (including Pell grants as well as student loans). The distance learning rules, which had otherwise prohibited the expansion of mostly or exclusively online institutions, were eliminated. Political support for these changes came from a broad coalition spanning advocates seeking more opportunities for underserved students to for-profit institutions bristling under existing rules. These changes allowed for the advent of very large online institutions or programs, which subsequently enrolled millions of Pell grant recipients, GI Bill recipients, and student loan borrowers.

Other legislation undermined accountability provisions, whether indirectly or unintentionally. To protect student loan borrowers against certain risks, Congress allowed borrowers to defer or reduce their payments during periods of military service, graduate enrollment, or during unemployment or financial hardship. Loan payments were suspended with interest, which was added to the loan at the end of the forbearance. One result of these changes was that student loan borrowers attending institutions with poor outcomes chose (or were steered into) forbearances or deferments rather than default, which allowed their institution to escape accountability under the Cohort Default Rate Rules. Another result was that the interest balances of those borrowers snowballed over time.

Likewise, the Post 9/11 GI Bill, which expanded benefits for veterans who served on active duty after 9/10/2001, inadvertently increased borrowing in the for-profit sector. Because of a loophole, GI Bill benefits were treated the same as private out-of-pocket payments under the 90/10 rule, which meant, for example, that a for-profit institution that received \$1 in GI Bill benefits could then receive \$9 in Title IV funds (and 36 percent of GI Bill benefits flowed to for-profit institutions.) GI Bill benefits are, furthermore, not considered grant or scholarship aid under rules that limit federal loan amounts, which allowed students to take out federal loans (in cash) for expenses already paid for by the GI Bill.

Federal Loans from the Student Perspective

While the rules governing whether and how institutions can participate in federal lending programs have changed significantly, and while students now receive loans via their institution's financial aid office rather than from a bank, when considered from the perspective of a student, the fundamental system of federal student loans is surprisingly constant over time.

All borrowers must complete the Free Application for Federal Student Aid (FAFSA). However, information collected on this form is not used for means testing or underwriting of student loans. Undergraduate loans are available to essentially all undergraduate students enrolled at least half-time at an accredited institution, regardless of their financial need. While low-income students are eligible for “subsidized” loans, in which interest accrual is suspended while students remain enrolled, all students whose cost of attendance exceeds grant aid are eligible for unsubsidized loans. For undergraduates, the loan amount is limited to the lesser of (1) the cost of attendance (including tuition and fees and the institution's estimate of living expenses) less grant aid or (2) statutory loan limits, which are determined by whether a student is dependent or independent (typically age 24 or older) and their academic level of study.² In 2022, statutory limits allowed first-year dependent undergraduates to borrow \$5,500 per year, second-year students \$6,500, and third- and fourth-year borrowers \$7,500. Independent borrowers face higher limits. Graduate borrowers face similar eligibility rules, but their loan limits were historically set at higher levels. Since 2007, graduate students face no statutory limit for annual and lifetime borrowing, which is limited only by the program's cost of attendance.

Today's nominal loan limits were implemented in 2007. Previously, nominal limits for certain undergraduate loans had not been increased since 1987 and graduate loans not since 1993, which means they eroded significantly in real terms. In fact, even with the 2007 limit increase, annual loan limits for most undergraduate borrowers—adjusted for inflation—are *below* those that applied in the 1980s and 1990s.

² Because grant aid is typically means tested, an implication of these rules is that higher-income students may qualify to borrow more than lower-income students.

Federal loans can be used not only for required tuition and fees, but also living expenses and other non-tuition costs of attendance. To the extent that the loan amount exceeds net-of-grant tuition or payments to the university, proceeds are furnished to the student directly.

Interest rates are set by law, and for the 2021-2022 academic year were 2.75 percent for undergraduates and 4.3 percent for graduate students. Between 2006 and 2021, interest rates varied from a low of 2.75 percent to a high of 6.8 percent for undergraduate borrowers, and 4.3 percent to 6.8 percent for graduate borrowers.

Students are required to begin repaying their loans after a six-month grace period following separation from school. The standard repayment plan is a 10-year amortizing loan where students make 120 equal monthly payments. If students fail to make a required payment for 270 days they are in default (Yannelis and Tracey 2022).

The recent history of student lending rules neither substantially affects the incentives for students to borrow nor directly explains the recent increase in borrowing. Perhaps the biggest recent change was the introduction of a series of income-driven repayment plans starting in 2009. These plans link the payments of student loan borrowers to their incomes, and borrowers with low earnings can make lower or even zero payments. After a period of repayment, remaining balances are forgiven. For example, under the first plan introduced borrowers paid nothing if their income was below 150 percent of the poverty line or, if their income exceeded that poverty threshold, 15 percent of their income in excess of that threshold; remaining balances would be forgiven after 25 years. Over time, the Department of Education used its regulatory authority to expand the number of these income-driven repayment plans and the generosity of their terms. For example, in 2023, the Saving on A Valuable Education plan (SAVE) was introduced, which raised the income threshold before which payments are required to 225 percent of the poverty line (about \$33,885 for a single individual in 2024) and to 5 percent of income over that threshold for undergraduate loans, and 10 percent for graduate loans. For borrowers who borrowed small amounts, the remaining loan balance can be forgiven as quickly as 10 years. Based on the typical earnings trajectories of students, the SAVE plan is expected to reduce the net present value of payments below the face value of the loan for many students—making paying for college with loans more favorable than paying out of pocket.

Aggregate Trends in Undergraduate Enrollment and Borrowing

Looking back over a half-century of student lending policy, our view is that the majority of the time series variation in student loan default rates—a salient and consistently measured summary measure of loan outcomes—was driven by the changes in federal policies regarding which institutions participated in lending programs and how many borrowers they enrolled (Looney and Yannelis 2021). These rules affected the entry, exit, and expansion of for-profit institutions, for whom accountability rules directly their ability to operate. Among community colleges and certain other non-selective institutions, these rules influenced whether the institutions chose to participate in lending programs, and thus the share of students in these sectors who borrowed. Many community colleges, for example, elected not to participate, either so as not to jeopardize their eligibility for federal grant programs or out of paternalistic concern for their students' finances. However, we see only a modest role for rising costs or other aggregate economic factors, mostly because undergraduate loan limits are set so low that most of the variation in outcomes across borrowers is related to characteristics of borrowers and their institutions.³

Overview of Aggregate Trends in Undergraduate Enrollment and Student Borrowing

To illustrate these trends, Figure 2A describes aggregate enrollment of undergraduate students, the number of borrowers, and the propensity of those students to borrow. The recent increase in college and graduate enrollment reflects both population growth and a jump in enrollment rates. Between 1990 and 2010, the number of high school graduates increased by 34 percent, the number of undergraduate students increased by 47 percent, and the number enrolled

³ An exception is the situation of graduate students, for whom the net cost of attendance matters a great deal, and for whom the recent the expansion in graduate credit, through the elimination of graduate loan limits has caused a deterioration in loan outcomes. Parents of dependent undergraduate students may also borrow through the federal loan program up to the cost of attendance less any grants or loans their children receive. Parent loans compose about 7 percent of federal loans. Parents are eligible as long as they do not have an adverse credit history (and regardless of ability to pay). We exclude a discussion of parent loans from this because they are more akin to unsecured loans than to loans to students whose acquired human capital 'backs' the loan. For a discussion of problems facing parent borrowers see Baum, Blagg, and Fishman 2019).

in graduate school increased by 56 percent (Department of Education 2022). The share of recent high school students enrolling in college went from 60.1 percent in 1990 to 63.3 percent in 2000 to 68.1 percent in 2010 (Census 2023).⁴ The total number of college and university students (including undergraduate and graduate students) increased from 16.5 million in 2000 to a peak of 23 million in 2012, before declining back to 17 million in 2020.

Why did enrollment rates increase? One likely reason is the persistently high return to college and graduate school over the last several decades, which increased demand for education. During the aftermath of the 2001 recession and during the Great Recession starting in 2007, the opportunity cost of enrollment was low, because of the weak labor market. Because of policy changes and the advent of online education, the supply of programs surged, particularly open access institutions, online programs, masters programs, and graduate programs not related to (or constrained by) professional organizations. Many of these new programs were targeted and particularly appealing to non-traditional student populations struggling in the job market and with other responsibilities because they offered more scheduling flexibility, were easy to sign up for, and federal aid and loans not only covered tuition but also helped pay for rent and other expenses.

In 1996 and 2000, fewer than 30 percent of enrolled undergraduates borrowed, but the share borrowing increased rapidly over the subsequent 12 years to peak at 40 percent in 2012. Between rising enrollment and a rising share of students who borrowed, the number of undergraduate students taking out federal loans doubled from 4.5 million to 9.3 million borrowers. Since then, although total enrollment has declined to its level in 2000, the fraction of students who borrow has remained high.

Note that Figure 2A describes active borrowers, or the flow of borrowers, not the total number of Americans with loans (presented in Figure 1). Because student loans have a long duration between when they are originated and when they are eventually paid off (or forgiven), the recent rise in the number of active borrowers caused the stock of borrowers to surge. Consider

⁴ Enrollment figures include foreign students and Current Population Survey data includes foreign born students who are resident in the US. Only US citizens and permanent residents are eligible for financial aid, hence number of borrowers excludes foreign students. According to the Department of Education Digest of Education Statistics Table 310.20, foreign enrollment increased from 407,272 in 1990, to 547,873 in 2000 to 723,249 in 2010, and 948,519 in 2021.

an undergraduate student who begins borrowing as a first-year student, completes a degree after five years (roughly the average length of enrollment for BA degree earners from four-year institutions), enters repayment after the standard six-month grace period, and subsequently pays off loans exactly on the standard repayment plan's 10-year schedule—that borrower will remain in the stock of student loan borrowers for almost to 16 years from the moment they start borrowing. Borrowers who go to graduate school, enter the military, defer payments for other reasons, or repay under an income-driven repayment plan are likely to owe their loans even longer. In this sense, the large increase in the stock of student loan borrowers follows from the rise in enrollment and rate of borrowing of recent postsecondary students.

Annual and Cumulative Amounts Borrowed and the Relation to Tuition

While the number of borrowers has increased, the amount undergraduate students borrow on an annual basis has been relatively constant because of loan limits. Figure 2B illustrates the annual average amounts borrowed by undergraduate students, the amount borrowed conditional on having borrowed at all, and the average annual net-of-grant and scholarship tuition paid each year. On average, the annual amount borrowed per undergraduate student through federal student loans in 2020 was about \$2,000. Among those who borrow, the average amount was about \$6,500. Most undergraduate students who borrow take loans up to the applicable limit (Black et al. 2021). The average amount borrowed falls very close to the \$6,500 limit applied to second-year students. The average amount borrowed by undergraduates (conditional on borrowing at all) is little changed over time (in nominal terms), because it is largely fixed by the applicable loan limits.

While undergraduates also face cumulative lifetime limits of \$31,000 for dependent students (\$57,400 for independent undergraduates), in practice, relatively few undergraduates hit these lifetime limits simply because they either graduate or drop out before the limit applies. Indeed, a student's educational persistence—the number of years they enroll—tends to be a more important determinant of their cumulative debt burden than their tuition costs or even financial need simply because of the binding annual limits. This relationship helps explain the otherwise counterintuitive fact that more indebted borrowers have lower default rates than borrowers with small balances; having a small undergraduate balance likely meant that you dropped out before completing a degree.

Despite widespread news articles featuring student loan borrowers with enormous, six-figure balances, it is not possible to borrow such amounts in federal loans as an undergraduate, and, prior to 2006, it was rare as a graduate student outside of medical school. While loan balances were low in the 1990s, by 2015, over 5 percent of borrowers had balances over \$100,000 (for a descriptive discussion of borrowers with large balances, their outcomes and the increase in these borrowers during the 2010s, see Looney and Yannelis 2019). Historically, borrowers with high balances tended to be professional degree students attending selective programs—doctors and lawyers—and thus tended to have strong labor market outcomes.

Over time, unpaid undergraduate loans could rise over time as interest accumulated. However, at a 5 percent interest rate (the rate in the 2023 school year), if a borrower made no payments and the interest compounded, it would take more than 14 years for the balance to double. This process of balances growing, rather than shrinking, has increased in recent years due to the uptick in the use of forbearances and income-driven repayment plans. However, in the Saving on A Valuable Education income-driven repayment program, unpaid interest will no longer accumulate, ending negative amortization for enrolled borrowers.

One common explanation for rising student debt is that rising tuition is driving borrowing costs. We are skeptical that rising tuition is a primary driver of borrowing amounts or worsening financial outcomes for undergraduates. Annual undergraduate loan limits are low, and most undergraduate borrowers are capped at the limit. At the margin, increases in tuition cannot increase borrowing for most students. That said, higher tuition costs do place greater demands on family finances, which may cause some students to switch from not borrowing to borrowing. Indeed, tuition increases may lead more students to borrow (Chakrabarti et al. 2020, 2023). However, rising cost appears to explain little of the total change in borrowing. Hershbein and Hollenbeck (2015) decompose changes in student loan borrowing over the period from 1996 to 2008 into changes in the observable characteristics of students, such as demographic characteristics, institution of study, family income, and tuition. Their conclusion is that changing student characteristics and rising tuition combined explained only 30 to 40 percent of the increases in borrowing in that period, of which college costs were only a part.

Another reason to be skeptical of the role of cost in driving borrowing is that net tuition is rising more slowly than conventionally believed after taking into the effect of tuition discounts, scholarships, tax credits, and grant aid. According to the College Board (2022), net tuition at two-year public schools (community colleges) has declined, on average, since the 1990s, and in-state tuition at four-year public schools is about the same, on average over that period.

Of course, not all students pay the average. At private nonprofits and selective public institutions, the “sticker price” has increased substantially, and for families that do not qualify for means-tested aid, that price increase is significant. Also, a rising share of students appear to be choosing higher-cost programs. For instance, between 2002 and 2018, at flagship public universities, out-of-state enrollment—where tuition is typically more than twice that of in-state tuition—increased by 55 percent and in-state enrollment decreased by 15 percent (Klein 2022).

More generally, the direction of causality between financial aid and college costs is a matter of considerable debate. While one view is that increased borrowing is required by excessive costs, another view is that broadly available loans and grants causes some families and students to choose more expensive educational options and institutions to raise their prices—a theory referred to as the “Bennett Hypothesis” after it was posited by Secretary of Education William J. Bennett in 1987. Some studies do suggest that increases in tuition are at least partially driven by increases in loan limits (Lucca, Nadauld and Shen 2019, Cellini and Goldin 2014, Kargar and Mann 2023, Black, Turner and Denning 2023).

Shifts in Undergraduate Enrollment and Borrowing Patterns by Type of Student

Changes in Enrollment Across Sectors and the Characteristics of Newly-Enrolled Students

Increases in the number of undergraduate borrowers and deteriorating outcomes are primarily the result of increases in enrollment of relatively aid-dependent students at riskier, lower-quality institutions.

Table 1 describes undergraduate enrollment, the share of students who borrow, and the resulting change in the number of borrowers between 2000, 2012, and 2020—roughly the periods before the run-up in student debt, the peak of undergraduate borrowing, and the most recent available data—and the share of students who borrow. To illustrate changes in the characteristics

of students and borrowers, we summarize these data by demographic characteristics; the institutional sector of their school, dependency status (which is important because independent borrowers are typically older, may have more employment and family responsibilities, and face higher loan limits than dependent students and tend to borrow more); and parent's highest level of educational attainment (a consistently and universally-available measure of family socioeconomic background).

The table highlights several facts about changes in enrollment and borrowing. First, over the period from 2000 to 2012, enrollment and, particularly, borrowing surged among groups that had historically been underrepresented in postsecondary education: Black and Hispanic students, first-generation students, independent students; and those at for-profit institutions and community colleges.

The fraction of enrolled students who borrowed increased from 28 percent to 40 percent of students between 2000 to 2012. Part of the reason is the economic context: many new entrants enrolled because of the weak economic conditions during the Great Recession, and were more financially insecure and reliant on federal aid to fund their education. Borrowing among independent students—older students returning to school after age 24—surged from 21 percent to 39 percent of such students. However, by itself, the changing demographic characteristics of borrowers explains relatively little of the increase in borrowing. Black students are roughly 25 percent more likely to borrow than white and Asian non-Hispanic students, while Hispanic students are slightly less likely to borrow. While a large share of new entrants were first-generation students, they are only slightly likelier to borrow than children of more educated parents.

A second observation from the table is that the increase in borrowing (conditional on enrollment) was widespread across demographic groups and across students from different socioeconomic status (as measured by their parent's education).

Finally, from 2012 to 2020, many of these changes had reversed, including the surge in aggregate enrollment. By 2020, black undergraduate enrollment remains only modestly higher in than in 2000—about 10 percent greater. White undergraduate enrollment in 2020 was below its level in 2000. Hispanic enrollment almost doubled. While 60 percent of postsecondary students and 61 percent of borrowers were first-generation students in 2000, in 2020, enrollment of first-

generation students reverted to its 2000 level and their share of enrollment declined to 56 percent in 2020.

Notably, a surprising fact is that in 2020, while the overall share of students who borrowed remained somewhat higher (34 percent) than in 2000 (28 percent)—and higher within each demographic group—the borrowing rates at four-year public and private non-profit institutions was roughly unchanged. Hence, the increase in overall borrowing is closely tied to where students enrolled.

The Shift in Higher Education Institutions and Borrowing Rates

Why did the share of students who borrowed increase? A major factor was the types of higher education institutions in which they enrolled. Enrollment at for-profits increased by 267 percent (2.2 million students) between 2000 and 2012. About three-quarters of students at for-profits borrow. The number of students at for-profit institutions who took out student loans rose from 602,000 for in 2000 to 2.1 million in 2012.

In the community college sector, the biggest change was not the increase in enrollment (which rose 25 percent) but instead the surge in the share of students who borrow from 5 percent to 17 percent. Some of this increase in borrowing was associated with state appropriations cuts (Chakrabarti et al. 2021). But the increase in borrowing is also related to changes in accountability rules that had previously deterred community colleges from participating in the federal loan program. The number of active community college borrowers increased by 1.1 million between 2000 and 2012. Of the total increase of 4.7 million borrowers from 2000 to 2012, 32 percent of the increase was accounted for by more for-profit borrowers and 23 percent more community college borrowers.

Between 2001 and 2011, total 12-month enrollment increased by 5.9 million students, including 1.5 million additional Black students, 1.6 million additional Hispanic students, and 1.5 million additional white students. Among these groups, 47 percent of the additional Black students enrolled at a for-profit, 24 percent of additional Hispanic students, and 65 percent of the additional white students. In 2011, almost one-fourth of Black students were enrolled at a for-profit. In addition, 23 percent of new Black students enrolled at a community college and 29 percent of Hispanic students, while community college enrollment fell among white students.

According to Table 1, in 2020 total enrolment was about the same as in 2000 but the number of borrowers was nevertheless 29 percent higher. Three trends help explain why borrowing remains higher. First, enrollment at for-profit schools increased. Second, the fraction of students who borrow at community colleges is more than twice as great as in 2000. And finally, a larger share of students are enrolled at four-year public and private institutions. While the fraction of students who borrowed to attend these programs is no different than in 2000, enrollment increased by 22 percent and 12 percent, respectively. These trends help explain the borrowing patterns described above. Part of the reason that borrowing rates among non-white, first-generation, and independent borrowers increased is because these newly-enrolled students flowed into for-profit and community colleges where borrowing was or became widespread. But borrowing rates also increased because a larger share of students (particularly white students) enrolled at four-year programs instead of community colleges. As we describe below, the expanded enrollment at four-year institutions tended to occur among less selective or open enrollment institutions, whose student outcomes were often more similar to those in the for-profit and community college sectors.

Higher Education Institutions and Student Loan Outcomes

In our view, the concentration of borrowing at for-profit schools, community colleges, and other less-selective institutions—and among the relatively disadvantaged students they enroll—is the principal cause of the deterioration in student loan outcomes. At any given institution, of course, some portion of the average outcomes of students reflects selection, like the admissions process at highly-selective institutions or enrollment choices of less-advantaged students based on considerations like proximity, cost, or flexibility at nearby open enrollment institutions.

However, institutions also seem to have causal effects on student outcomes. The challenge to identifying a causal effect is to find way of adjusting for unobservable variables. One approach in the literature has been to adjust for the schools to which students apply: using this method, Chetty et al. (2020) estimate that 80 percent of the difference in earnings premia across colleges conditional on parental income, race, and test scores is due to the causal effect or “value-added” of colleges. Given the causal linkage from institutions to outcomes, the average outcomes of existing or prior enrollees provides a strong estimate of the likely outcomes of subsequent students who attend the college.

Another approach to looking at causal effects of types of institutions on outcomes relies on those just above or just below a certain test-score cut-off. Examining the discontinuity at the minimum SAT score to be admitted to Georgia’s four-year public system, Goodman, Hurwitz, and Smith (2017) find large effects on educational outcomes (degree completion rates) of students who are marginally admitted and thus diverted from the alternative (which is typically community college). Likewise, Zimmerman (2014) examines a similar test-score cutoff at a large Florida public institution and finds that marginally admitted students earn 22 percent more than their peers who were not admitted—a return of 8.7 percent per year of college attended, on average, which is about the same as the cross-sectional ordinary least squares difference in earnings between individuals with different years of college.

The evidence of large discontinuities in outcomes for marginal students at public four-year institutions is particularly relevant to interpreting the outcomes of new students who enrolled during the period from 2000 to 2012. Many of these students were presumably on the margin of enrolling or not enrolling, and when they did enroll, many of them ended up at the type of institution with lower payoffs.

For-profit higher education institutions appear to result in particularly poor outcomes. Students from for-profit colleges accumulate higher levels of debt, their labor market earnings after enrollment are lower and the rates of default on their loans are higher than students in other sectors (Deming et al. 2012, Lang and Weinstein 2013; Armona et al. 2018; Armona, Chakrabarti and Lovenheim 2022). Attending a four-year private for-profit college is the strongest predictor of loan default—more predictive than dropping out!—according to researchers at the Federal Reserve Bank of New York (Chakrabarti et al., 2017a). Examining pre- and post-enrollment earnings of students who attended for-profit programs using administrative data on the population of federally-aided students, Cellini and Turner (2018) find that for-profit students earned less five or six years post-attendance than they did prior to enrollment—lower than student outcomes in identical programs offered by public institutions, even after accounting for differences in student characteristics. Looney and Yannelis (2015) also document that the rise in for-profits is associated with many of the adverse outcomes for student loan borrowers.

While one might be concerned that the poor outcomes of students at low-quality colleges reflects the disadvantage of their students, this appears not to be the case. The poor outcomes of students at for-profit colleges are not attributable to differences in family income, age, race, academic preparation, or other factors (Scott-Clayton 2018).

Enrollment Changes Across Institutions by Measures of Institutional Quality and Student Outcomes

To emphasize that the quality of the institutions new borrowers attended is a key cause of worsening loan outcomes, Figure 3 describes recent enrollment changes among institutions categorized directly by student loan outcomes. Up to this point, our discussion has differentiated types of higher education institutions by their academic level and control: four-year public, two-year public, private nonprofit, and private for-profit. Another informative way categorizing the quality of educational institutions is based on the educational, labor market, or student loan outcomes of their students. If average outcomes at institutions largely reflect differences in value added, those averages provide useful predictions of the outcomes of individual students who enroll at those institutions.

To illustrate the relationship between institutional characteristics and worsening student loan outcomes, Figure 3A shows the change in fall enrollment at educational institutions ranked by the average student loan repayment rate at each institution. The sample includes all institutions that enroll undergraduate students. Institutions are grouped into enrollment-weighted quintiles based on their fall enrollment in 2000 and their average enrollment-weighted repayment rate of their student loan borrowers over the period when this metric was available in the US Department of Education College Scorecard (for the 2006 to 2013 graduating cohorts; the repayment rate is defined as the fraction of the non-enrolled borrowing cohort whose loan balances have declined in the three years since graduation). Thus, each line represents an equal share of enrollment in the year 2000 and are indexed to one in that year.

The figure makes clear that the surge in enrollment that started in the late 1990s/2000s and continued through the Great Recession was tilted toward institutions with low repayment rates.

While enrollment at institutions where students were most successful in repaying their loans increased only by about 13 percent between 2000 and 2010, enrollment at institutions where students struggled the most to repay their loans expanded by close to 70 percent.⁵ In other words, the surge in enrollment predominantly occurred at institutions where students tended to struggle the most with their loans.

We emphasize the student loan repayment rate because it is directly related to the financial strain and deterioration of loan outcomes of borrowers. However, the pattern of enrollment changes is qualitatively the same had we instead categorized institutions by measures of educational outcomes (like the graduation rate), admissions selectivity, labor market outcomes (like the mean or median earnings of program completers, as measured by the College Scorecard), or alternative student loan outcomes (like the default rate or fraction of borrowers not paying down their loan).

Indeed, in 2011, the average enrolment-weighted degree completion rate at institutions in the lowest-repayment rate quintile illustrated in Figure 3 was 23 percent; the average post-enrollment earnings were \$27,760; the average student loan default rate was 20 percent. In contrast, at institutions in the highest repayment rate quintile, 73 percent graduated, their average earnings was \$48,375 and the default rate was 3 percent. What kinds of schools are these? In the lowest repayment quintile, the largest institutions are the University of Phoenix (at the time, the largest online for-profit institution); Kaplan University and Ashford University (which previously were large online for-profit institutions, but which were since acquired by Purdue University and University of Arizona, respectively, and are now operated as the online offerings of those public universities); and two large community college systems operating around Houston Texas—the Houston Community College System and Lone Star College. The largest institutions in the highest repayment rate quintile are large public institutions: Texas A&M, Pennsylvania State University, University of Texas Austin, Michigan State University, and University of Minnesota Twin Cities.

⁵ Were data on 12-month enrollment available prior to 2001, it is likely that this total headcount data would illustrate an even larger surge in enrollment at low-repayment-rate institutions because they have more short-term programs and more non-traditional enrollment patterns.)

Note that while these institutions are prestigious, they are also not highly selective with acceptance rates between 31 percent and 75 percent.

Across a range of student loan, educational, and labor-market outcomes, the pattern is the same—institutions offering the highest-quality educations and with the best outcomes expanded enrollment the least, whereas the lowest-performing institutions expanded the most.

Who were the students enrolling at these lower-quality institutions? Predominantly the most at-risk and disadvantaged students. Given the changes in the characteristics of those who enrolled during this period, the students filling these seats at low-performing institutions were disproportionately Black or Hispanic, independent students, and first-generation students. To illustrate, Panel B of Figure 3 focuses on first-generation students, the best-available measure of the socioeconomic background of students (family income is only available for dependent students; financial aid applications of independent students and graduate students only require income information from the students themselves). Panel B shows that the increase in first-generation enrollment is highly concentrated among the lowest quality institutions. Among the institutions with the worst repayment outcomes, an additional 1.8 million first-generation undergraduate students were enrolled in 2010 compared to 2000. First-generation enrollment at the highest-quality institutions was essentially unchanged over this period.

The divergence in enrollment closely coincides with the timing of changes to institutional accountability changes. In earlier work, Looney and Yannelis (2022) provide evidence that the implementation and subsequent unwinding of these accountability measures causes the changes in enrollment and, subsequently, the number of students who default on their loans.

Graduate Students: Similar Enrollment Changes but Soaring Dollar Amounts

The deterioration of undergraduate student loan outcomes is primarily about changes in the risk characteristics of the institutions that students attend and the vulnerabilities of those students,

rather than rising costs or borrowing amounts. In contrast, the story of the deterioration of graduate loan outcomes is both about changes in enrollment patterns *and* surging loan volumes accommodated by the fact that, since 2007, there are no annual or lifetime limits on how much graduate students can borrow in federal loans. At present, almost half of all federal student loans are issued to graduate students even though graduate students represent a small share of total enrollment.

Figure 4A illustrates graduate enrollment, the number of active borrowers, and the fraction of graduate students who borrow. Similar to the pattern of undergraduate enrollment, graduate enrollment begins rising starting in 2000 and more quickly after 2004. However, two notable differences emerge. First, the enrollment of graduate students remains at historic highs (unlike undergraduate enrollment, which peaked in 2012). Second, the fraction of graduate students who borrow remains at about 40 percent, about the same level as in 2004 and somewhat higher than among undergraduates (35 percent in 2020).

Figure 4B describes the average tuition and borrowing amounts of graduate students. In 2020, the average graduate student paid about \$13,000 in net tuition (roughly double the average net tuition of undergraduates). The average amount borrowed per graduate student was about \$10,000 (compared to \$2,000 per undergraduate), and among those graduate students who borrowed, they borrowed almost \$25,000 each year. Looking over time, average tuition and other costs are correlated with the amounts borrowed, and increases in costs are closely related to increases in borrowing.

For graduate students, the most salient change in policy in the last two decades has been the elimination of limits on student loans amounts in 2007. While most graduate students were not bound by the prior limit (\$20,500) the elimination of the limit increased borrowing among those at the limit, caused some borrowers who previously took private loans for excess costs to switch to federal loans, and caused institutions to raise graduate tuition (Black, Denning, and Turner 2019).

In part because of these enrollment trends and the removal of limits on the size of graduate loans in 2007, graduate students today borrow almost the same aggregate amount each year as

undergraduate students, even though there are almost five times as many undergraduate students (Monarrez and Matsudaira 2023).

Table 2 shows that the number of graduate student borrowers more than doubled between 2000 and 2012 (from 0.8 million to 1.6 million) and remained close to that higher level in 2020. This change was driven in part by enrollments, which increased by 39 percent between 2000 to 2012 and remained higher (in contrast to undergraduate enrollment, which reverted to 2000 levels by 2020). In particular, the number of borrowers in master's degree programs increased 163 percent, which represents most of the increase in the total number of borrowers.

Beyond enrollment, the share of students who borrowed increased from 29 to 43 percent between 2000 and 2012, and remained at 40 percent in 2020. Again, these changes are concentrated among masters' students. The fraction of professional-degree students who borrowed in 2020 was the same as in 2000, and the share of doctoral students who borrowed fell. In contrast, the share of master's students who borrowed increased from 25 to 44 percent in 2012 and remained above 40 percent in 2020. In sum, almost all of the increase in the number of graduate borrowers is tied to students pursuing master's degrees.

Who was enrolling and borrowing in these programs? Table 2 shows that among graduate students, the demographic shifts are even more pronounced than among undergraduates. Women surged into graduate study over this period, and their enrollment remained high through 2020. Roughly twice as many Black, Hispanic, or Asian students enrolled in graduate school in 2012 and 2020 as in 2000. In contrast, by 2020, enrollment of white women was almost unchanged and enrollment of white men fell 9 percent.

Above and beyond enrolment, these new students borrowed at much higher rates than previous graduate students. The number of Black graduate borrowers tripled and the number of Hispanic borrowers almost quadrupled.

The growth in masters' degree enrollment and borrowing has drawn scrutiny because of the rising costs and amounts borrowed for these programs, and because of large differences in outcomes across programs and institutions. For example, over half of the increase in Black graduate enrollment was accounted for by enrollment in for-profit institutions, while the share of Black graduate students enrolled at public institutions declined (Monarrez and Matsudaira 2023).

This change in enrollment matters for student loan outcomes because about 25 percent of for-profit graduate borrowers leave with high debt burdens relative to their earnings using the Department of Education’s proposed measure of debt affordability, compared to 2 percent of students in the public sector (Federal Register 2023). As Table 2 shows, the number of graduate borrowers at for-profit institutions was ten times larger in 2012 than in 2000 and almost 8 times larger in 2020.

Graduate borrowers therefore have very different employment and financial outcomes than in the past. In 2000, 30 percent of graduate student borrowers were borrowing to attend a professional degree program, like law or medical school, which tended to lead to high-paying, secure professions. In 2020, those borrowers represented only 13 percent of graduate borrowers. However, because today’s professional degree borrowers borrow so much more in 2020, they still owe about 40 percent of graduate debt—about the same as in 2000.

Within master’s programs and doctoral programs, student outcomes are very heterogenous both because of the career paths of students and differences in costs across programs. Consider students pursuing a master’s in social work in Los Angeles: According to the Department of Education’s College Scorecard, University of Southern California graduates earn \$64,000 a year and owe \$126,000 in federal debt. At UCLA, students earn \$77,000 and owe \$54,000. And at California State University-LA, students earn \$64,000 and owe \$30,000. While the debt-service-to-income level of University of Southern California’s graduates is the highest (too high, per the Department of Education’s proposed measure of affordability), its program is also the country’s largest, with 1,200 graduates per year. Such programs that lead to excessive indebtedness impose financial burdens on their students and eventually large costs on taxpayers..

Implications and Repercussions

One result of these enrollment and borrowing changes is that many of the newly-enrolled graduate students at low-quality institutions, feel they got a bad deal, and they did. For-profit borrowers are less likely to complete degrees and find jobs, and those who do find work earn less than peers at selective institutions. These outcomes translate into substantially higher loan default rates that persisted through the past two decades.

Another result is that Americans owe much more in aggregate student debt, raising concerns about reduced access to credit and financial hardship. However, the evidence on the economic impacts of student debt is mixed. While loans provide liquidity and a path to upward mobility for some (Goodman, Isen and Yannelis 2021), difficulty repaying may depress consumption, investment and saving for others (Dinerstein, Yannelis and Chen 2023).

Because of persistent inequities in who goes to college and graduate school, student debt remains highly concentrated among children of higher-income households who attained significant education and had lucrative careers (Baum and Looney 2020; Looney 2021, Catherine and Yannelis 2023). However, debt has increased across the income and educational spectrum. The top 40 percent of households owe well over half of outstanding debt, while the bottom 40 percent owe a smaller share (of a rising amount). Moreover, these figures understate the concentration of debt among the affluent because lower-income groups benefit more from income-driven repayment and related forgiveness (Catherine and Yannelis 2021).

The concentration of debt among affluent households alongside the concentration of default and distress among borrowers with smaller balances and poorer outcomes has created political challenges in solving the student debt crisis, with debates over the targeting of relief and the design of income-driven repayment plans.

Finally, recent decades point to significant unmet demand for education among disadvantaged groups, but a lack of opportunities to attend good schools. While for-profit colleges are obvious contributors to the student lending crisis, the lack of expansion of high-quality public and nonprofit institutions is also a major factor. A range of supply constraints related to government approval processes, finances, and prestige help explain this lack of high-quality expansion (Cellini 2009, Blair and Smetters 2021). Promoting access specifically to high-quality, good-value programs remains a key challenge.

Conclusion: Challenges of Student Lending Policy

The labor market returns to college and graduate school are at historic highs. The typical college graduate earned 75 percent more than a high school graduate in 2019, and average returns to an additional year of education are in the range of 10.5 percent (Patrinos and Psacharopoulos

2018). For decades, student loans have offered students without means or access to credit a way to finance these investments. The expansion in access to and use of student loans over the last 20 years has boosted enrollment and educational attainment among groups who would not otherwise have had the financial resources to attend college or graduate school. Moreover, the labor market outcomes of groups who increased bachelor's and graduate degree attainment the most over the last 20 years are strong. Alongside broader evidence of the high returns to college for marginal students, too few Americans are pursuing postsecondary education, not too many.

However, the last 20 years also illustrates some significant tradeoffs of relying on the historical student lending system as a primary vehicle to boost access. On the plus side, from a fiscal perspective, lending programs are less expensive than grant programs, and, some argue, more politically and fiscally sustainable because they are self-funded by their beneficiaries rather than from general revenues—the interest paid by previous generations of borrowers funded the costs of new loans to current students. This approach had distributional advantages, as higher-earning graduates tended to pay more without subsidies, offsetting reduced payments of lower-income borrowers (Catherine and Yannelis 2022).

The advent of income-driven repayment plans and improvements in their administration have increased the insurance value and redistribution in the loan system by tying payments to earnings. Previously, borrowers faced an inflexible 10-year repayment plan, which tended to burden borrowers with high payments early in their careers or when their incomes were temporarily low (Mueller and Yannelis 2021; Dynarski and Kreisman 2013). Extending repayment or making payment graduated helps borrowers smooth consumption given that incomes tend to rise over time (Boutros, Clara and Gomes 2022).

However, significant problems of quality and cost remain largely unaddressed by federal policymakers. Institutions face few federal incentives to offer high-quality, high-value educational programs and to enroll federal-aid dependent students into those programs, and bear little consequence for poor outcomes. A significant cause of the worsening outcomes of student borrowers is the type of institutions and programs they attend. At many for-profit colleges, the returns to a degree may even be zero, suggesting a negative return when costs are factored in. Even

at high-quality, elite programs, the costs can be extremely high and, under the current income-driven plans, those costs are likely to fall on federal taxpayers.

The advent of income-driven repayment plans and their rising take-up have exacerbated these disadvantages: they can erode the incentives of students to seek higher-return, lower-cost programs; they insulate institutions from market pressure to improve value; and they impose marginal tax rates on students. Under today's income-driven repayment plans, most students are expected to repay less than \$1 for each \$1 they borrow, and thus such plans seem especially vulnerable to adverse selection and moral hazard for both individuals and institutions (Karamcheva et al. 2022, Britton and Gruber 2019; de Silva 2023). These incentives can make borrowers insensitive to price, quality, or outcomes, and encourage institutions to raise tuition or cut costs. Some schools and types of specialized investors have proven over the decades to be particularly adept at capturing government aid while providing poor returns to students (Eaton, Howell and Yannelis 2020). While income-driven repayment plans provide payment relief to existing borrowers, on their own, they potentially worsen the problem of institutional quality and value.

Policymakers have proposed legislative and regulatory changes to federal aid programs intended to better align the incentives of schools, borrowers and taxpayers. These proposals impose fines or sanctions on schools for the adverse outcomes of students, putting schools on the hook for adverse outcomes. (Brazil instituted a similar policy in 2017.) While such policies can help fix school incentives, a concern is that they will unintentionally deter institutions from admitting students from challenging backgrounds. The central difficulty is that we only observe a program's dropout rate, default rate, or post-enrollment labor market outcomes which are correlated with students' family income, race, and socioeconomic status, rather than the program's value added (Barahona et al. 2021).

Perhaps the loudest debate about the student loan crisis surrounds the issue of loan forgiveness for past borrowers, and whether to increase loan subsidies for future students attending college and graduate school. This debate involves the intertwined issues of cost and equity. Recent and proposed policies to forgive loans and provide more generous income-based repayment plans for future borrowers have made student loans the costliest federal program for supporting education (CBO 2023). Most of these incremental subsidies will benefit students who would have attend college and graduate school anyway. Because of inequity in access to college and graduate

school, those students tend to be affluent, well educated, and successful after graduation. Thus, increases in loan subsidies are more expensive because they benefit inframarginal students, and regressive because they benefit higher-income groups more than the struggling borrowers they intend to serve (Catherine and Yannelis 2023). While more targeted aid policies can seem complicated or administratively daunting, we believe that increased targeting of aid—to prospective students based on need, to institutions based on the outcomes of their students, and to borrowers based on their post-college earnings—is the best way to promote access to high-quality schools, to protect students and taxpayers from excessive costs, and to ensure the long-term sustainability of federal aid programs.

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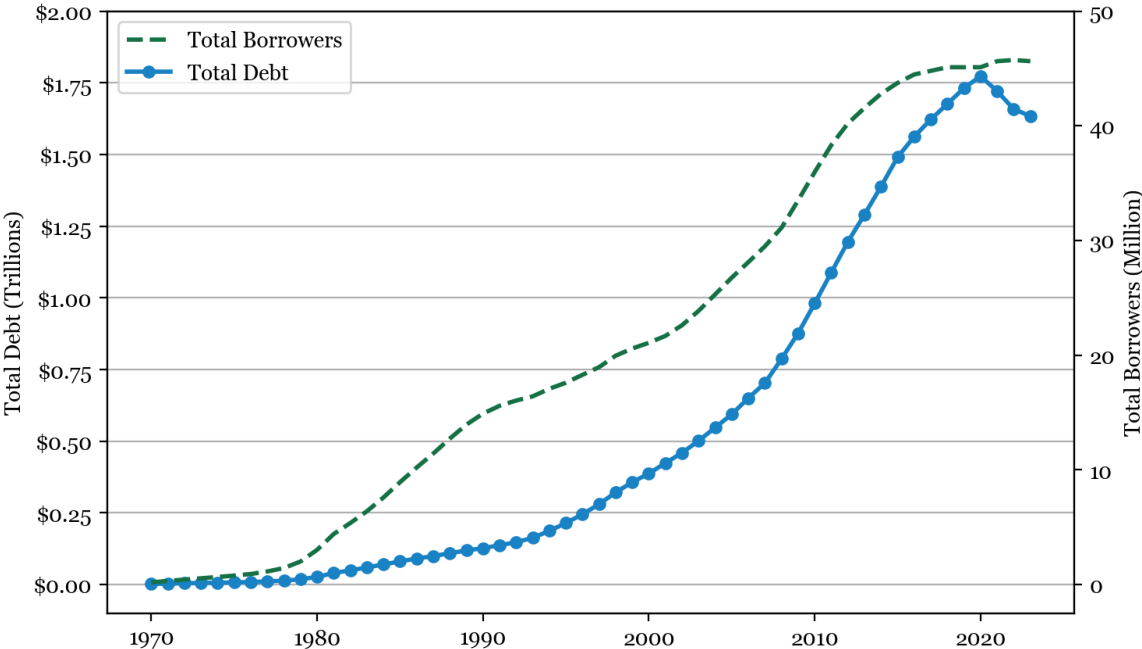
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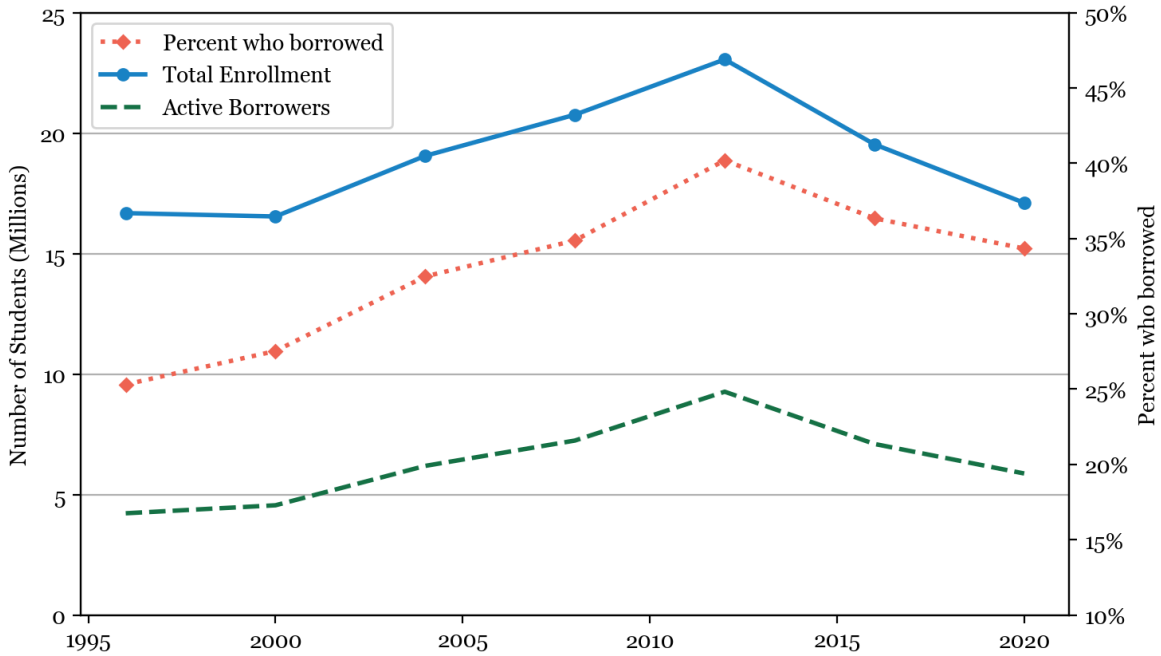
Figure 1: Total Borrowers and Total Debt



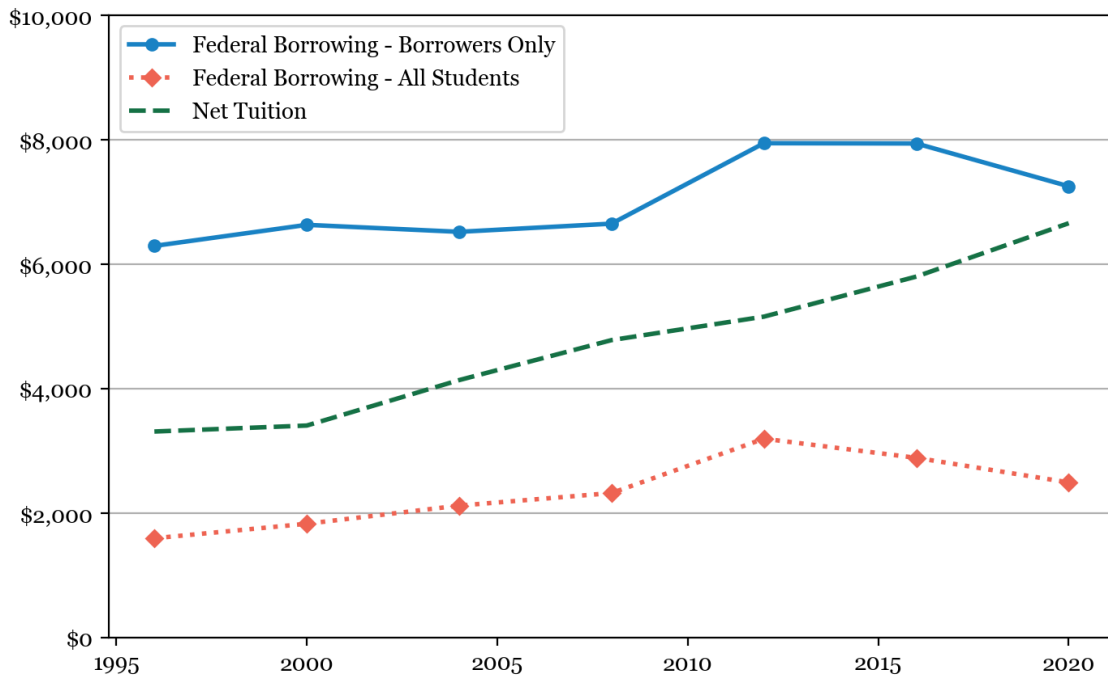
Notes: This figure plots the total number of borrowers and total student loan debt in the US Debt is reported in trillions of 2022 dollars and the number of borrowers is reported in millions. Source: Looney and Yannelis 2015 and Department of Education, Federal Student Aid Data Center.

Figure 2: Undergraduate Enrollment and Borrowing

Panel A: Enrollment and Borrowers



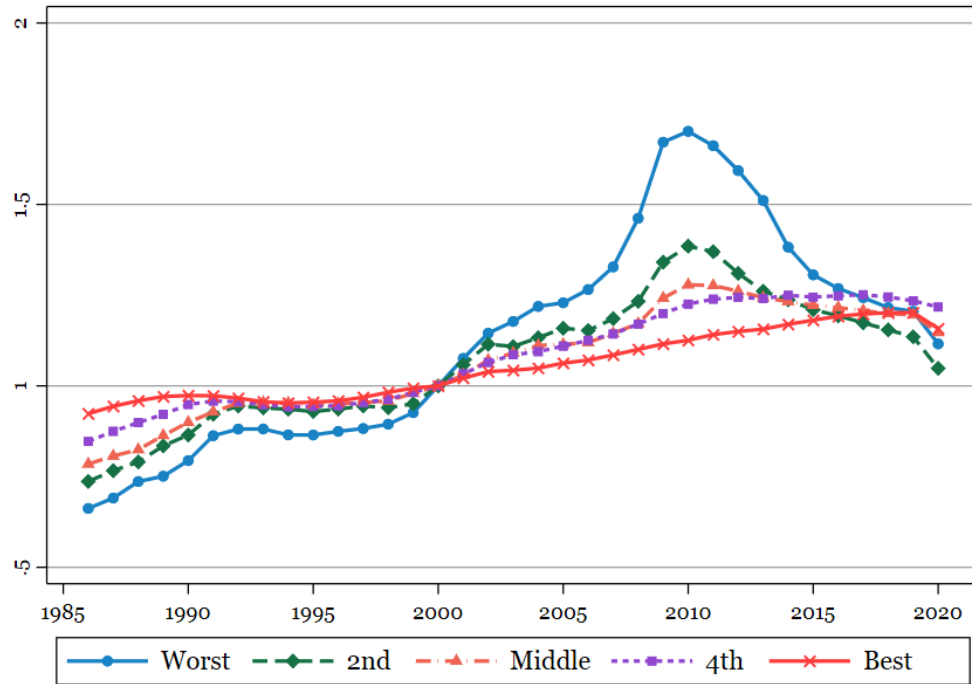
Panel B: Annual Borrowing and Net Tuition



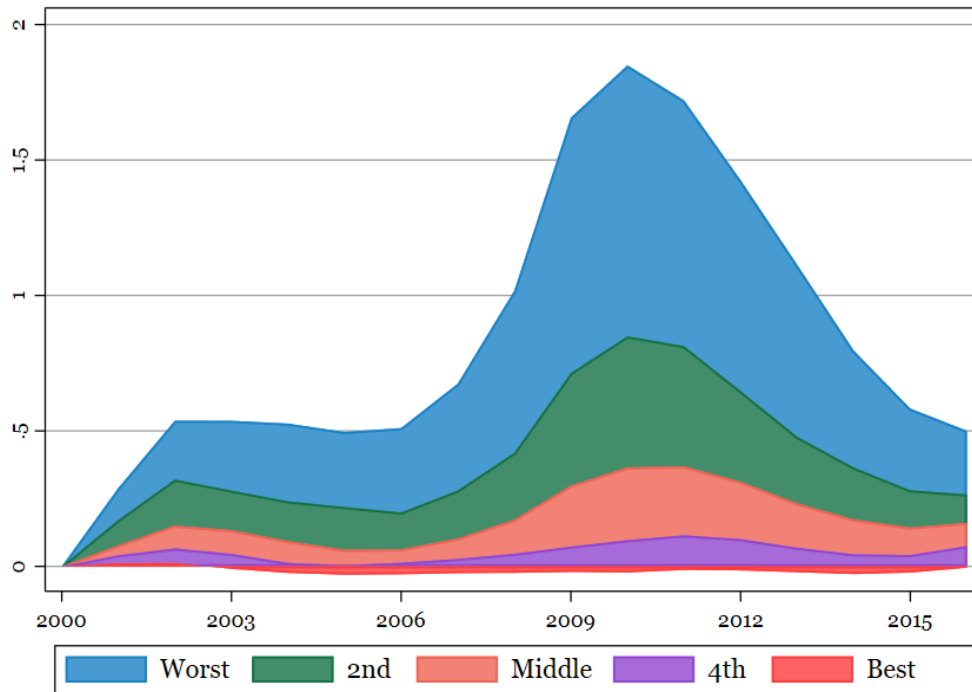
Notes: Panel A plots total enrollment, total active borrowers, and the share of students enrollment that are active borrowers. Panel B plots the average annual federal borrowing and average net-of-grant and scholarship tuition paid. Annual federal borrowing is reported both annual average amount borrowed across all undergraduate students and the average conditional on borrowing at least \$1. Dollar amounts in 2022 dollars. Source: National Postsecondary Student Aid Study.

Figure 3: Enrollment Changes by Institutional Characteristics

Panel A: Enrollment Change by Institution's Student Loan Repayment Rate (indexed to enrollment in 2000)



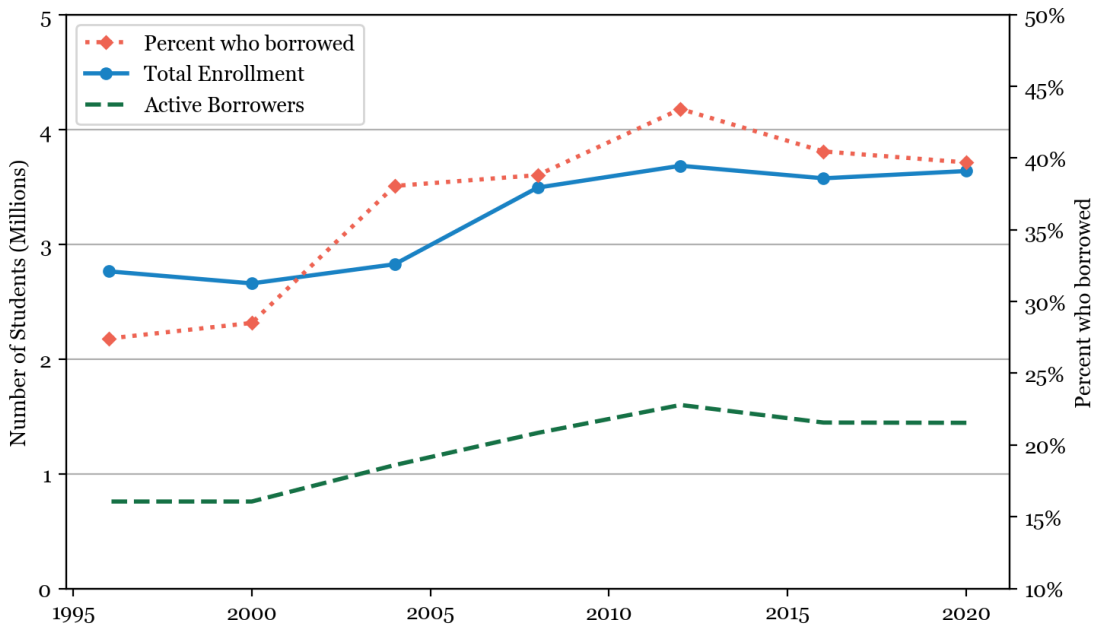
Panel B: Change in Enrollment of First-Generation Students by Their Institution's Loan Repayment Rate Quintile (change since 2000 in millions of students)



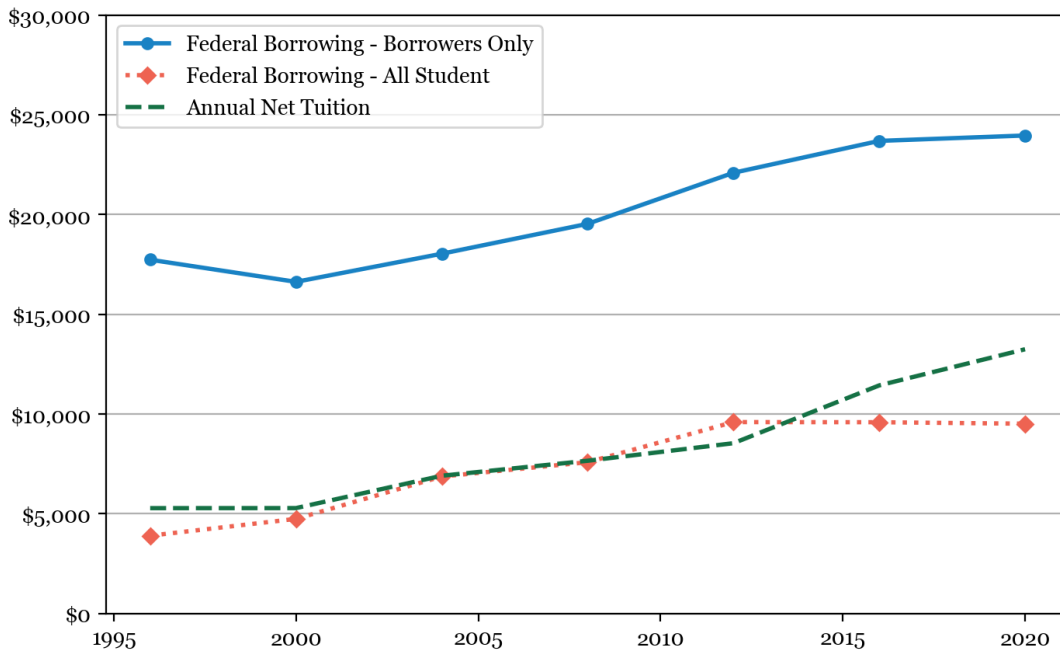
Source: Integrated Postsecondary Education Data System and the College Scorecard.

Figure 4: Graduate Enrollment and Borrowing

Panel A: Enrollment and Borrowers



Panel B: Annual Borrowing and Net Tuition



Notes: Panel A plots total graduate enrollment, total active borrowers, and the share of graduate students enrollment that are active borrowers. Panel B plots the average annual federal borrowing and average net-of-grant and scholarship tuition paid. Annual federal borrowing is reported both annual average amount borrowed across all graduate students and the average conditional on borrowing at least \$1. Dollar amounts in 2022 dollars. Source: National Postsecondary Student Aid Study.

Table 1: Undergraduate Federal Student Loans

	Undergraduate Enrollment			Fraction of Students That Borrowed			Change in # of Borrowers	
	2000	2012	2020	2000	2012	2020	2000-2012	2000-2020
<i>Total</i>	16.5	23.1	17.1	28%	40%	34%	104%	29%
<i>Race/Gender</i>								
Asian/White female	6.6	8.1	5.3	28%	41%	38%	79%	9%
Asian/White male	5.3	6.6	4.2	26%	36%	30%	70%	-9%
Black female	1.3	2.3	1.5	36%	53%	50%	167%	56%
Black male	0.7	1.4	0.8	34%	46%	43%	165%	35%
Hispanic or Latino fem	1.1	2.1	2.2	26%	36%	27%	172%	109%
Hispanic or Latino mal	0.9	1.6	1.4	21%	32%	24%	159%	76%
<i>Dependency status</i>								
Dependent	8.4	11.2	9.7	33%	41%	36%	66%	24%
Independent	8.1	11.8	7.4	21%	39%	32%	165%	37%
<i>Parents' highest education level</i>								
Less than BA	9.3	13.7	9.3	29%	42%	36%	113%	22%
Bachelor's degree	3.5	4.6	4.1	29%	38%	34%	74%	40%
Graduate Degree	2.7	4.0	3.7	27%	35%	31%	99%	61%
<i>Sector</i>								
Public 4-year	5.2	6.5	6.4	39%	48%	38%	55%	20%
Not-for-profit 4-year	2.3	2.7	2.6	50%	60%	51%	39%	16%
Public 2-year	7.0	8.8	5.0	5%	17%	11%	290%	51%
Private for profit	0.8	3.0	1.1	74%	71%	62%	250%	9%

Notes: The first three columns (2000, 2012, and 2020) present undergraduate enrollment (in millions). The next three columns present the fraction of undergraduate students that borrowed, and the last two columns show the change in borrowers between 2000-2012 and 2000-2020.

Source: National Postsecondary Student Aid Study.

Table 2: Graduate Student Federal Student Loans

	Graduate Enrollment			Fraction of Students That Borrowed			Change in # of Borrowers	
	2000	2012	2020	2000	2012	2020	2000-2012	2000-2020
<i>Total</i>	2.7	3.7	3.6	29%	43%	40%	111%	90%
<i>Race/Gender</i>								
Asian/White female	1.2	1.6	1.4	26%	42%	40%	112%	79%
Asian/White male	1.0	1.2	1.0	29%	36%	27%	52%	0%
Black female	0.2	0.3	0.3	41%	66%	61%	241%	201%
Black male	0.1	0.1	0.1	35%	62%	53%	184%	194%
Hispanic or Latino female	0.1	0.2	0.2	29%	51%	53%	227%	300%
Hispanic or Latino male	0.1	0.1	0.2	29%	42%	44%	129%	230%
<i>Parents' highest education level</i>								
Less than BA	1.2	1.5	1.5	30%	48%	47%	113%	98%
Bachelor's degree	0.6	0.9	1.0	26%	39%	37%	134%	140%
Graduate Degree	0.8	1.2	1.2	31%	40%	34%	106%	67%
<i>Sector</i>								
Public 4-year	1.5	1.7	1.6	24%	37%	34%	73%	54%
Not-for-profit 4-year	1.1	1.4	1.5	35%	46%	41%	76%	66%
Private for profit	0.1	0.4	0.3	44%	58%	55%	926%	656%
<i>Graduate degree program type</i>								
Masters	1.6	2.5	2.1	25%	44%	42%	163%	108%
Doctorate	0.4	0.4	0.7	20%	24%	18%	36%	74%
First-professional	0.3	0.4	0.5	70%	79%	70%	33%	46%

Notes: The first three columns (2000, 2012, and 2020) present graduate student enrollment (in millions). The next three columns present the fraction of students that borrowed, and the last two columns show the change in borrowers between 2000-2012 and 2000-2020.

Source: National Postsecondary Student Aid Study.