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A Crisis in Student Loans? How Changes in the Characteristics of Borrowers and in the Institutions They Attended Contributed to Rising Loan Defaults

ABSTRACT This paper examines the rise in student loan default and delinquency. It draws on a unique set of administrative data on federal student borrowing matched to earnings records from de-identified tax records. Most of the increase in default is associated with borrowers at for-profit schools, 2-year institutions, and certain other nonselective institutions. Historically, students at these institutions have constituted a small share of all student borrowers. These nontraditional borrowers have largely come from lower-income families, attended institutions with relatively weak educational outcomes, faced poor labor market outcomes after leaving school, and defaulted at high rates. In contrast, default rates have remained low among borrowers who attended most 4-year public and nonprofit private institutions and among graduate school borrowers—who collectively represent the vast majority of the federal loan portfolio—despite the severe recession and these borrowers’ relatively high loan balances. The higher earnings, low rates of unemployment, and greater family resources of this latter category of borrowers appear to have helped them avoid adverse loan outcomes even during times of hardship. Decomposition analysis indicates that changes in the characteristics of borrowers and the institutions they attended are associated with much of the doubling in default rates between 2000 and 2011, with changes in the type of schools attended, debt burdens, and labor market outcomes explaining the largest share.

Between 2000 and 2014, the total volume of outstanding federal student debt nearly quadrupled to surpass \$1.1 trillion, the number of student loan borrowers more than doubled to reach 42 million, and default

rates among recent student loan borrowers rose to their highest levels in 20 years. This increase in debt and default and more widespread concern about the effects of student loan debt on young Americans' lives has contributed to a belief that there is a crisis in student loans. Using new administrative data sources, we examine recent changes in the market for federal student loans with a particular focus on the sources of rising default rates, the roles played by educational institutions, and the labor market outcomes of borrowers.

These data show that to the extent that there is a crisis, it is concentrated among borrowers who attended for-profit schools and, to a lesser extent, 2-year institutions and certain other nonselective institutions. We refer to these borrowers as "nontraditional" because, as students, they tend to be older, often enroll less than full time, and are living independently of their parents, and also because historically there were relatively few for-profit students and because 2-year students rarely borrowed. As a result, in 2000 these borrowers represented a small share of all federal student loan borrowers and an even smaller share of loan balances.

However, during and soon after the recession, the number of nontraditional borrowers grew to represent almost half of all new borrowers. They experienced poor labor market outcomes, had few family resources, and owed high debt burdens relative to their earnings. Their default rates skyrocketed. Of all the students who left school, started to repay federal loans in 2011, and had fallen into default by 2013, about 70 percent were nontraditional borrowers.¹

In contrast, the majority of undergraduate and graduate borrowers from 4-year public and private (nonprofit) institutions, or "traditional borrowers," have experienced strong labor market outcomes and low rates of default, despite having the largest loan balances and facing the severe headwinds of the recent recession. While the number of traditional borrowers also increased rapidly over time, recent borrowers' family backgrounds and labor market outcomes are not much different from their peers' in earlier years, especially for graduate students and undergraduates at relatively selective institutions. In fact, traditional borrowers earned more, on average, in 2013 than their peers had in 2002. While graduates in the late 2000s were hit harder than other cohorts by the recession, the unemployment rate of traditional borrowers who left school and started repaying their loans in

1. Borrowers from nonselective 4-year schools accounted for an additional 12 percent of defaults.

2011 was 7.7 percent in 2013 compared to 6.6 percent for the comparable cohort of recent borrowers in 2002.

These results derive from a new database formed by the merger of administrative records on student loan burdens to earnings information from de-identified tax records. The data provide annual information on student characteristics, the institutions they attended, loan balances and loan status from 1970 to 2014, and labor market outcomes from 1999 to 2013 for a 4-percent sample of all federal student borrowers. The sample includes about 46 million annual observations on 4 million individual borrowers, assembled from hundreds of millions of individual records of loan transactions, aid applications, and earnings records. These data were assembled to improve budget estimates and inform policy regarding programs with both spending and tax components. They also provide unique advantages over prior survey and credit-panel data sets because they allow detailed examination of the role played in student loan defaults by institutions, labor market outcomes, and other potential contributing factors.²

These data show that the number of new nontraditional borrowers increased steadily since the mid-1990s, as enrollment in for-profit institutions returned to growth after having declined earlier in the 1990s and then surged during the recession and as the weak labor market boosted enrollment and increased borrowing rates, particularly among 2-year students.³ Because of the relatively short enrollment durations of many of these new borrowers, the combination of new enrollment and rapid turnover resulted in a flood of nontraditional borrowers, disproportionate to their share of enrollment, who were out of school and into loan repayment after the recession. For instance, in 2011, while for-profit students made up only 9 percent of all postsecondary students (according to the National Center for Education Statistics) and 25 percent of all active federal borrowers, they represented more than 31 percent of borrowers leaving school and starting to repay federal loans that year. Combined with students from 2-year institutions, who represented an additional 16 percent of borrowers starting to repay loans that year, this meant that almost half of borrowers in their first years of repayment were nontraditional borrowers.

2. Detailed tabulations of this database are described in the online appendix. The online appendixes for this and all other papers in this volume may be found at the *Brookings Papers* web page, www.brookings.edu/bpea, under “Past Editions.”

3. High default rates in the 1980s led to major accountability changes in the student loan program, which contributed to pushing more than 1,500 for-profit schools out of business and to declines in enrollment and borrowing at for-profit institutions through the early 1990s. This period coincided with a sharp decline in the overall default rate on student loans.

In addition to being more numerous and in their earliest years of loan repayment after the recession, recent nontraditional borrowers appear to be a particularly high-risk population. They tend to be older when they first enroll, to be from lower-income families, and to live in poorer neighborhoods. They are more likely to be first-generation borrowers. They attend programs they are less likely to complete and, after enrollment, are more likely to live in or near poverty and to experience weak labor market outcomes, outcomes that worsened disproportionately during the recession. And their loan burdens, though smaller on average both in absolute terms and relative to their earnings, have tended to increase faster over time.

All these factors contributed to high default rates among nontraditional borrowers. About 30 percent of nontraditional borrowers required to start repayment on loans in 2011 defaulted within three years, compared to 13 percent among traditional undergraduate borrowers and 3 percent among graduate borrowers. Many more appear to be struggling with their loans but have avoided default through protections such as forbearance, deferment, and income-based repayment programs, which allow borrowers to suspend or make reduced payments during times of hardship. Using decomposition analysis, we find that changes in observable characteristics—like the backgrounds of students, their labor market outcomes, and the schools they attend—can explain between half and two-thirds of this increase in default, with changes in the types of institutions attended alone explaining between one-quarter and one-half of the increase in default rates between 2000 and 2011. However, much of the increase in default rates, particularly among nontraditional borrowers, cannot be explained simply by factors like their family background or labor market outcomes, suggesting that factors we cannot observe, such as the quality of the education received, students' satisfaction with their institutions, and other financial or economic difficulties specific to nontraditional borrowers, may also be driving up default rates.

These high rates of default are unlikely to persist because of the recent normalization in enrollment patterns post-recession, increased scrutiny and policing of for-profit institutions, and other factors that have contributed to a decline in the number of nontraditional borrowers. From 2010 to 2014, the number of new borrowers fell by 44 percent at for-profit schools and by 19 percent at 2-year institutions. Because of the relatively long life cycle of a student loan, these changes will not be fully felt for several years.⁴

4. A loan originated to a first-time borrower will not be “eligible” for default until the student completes her educational career, enters a six-month grace period, and then spends about a year in repayment on the loan.

In addition, rising enrollment in income-based repayment programs will help many borrowers experiencing economic hardships avoid default. The decline in the rate of new borrowers and an uptick in the number of borrowers paying off loans have already contributed to a sharp slowdown in the growth rate of borrowers and aggregate debt. In 2014, for instance, the number of borrowers increased by about 1 million, down from an average annual increase of 2 million from 2009 to 2012.

One reason traditional student loan borrowers have avoided default is that they experience favorable labor market outcomes, with low rates of nonemployment (even in the recession) and relatively high earnings; moreover, they are more likely to come from higher-income families in the first place. Most traditional borrowers have not accumulated large balances. While average debt burdens have increased and some borrowers have accumulated very large balances (4 percent of borrowers had balances over \$100,000 and 14 percent had balances over \$50,000 in 2014), most borrowers with large balances are graduate students, parents, and “independent” undergraduate borrowers often from for-profit schools. Indeed, one consequence of these patterns is that borrowers in the top 20 percent of the income distribution owe more than one-third of outstanding student loan debt.

Beyond examining the sources of the rise in default and delinquency, these data also inform a broader debate regarding the implications of rising student indebtedness. One concern is that rising rates of default reflect excessive borrowing and overextended finances, which could impair students’ abilities to finance first homes and to live independently of their families, or could constrain their occupational choices, reducing rates of homeownership and marriage, or their entrepreneurial risk taking.⁵ Our results suggest a potentially different interpretation for many of the observed relationships between rising student borrowing and worsening outcomes: a shift in the composition of borrowers toward higher-risk or more disadvantaged individuals. Just as these shifts contribute to higher default rates, they may also contribute to lower rates of homeownership or to constrained occupational choices. In fact, increases in default rates due to compositional shifts could overshadow relatively beneficial investments in higher education, which may be less worrisome or even desirable (Akers and Chingos 2014; Avery and Turner 2012; Dynarski and Kreisman 2013; Sun and Yannelis 2016). Indeed, for most borrowers

5. See, for instance, Baum (2015), Bleemer and others (2014), Field (2009), Gicheva (2013), Gicheva and Thompson (2014), Ionescu (2009, 2011), Marx and Turner (2015), Mezza, Sommer, and Sherlund (2014), and Shao (2014).

(and the majority of the student loan portfolio) the educational investments financed with their loans are associated with favorable economic outcomes, and most borrowers appear able to manage their debt even during recessionary periods.

Ultimately, an important question for understanding the welfare consequences of student aid programs and for developing new policies to improve their effectiveness is whether attending college was worthwhile for borrowers, even those with high rates of default. On average, education is among the most productive of investments individuals can make because the benefits of higher earnings and better well-being accumulate over a lifetime (Greenstone and Looney 2011). But the relatively weak labor market performance, high default rates, and increasing debt burdens of many borrowers raise concerns that not all students are better off. One specific area of concern is that the costs of education and the debts of borrowers have increased relative to labor market returns. Understanding why costs and debt burdens are rising, and parsing out the relative contributions of the recession's effects on enrollment, households' savings and ability to borrow, contraction in public support for education, rising costs of attendance, and other factors, would help identify whether steep increases are associated with changes in the return on students' educational investments.

Similarly, on the other side of the cost-benefit ledger, the benefits of loan-financed education depend on the quality of education provided and the labor market return specific to those investments. That requires knowing not just how borrowers are doing today, but the difficult-to-measure counterfactual of how they would have fared if they had not attended a particular institution. Understanding the differences in the costs and returns to different institutions—and how to encourage higher-return investments—is therefore a key predicate for improving federal loan programs. This appears to be especially true for nontraditional borrowers, for whom educational opportunities appear to vary more in cost and quality, and for whom their educational and financing choices appear to have much larger implications for their longer-term well-being.

The remainder of this paper is organized as follows. In section I we provide background on the structure of federal student loan programs. In section II we discuss the data sources used in the paper. In section III we analyze the factors associated with the increase in student loan debt and discuss the rise of nontraditional borrowers and the implications for borrowing and for borrowers' default and labor market outcomes. In section IV we provide an analysis of the characteristics of nontraditional borrowers and their backgrounds. In section V we provide information on borrowers'

labor market outcomes. In section VI we analyze the debt burdens of borrowers over time. In section VII we focus on a key outcome—loan repayment—and conduct regression and decomposition analysis of factors associated with the rise in student loan default; we then discuss the flows of borrowers during and after the Great Recession as well as the potential implications for future repayment. In section VIII we conclude and provide suggestions for further research.

1. Background: The Structure of Federal Student Loan Programs

The analysis in this paper focuses on federal student lending programs, which were first established in 1958 to provide low-cost loans to students and were subsequently expanded several times, notably under the Higher Education Act of 1965. These federal student lending programs accounted for the nation's largest source of nonmortgage household debt in 2014.⁶ The aim of these student loan programs was to alleviate credit constraints for borrowers, who internalize many of the benefits of education.⁷

In 1966, President Lyndon Johnson articulated the purpose of the student loan program in these words:

Under this new loan program, families will finance college education for their children in the same way that they finance the purchase of a home: through long-term, federally guaranteed private loans. For millions of families, the financial burden of college education will now be lifted; new opportunities will open for American students. (Johnson 1966)

The vast majority of student loans in the United States are federally guaranteed or direct loans made by the Department of Education.⁸ The main federal lending program today is the Federal Direct Loan program, which was created by the Higher Education Amendments of 1992. Since

6. The Department of Education provides more information on federal student lending programs at http://federalstudentaid.ed.gov/site/front2back/overview/overview/fb_02_01_0040.htm. It also provides extensive information on student loan interest rates at <https://studentaid.ed.gov/sa/types/loans/interest-rates>.

7. This stands in contrast to many other countries, where governments finance education expenses. The welfare implications of direct government financing of college costs are controversial, since while there are externalities associated with education, borrowers internalize many of the benefits of higher education. For discussions of financing higher education, see Hartman (1972), Johnson (2006), and Psacharopoulos and Papakonstantinou (2005).

8. Private student loans, which are not included in these data, are a small portion of the aggregate total student loan volume, amounting to less than one-tenth of all student loans disbursed between 2009 and 2013 (College Board 2014).

2010, the Direct Loan program has accounted for all federal student loans. Under this program, postsecondary institutions originate loans under federal lending rules, and loan servicing is handled by the Department of Education through private servicing contractors.

Direct Loans, which can be made both to undergraduate and graduate students, come in four types: Unsubsidized Stafford, Subsidized Stafford, PLUS, and consolidation loans. Unsubsidized, PLUS, and consolidation loans are available to all borrowers attending eligible institutions, while Subsidized loans are available based on a financial needs test. One main difference between Unsubsidized and Subsidized loans is that interest does not accrue for borrowers of Subsidized loans while they are in school. PLUS loans are available to the parents of dependent undergraduate students (Parent PLUS) and to graduate and professional students. Independent undergraduate students are not eligible for PLUS loans, but are allowed to borrow additional Stafford loans up to higher maximums. Consolidation loans allow students to combine all of their federal loans into one loan to simplify payments. Loan limits are set by legislation, and loans can be used only to meet education expenses like tuition and other costs of attendance. Fees for Direct Loans were raised slightly following the 2013 budget sequestration; borrowers are charged an origination fee of 1 percent for Stafford Loans and 4 percent for PLUS loans.

Table 1 provides an overview of these federal borrowing programs. The table presents the total loan balance in each fiscal year (over \$1.1 trillion in 2014) and the total number of borrowers (roughly 42.8 million in 2014); it also disaggregates those figures into the shares of loans and borrower types each year. Over time, graduate loans and Parent PLUS loans have increased as a share of federal lending. In 1994, about 68 percent of the portfolio was undergraduate loans, and by 2014 that rate had declined to about 59 percent of the portfolio. In terms of numbers of borrowers, the same growth in graduate and parent loans is apparent. However, much of the increase in graduate debt is held by a rising share of students taking out both graduate and undergraduate loans. The persistence of borrowing at the undergraduate and graduate levels, and the increases in graduate and parent loans (whose loan amounts are limited only by costs of attendance), prove to be important reasons why aggregate and per-student loan amounts increase over time.

Prior to the Federal Direct Loan program, the Federal Family Education Loan (FFEL) program also disbursed federally guaranteed loans through private lenders following lending rules for federally guaranteed loans. The main difference between the programs was financing through

Table 1. Aggregate Loan Volume and Number of Borrowers by Loan Type, 1985–2014

<i>Fiscal year</i>	<i>Total balance^a</i>	<i>Percent undergraduates^b</i>	<i>Percent graduates^c</i>	<i>Percent parent^d</i>	<i>Total borrowers^e</i>	<i>Percent undergraduates only^f</i>	<i>Percent graduates and undergraduates^g</i>	<i>Percent graduates only^h</i>	<i>Percent parent onlyⁱ</i>
1985	64,406	76	23	1	8,919	84	6	8	2
1986	72,403	76	23	2	10,193	84	6	8	2
1987	79,209	75	23	2	11,411	85	6	8	2
1988	87,330	75	23	2	12,714	85	5	7	3
1989	95,156	74	23	3	13,938	84	5	7	3
1990	101,450	73	24	3	14,896	84	5	7	4
1991	109,914	72	25	4	15,577	83	5	7	5
1992	118,315	70	25	4	16,035	83	5	7	5
1993	130,637	70	26	5	16,402	82	5	7	6
1994	150,137	68	27	5	17,058	82	5	7	6
1995	172,258	67	27	5	17,585	81	5	7	6
1996	196,827	66	28	6	18,270	81	5	7	7
1997	225,185	65	29	6	18,939	81	6	7	7
1998	258,336	65	29	6	19,934	80	6	7	7
1999	286,876	65	29	6	20,563	80	6	7	7
2000	311,449	64	30	7	21,063	79	7	7	7
2001	340,945	63	30	7	21,661	79	7	7	8
2002	369,617	63	30	7	22,590	78	7	7	8
2003	404,376	62	30	7	23,846	78	8	7	8
2004	441,283	61	31	8	25,285	77	8	7	8
2005	478,881	61	31	8	26,745	77	9	6	9
2006	525,178	60	32	8	28,095	76	9	6	9

(continued)

Table 1. Aggregate Loan Volume and Number of Borrowers by Loan Type, 1985–2014 (Continued)

<i>Fiscal year</i>	<i>Total balance^a</i>	<i>Percent undergraduates^b</i>	<i>Percent graduates^c</i>	<i>Percent parent^d</i>	<i>Total borrowers^e</i>	<i>Percent undergraduates only^f</i>	<i>Percent graduates and undergraduates^g</i>	<i>Percent graduates only^h</i>	<i>Percent parent onlyⁱ</i>
2007	568,054	60	32	8	29,478	76	10	6	9
2008	634,453	59	33	8	31,093	76	10	6	9
2009	706,894	59	33	8	33,480	76	10	6	9
2010	791,637	59	33	8	35,949	76	11	6	9
2011	878,741	59	33	8	38,301	75	11	6	9
2012	966,236	59	33	8	40,174	76	11	6	9
2013	1,050,000	59	33	8	41,529	76	11	6	8
2014	1,130,000	59	34	8	42,760	76	11	6	8

Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. Total loan balances in millions of 2014 dollars as of the end of each fiscal year.

b. Percent of total loan balances going toward undergraduate degrees.

c. Percent of total loan balances going toward graduate degrees.

d. Total Parent PLUS loan balances as a percent of total loan balances.

e. Total number of borrowers in thousands as of the end of each fiscal year.

f. Percent of borrowers with only undergraduate balances.

g. Percent of borrowers with both undergraduate and graduate balances.

h. Percent of borrowers with only graduate balances.

i. Percent of borrowers with only Parent PLUS loans.

private capital or direct federal funds, and students saw few differences in lending rules.⁹ The Perkins loan program provides additional loans to low-income borrowers with exceptional financial need. Perkins loans make up a small share of federal student loan programs, and the analysis in this paper excludes them.

Interest rates are set by Congress and were identical for Stafford borrowers under the Direct Loan and FFEL programs, but can vary for graduate and undergraduate borrowers. Historically, undergraduate Stafford loan interest rates have been both fixed and variable, depending on the year, and rates have varied between 8.25 percent (1999) and 3.4 percent (2004). In the 2010–11 academic year, interest rates were 6.8 percent; in 2015, they dropped to 4.25 percent.

For most loans, after leaving school, repayment begins after a six-month grace period. Once repayment begins, payment can be stopped through either deferment or forbearance. Loans can go into deferment if a borrower re-enrolls in school, becomes unemployed (for up to 3 years), faces economic hardship, or joins the military or the Peace Corps. Forbearance also allows borrowers to defer loans for up to one year if they are ill, face financial hardship, or perform national service. Interest typically continues to accrue while loans are in deferral or forbearance.¹⁰

The standard repayment plan for student loans is a 10-year plan. Extended repayment plans of up to 25 years are also available to many borrowers with large balances. In addition, income-based and income-contingent repayment options are available to many borrowers with low incomes and high relative debt burdens. Historically, take-up of income-driven repayment plans has been low, although it has been rising in recent years. Bruce Chapman (1997, 2006) provides a discussion of many of the theoretical issues related to income-contingent repayment plans as well as an overview of income-contingent repayment plans in an international context.

Under the Income-Based Repayment and Pay As You Earn plans, borrowers pay the lesser of 10–15 percent of their income or their payment under a 10-year plan. Under the Income-Contingent Repayment plan, borrowers pay the lesser of 20 percent of their discretionary income or what

9. The rules are almost identical for Direct Loans and FFEL loans, the main difference being that the source of funds is private under the FFEL program. Interest rates for Parent PLUS loans differed slightly in some years, as did eligibility for income-based repayment plans and loan consolidation.

10. The Department of Education provides further information on repayment plans, forbearance, and deferment at <https://studentaid.ed.gov/sa/repay-loans/deferment-forbearance>.

they would pay under a fixed repayment plan. In many cases, borrowers can pay more under an income-contingent plan than they would under the standard plan, but in some cases loan balances can be discharged after 25 years in repayment. Eligibility for these programs has varied historically depending on the type of loan, time of entry into borrowing, entry into repayment, and debt-to-income ratios. In 2014, the Pay As You Earn plan was made available to all borrowers regardless of entry into borrowing.¹¹

Students who miss a payment are considered delinquent, and servicers are required to report delinquency to credit bureaus within 90 days. Loans are in default if delinquent for more than 270 days. Unlike other consumer loans, student loans are nearly impossible to discharge in bankruptcy. If a borrower goes into default, she loses eligibility for deferment, forbearance, and alternative repayment plans, and the loan is assigned to a collection agency. The borrower is then liable for late fees, collection costs, and accruing interest. The government is obligated to collect defaulted loan amounts using wage garnishment of up to 15 percent of the borrower's wages, and through the Treasury Offset Program, which withholds any tax refunds and certain other payments, like a portion of Social Security retirement or disability benefits. Accounting for collection costs, the Department of Education (2014) estimates that recovery rates using these methods were approximately 75 to 85 percent in 2014, compared to recovery rates of 70 percent for mortgage loans (Downs and Xu 2015). Historically, recovery rates have been lower; Deborah Lucas and Damien Moore (2010) estimate recovery rates of around 50 percent in the early 2000s.

II. New Administrative Data Sources

The estimates presented in this paper derive from a random 4-percent sample of federal student loan borrowers assembled from components of the National Student Loan Data System (NSLDS), which is the primary data system used to administer the federal loan programs described above. This data system maintains the information needed to run the loan programs, including the repayment system; assessing eligibility for loans using information from financial aid applications; disbursing loans to institutions based on the students' academic level; tracking when students withdraw or graduate to determine when they must begin repayment and if and when they enter deferment, forbearance, or alternative repayment plans; and

11. The Department of Education provides further information on income-driven repayment plans at <https://studentaid.ed.gov/sa/repay-loans/understand/plans/income-driven>.

providing the financial accounting of loan balances, interest accrual, transactions, and other changes in loan status. Hundreds of individual pieces of information contained in multiple databases, drawn from hundreds of millions of individual records of aid applications, loan transactions, and status updates are distilled into about 46 million annual observations on 4 million borrowers.

The panel, which follows the same borrowers over time starting from when they first take out a federal student loan, is based on data originally constructed by the Department of Education's Budget Service Division for use in budget projections. These files include information on student characteristics derived from each Free Application for Federal Student Aid (FAFSA) filed by students; information on each loan disbursed by Federal Student Aid (FSA), including the loan balance, its status, and changes in status over time; the institution the loan was disbursed to; and information on Pell Grants received. Information on each borrower obtained from the FAFSA is generally available only for loans originated after fiscal year 1995. However, most of the basic loan information (such as loan amounts and dates of origination, repayment, and default, and institution of study) is available from all sample borrowers starting in fiscal year 1969.¹² The sample is representative of more than 99 percent of federal loans and borrowers. However, while we include Parent PLUS loans in our tabulations of borrowing amounts, when examining the experiences of borrowers as they complete school, enter the labor market, and begin repaying their loans, we focus exclusively on student borrowers and exclude outcomes (and economic status) of parent borrowers.

These data are merged to a panel of administrative earnings and income records that span the (calendar year) period from 1999 to 2014 (data for 2014 are incomplete and preliminary). The primary data of interest are the earnings and total incomes of borrowers. Individual earnings are derived from information reports from employers (W-2s) and from self-employment earnings reported on the Schedule C of individual tax returns. Total income is the sum of all income sources reported by taxpayers; if the taxpayer is married and filing a joint return, this includes any income and earnings of the spouse. In addition, information on filing status and the number of dependent children and federal poverty levels is used to construct indicators of poverty.¹³

12. The sample does not include Perkins loans, which were approximately 1 percent of loans disbursed in 2014 (College Board 2014).

13. Online appendix A provides additional detail on the data, sample, and variable construction.

II.A. Sample Construction

To examine the dynamics of borrowing in the loan market, we focus on the flows of borrowers as they enter borrowing (when they originate their first federal loans) and when they enter repayment (when they start repaying their loans) and look at the relationship of those flows to the overall stock of federal loans and to aggregate student-loan outcomes. We treat the year a loan entered into repayment as a primary focus because that year is typically the first time a student exits school, enters the labor market, is required to make payments, and first becomes liable for delinquency and default. Specifically, we define “entering repayment” as the time when a borrower’s last loan enters into repayment, that is, when all of a borrower’s loans are in repayment. We define repayment cohorts based on the fiscal year each borrower entered repayment. These definitions closely approximate the aggregate measures of debt, default, and average loan burdens produced by the Department of Education (2014).

We define entrants as first-time borrowers, assign them to entry cohorts based on the fiscal year their first loans were originated, and use information on the students from the first loan-related FAFSA filed and the institution that originated the loan. This provides a consistent measure of new originations and borrower characteristics when borrowers first enter the loan system. Defining flows based on first-time and last-time borrowing obscures the fact that an educational career sometimes involves multiple spells of borrowing (re-entry) as students take time off, change institutions, or go to graduate school. In practice, however, this convention has little effect on our analysis of borrowers, because loan outcomes are strongly correlated within borrowers (that is, when borrowers default they default on all loans) and because most variation in loan outcomes occurs after the borrower leaves school and permanently enters the labor force. In addition, the fact that spells of borrowing may overlap at the end of the sample period introduces censoring effects. For example, some borrowers entering repayment in 2014 will subsequently return to graduate school.

II.B. Variable Construction

Most variables used in our analysis are straightforward; characteristics of borrowers, like family income, age, and gender, are taken directly from the FAFSA. Data on the neighborhoods of borrowers—local unemployment rates, poverty rates, median household income, and percent black, white, and Hispanic—are derived by matching the ZIP code provided on the first FAFSA with ZIP code–level statistics from the 2000 Decennial Census. Loan information, such as disbursements and balances, are the

sum of all Direct and FFEL undergraduate and graduate loans or Parent PLUS loans at the end of the fiscal year for each borrower. We use these loan types and the reported academic level of borrowers to differentiate undergraduate from graduate borrowers. All dollar amounts are in real 2014 dollars (adjusted using the personal consumption expenditure deflator) unless noted otherwise.

In practice, over the course of an educational career students may attend multiple institutions and take out both undergraduate and graduate loans. Our general approach is to classify students based on their characteristics, the institution they attended, and their level of school when they borrow for the first time. Hence, borrowers may be classified as attending a 2-year school even though some may ultimately complete a 4-year degree elsewhere, and borrowers who start their education (and student loan borrowing) at 4-year institutions may ultimately go on to graduate or professional schools. One implication of this choice is that when we examine the eventual loan burden of a student starting to repay her loans, her loan burden may include a combination of undergraduate and graduate loans even though she started off as an undergraduate borrower.

In practice, this assumption has little effect on our conclusions because changes in enrollment between sectors are relatively rare. For example, a borrower attending a 4-year institution is generally likely to complete his education there. As a result, there is little difference in outcome measures like default rates by institution type whether they are based on first institution or last institution attended.

However, for certain loan measures, such as the number of borrowers or the amounts borrowed by institution type, whether to measure based on first or last institution attended has a greater effect, particularly for nontraditional borrowers. In particular, some individuals who started at 2-year institutions went on to attend 4-year institutions or for-profit institutions where they accumulated larger debts, and some students who started as traditional borrowers later returned to school and last attended a for-profit school, especially during the recession. Qualitatively, the enrollment and borrowing patterns are quite similar whether we use first or last institution attended, but the levels can be somewhat different.¹⁴

One important advantage of these data over other sources is the availability of information on the institutions that students borrowed to attend, including the specific schools, the controls (public, private, or for-profit),

14. The online data appendix provides complete tabulations of borrower outcomes and debts using both first and last institution attended.

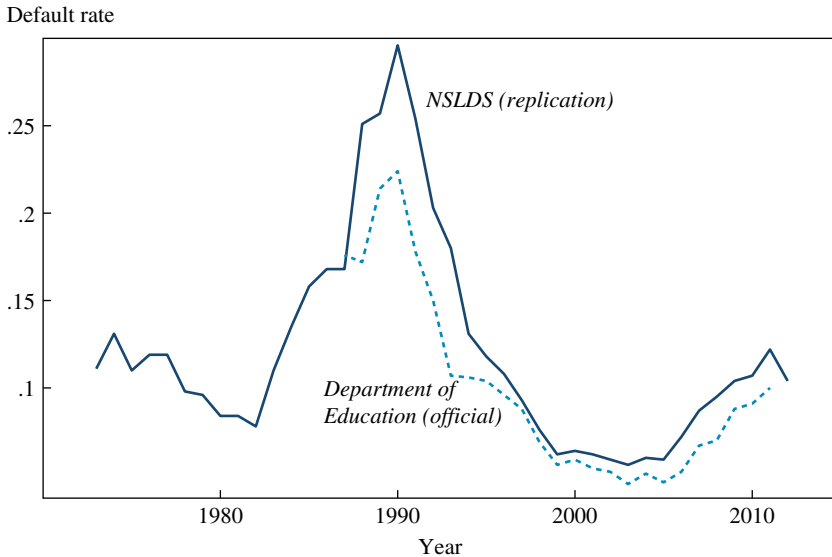
and types (2-year or 4-year). To illustrate the role of institutions, we present much of our analysis based on the type of institution attended. In particular, we use a common index of selectivity from Barron's Educational Series (2008) to segment students based on the control, type, and selectivity of the institutions they attended, and their level of study into six broad groups: for-profit institutions; 2-year public and private institutions (the vast majority of which are community colleges); nonselective 4-year public and private institutions (schools that Barron's reports as admitting more than 85 percent of applicants); somewhat selective institutions (which admit 75 to 85 percent of applicants); selective institutions (which admit fewer than 75 percent of applicants); and graduate-only borrowers (borrowers whose first and only loans were graduate loans).¹⁵

Our primary indicator of student loan distress is the 3-year cohort default rate measured as the fraction of borrowers entering repayment in a fiscal year who are in default on a federal loan within 3 years (1,095 days) from the date the loan entered repayment. We introduce several other indicators of student loan burdens or delinquency, including debt-service-to-earnings ratios and rates of negative amortization, which we define as the fraction of student loan borrowers who owe more on their loans at a specified time after they entered repayment.

These estimates of the aggregate loan volume, number of borrowers, and the cohort default rate closely mirror the official measures produced by the Department of Education. Figure 1 shows default rates over time in our sample, compared with aggregate statistics released by the Department of Education.¹⁶ The replicated default rate closely matches the pattern of published statistics for most of the overlapping period. However, our replication clearly differs slightly for several reasons that relate to our sample construction and to the construction of the official default rate. First, our sample is a person-by-year sample, which means any student appears only once. In official statistics, a borrower who attends multiple institutions may be included multiple times. Second, we focus on the last time a borrower enters repayment, when default risks are likely to be higher. Finally, our sample includes all institutions, all undergraduate and graduate loans, and all (nonparent) borrowers, which is a broader array of programs and

15. Our nonselective group corresponds to Barron's "Non-Competitive or Less-Competitive"; somewhat selective to its "Competitive"; and selective to its "Very, Highly, and Most Competitive." The online data appendix also provides estimates based on the first and last type and control of the institution attended.

16. We use 2-year cohort default rates for this validation exercise since historical data on this series exist covering a longer period of time.

Figure 1. Two-Year Cohort Default Rate, 1972–2012^a

a. This figure compares the official 2-year cohort default rate from the Department of Education for 1992–2010 (dashed) with our replication based on the 4-percent NSLDS sample from 1972–2012 (solid). In our replication, the 2-year cohort default rate is the fraction of federal student loan borrowers entering repayment on all federal loans who default by the end of the next fiscal year after the fiscal year that they entered repayment. Cohorts are defined by fiscal year entered repayment.

students than is counted in the official rate. For instance, some students may be excluded from the official rate if their institution demonstrated they met certain criteria for exclusion. Prior to 1995, direct loans were excluded from the official default rate, and borrowers from recently closed institutions appear to have been excluded, which may have affected estimates during periods when the number of participating institutions was declining sharply. For the aforementioned reasons, our estimates are likely to be somewhat higher than the official rate, particularly in earlier years.

III. The Rise of Nontraditional Borrowing and Its Consequences

A primary focus of our analysis is on the divergent outcomes of what we call nontraditional and traditional borrowers. In this section, we describe how nontraditional borrowing increased in recent years, compare this increase in borrowing to increases in enrollment measured in other data sources, examine how the increase in nontraditional borrowing affected the

composition of the federal loan portfolio, and illustrate how these changes in borrowing patterns over the recession resulted in a sharp increase in the number of nontraditional borrowers out of school and into the labor market as the recession waned.

III.A. New Borrowers at For-Profit Schools, 2-Year Institutions, and Other Nonselective Institutions

As discussed earlier, we define traditional borrowers as those attending 4-year public and private institutions because they represent one case of a “typical” college student: They start college in their late teens, soon after completing high school, are dependent on their parents (or assumed to be) for aid purposes, pursue 4-year degrees and, frequently, head on to graduate study. The median age of first-time undergraduate borrowers at these schools is 19 (26 for graduate borrowers) and more than 80 percent of undergraduates at relatively selective institutions are dependents for purposes of financial aid.

In addition, these borrowers are traditional in that historically they represented a large share of federal borrowers and loan amounts. In 1999, borrowers at 4-year public and private institutions and graduate-only borrowers represented about 70 percent of new borrowers, about two-thirds of all federal student loan borrowers (the stock), and almost 80 percent of aggregate student loans outstanding. One reason for the outsized influence of 4-year public and private institutions is that these institutions, particularly the most selective private institutions and graduate professional schools, were relatively more expensive, hence students there had a greater need to borrow to attend.

Nontraditional borrowers, in contrast, constituted only a small share of federal student loan borrowers and an even smaller share of the aggregate student loan portfolio. For instance, full-time undergraduate students at for-profit schools were a relatively small share of all new full-time students in 2000 (10 percent) and an even smaller share of total full-time plus part-time enrollment (3 percent). While almost all for-profit students took out federal loans to study, their relatively small share of enrollment meant that they still represented only 20 percent of new borrowers, 14 percent of active borrowers, and 13 percent of outstanding federal loans. Hence, they were a relatively small share of both students and student-loan dollars, though a disproportionate (but still modest) share of borrowers.

While 2-year borrowers—primarily community college students—were also a small share of federal borrowers and loan amounts, the reason was quite different. Community college students rarely borrowed and when

they did, they borrowed relatively small amounts. In 2000, community college students were 27 percent of new fall enrollment and 43 percent of total postsecondary undergraduate enrollment—more than double the enrollment share of private nonprofit institutions and almost 15 times the reported enrollment of the for-profit sector. However, according to the Department of Education, in the 2000–01 school year, only 15 percent of new 2-year public students borrowed.¹⁷ As a result, they accounted for only 9 percent of active undergraduate federal borrowers in 2000 and, because their average loan amounts were relatively small, they accounted for only about 4 percent of undergraduate federal loan originations that year and 8 percent of all outstanding federal loans.

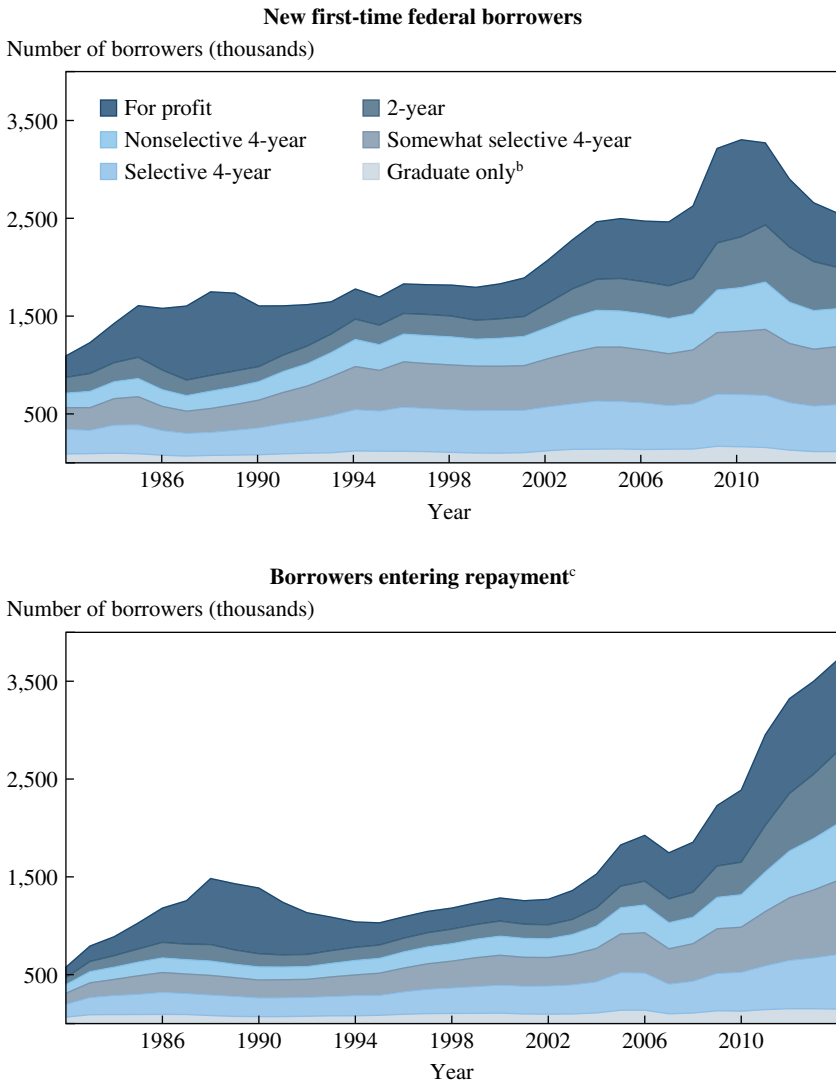
More generally, nontraditional borrowers are more likely to be older at entry; their median age at first borrowing is 24 at for-profit schools and 23 at 2-year institutions. They are more likely to be independent for financial aid purposes, which means they are subject to higher borrowing limits and less likely to draw on the support of their parents. While the characteristics of the students themselves are therefore relatively similar at for-profit and 2-year schools, the share that leave with loans and the average loan burden is much lower among community college students.

Of course, categories based solely on an institution's ownership or control and the predominant type of degree awarded miss some heterogeneity within and across groups. Nonselective 4-year public and private institutions are a particularly heterogeneous group and include many institutions whose students have background characteristics, borrowing rates, and loan and labor market outcomes more similar to students at for-profit institutions than to those at more selective 4-year institutions. They may also be unconventional in other dimensions, such as having a predominate focus on online education. The estimates we provide of the outcomes of students from nonselective 4-year public and private institutions therefore reflect an average of potentially disparate outcomes within that borrowing population.

To illustrate the changes in borrowing over time by type of institution, figure 2 (top panel) provides more perspective on the rise (and decline) of borrowing using estimates of the number of first-time borrowers at each type of institution each fiscal year. This figure shows the steady growth of the for-profit sector over the last 15 years and, especially, the surge in enrollment during the recession. In 2009 and 2010, borrowers at for-profit

17. See the National Center for Education Statistics' online "Digest of Education Statistics," table 331.20 (https://nces.ed.gov/programs/digest/d14/tables/dt14_331.20.asp).

Figure 2. First-Time Student Borrowers and Borrowers Entering Repayment by Institution Type, 1982–2014^a



Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. For both panels, institution type and selectivity (as defined by Barron's Educational Series) refer to institution borrower first attended. All types, except for-profit, include both public and private institutions. See text for details.

b. Borrowers taking out only graduate loans.

c. Borrowers entering repayment on their last federal loan; that is, all loans have entered repayment.

schools represented roughly 30 percent of new borrowers (about 980,000 new borrowers each year), and new borrowers at 2-year schools represented roughly 16 percent of new borrowers (and 19 percent at its peak in 2012 of 580,000 borrowers). Between 2006 and their respective peaks, the number of new borrowers at 2-year schools jumped by 71 percent, and the number at for-profit schools by 60 percent. While new borrowing also increased at public and private 4-year institutions during the recession, the increases from 2006 to their relative peaks were much smaller: 31 percent at nonselective schools (2011 peak), 12 percent at the most selective schools (2011), and 24 percent among graduate-only borrowers (2009). From 2009 to 2011, almost half of all new federal borrowers (45 percent) were students at either for-profit or 2-year schools.

III.B. Comparison of Enrollment and Borrowing in NCES and NSLDS

The increase in and importance of nontraditional borrowers is less visible in official statistics that report the level of total or new enrollment. Many nontraditional borrowers appear to enroll in part-time or certificate programs or enroll outside the usual academic calendar, which starts in the autumn, and therefore they appear to fall outside the definitions used in official enrollment statistics. In addition, because borrowers at 2-year institutions and for-profit institutions enroll for much shorter durations than those at other 4-year institutions, the annual level of enrollment undercounts the number of individual borrowers flowing through for-profit and community colleges.

Table 2 provides a basic comparison of the enrollment data from the National Center for Education Statistics (NCES), which is the primary public source for measuring college enrollment, with NSLDS data. The table compares the NCES measures of total fall undergraduate enrollment (including full-time and part-time students) to estimates of the number of active undergraduate borrowers and the amount they borrowed from NSLDS in 2000 and 2011. The measures are disaggregated by school type available in the NCES: public 2-year, public 4-year, private non-profit, and for-profit. The first two columns show total fall enrollment at degree-granting institutions, followed by the number of total active borrowers taking out loans that year. The last two columns show federal undergraduate loan originations.

As table 2 shows, total fall undergraduate enrollment rose from 13.2 million in 2000 to 18.1 million in 2011, a 37 percent increase. During the same interval enrollment at for-profit institutions increased by more than 300 percent, and as a share of all students enrollment at for-profits increased from

Table 2. Undergraduate Enrollment and Borrowing, 2000 and 2011^a

	<i>Total fall enrollment (millions)^b</i>		<i>Total active borrowers (millions)^c</i>		<i>Active originations (billions of 2014 dollars)^d</i>	
	2000	2011	2000	2011	2000	2011
<i>Students, borrowers, and loan amounts</i>						
Public 2-year	5.7	7.1	0.4	1.4	1.6	8.7
Public 4-year	4.8	6.6	2.0	3.3	12.2	24.2
Private nonprofit	2.2	2.7	1.1	1.7	7.6	13.6
For-profit	0.4	1.7	0.6	2.2	3.6	18.0
Total	13.2	18.1	4.0	8.5	24.9	64.5
<i>Shares of students, borrowers, and loan amounts^e</i>						
Public 2-year	43	39	9	17	4	8
Public 4-year	37	37	49	38	44	38
Private nonprofit	17	15	28	20	40	30
For-profit	3	9	14	25	12	24
<i>Borrowers per student, originations per student, and originations per borrower^f</i>						
	<i>Borrowers per student (percent)</i>		<i>Originations per student (dollars)</i>		<i>Originations per borrower (dollars)</i>	
Public 2-year	7	20	277	1,226	4,194	6,121
Public 4-year	41	49	2,519	3,649	6,173	7,436
Private nonprofit	52	63	3,431	5,000	6,641	7,998
For-profit	138	131	8,935	10,861	6,476	8,313
Total	31	47	1,894	3,570	6,163	7,553

Sources: Full-time enrollment data come from the U.S. Department of Education, National Center for Education Statistics (NCES), Higher Education General Information Survey, tables 331.20 and 303.70. Borrower and origination data come from the U.S. Treasury tabulations of the 4-percent NSLDS sample.

a. Degree-granting institutions include those that grant associate's degrees or higher, and participate in Title IV federal financial aid programs.

b. Columns 1 and 2 of the top panel show total fall undergraduate enrollment (millions; full- and part-time) in degree programs that participate in Title IV programs. Data come from NCES.

c. Columns 3 and 4 of the top panel show total active undergraduate borrowers (millions) receiving undergraduate loan disbursements in each fiscal year. Data come from NSLDS tabulations.

d. Columns 5 and 6 of the top panel show aggregate federal undergraduate loan originations in billions of 2014 dollars. Data come from NSLDS tabulations.

e. The middle panel shows institution shares (as percentages) of the totals from the top panel.

f. Originations include all loans disbursed on behalf of undergraduate students (excluding PLUS loans).

3 to 9 percent.¹⁸ Enrollment at 2-year public schools increased roughly 25 percent, though as a share of all students it declined from 43 to 39 percent. Prior to and during the recession, many new students enrolled in school, but those students disproportionately enrolled at for-profit institutions and at lower-than-average rates at community colleges and private nonprofit schools. These enrollment patterns contributed to increases in the number of borrowers, not only because they increased the number of eligible students but also because the composition of students shifted toward for-profit schools (where the ratio of borrowers to NCES-reported students is 1.4 to 1) and away from 2-year and private nonprofits, where fewer students tended to borrow.

In addition, the rate of borrowing among NCES-reported enrolled students increased, particularly at 2-year public institutions where borrowing rose from 7 percent of students to 20 percent. Rates of borrowing per student increased by about 20 percent at 4-year public and private institutions (from 41 to 49 percent of students at 4-year public institutions and from 52 to 63 percent at private institutions), and declined slightly at for-profits. Because enrollment at for-profits increased as well as the borrowing rates at 2-year public schools, students at these two types of schools increased as a share of all active borrowers, rising from 9 to 17 percent and from 14 to 25 percent, respectively, between 2000 and 2011. Other things equal, had enrollment increased more evenly across institution types—for instance, had more students attended 2-year schools rather than for-profit schools—and had the increase in the share of community college students who borrowed been smaller, then the number and distribution of student loan borrowers would have been quite different, with a larger share of 4-year public and private borrowers and fewer nontraditional borrowers.

The fact that there are almost 40 percent more for-profit *borrowers* (from NSLDS data) than reported for-profit *students* (from NCES data) is one indication that the NCES enrollment figures understate the number of nontraditional borrowers (see the first two columns of the lower panel of table 2). Several factors are likely to explain this discrepancy, including borrowers in nondegree programs and borrowers enrolled outside the traditional academic cycle. Increases in such students may also be one reason why the number of active borrowers rose relative to NCES measures of

18. This is an underestimate, since the NCES data only include degree-granting institutions, defined as those that grant associate's degrees or higher and participate in Title IV federal financial aid programs. Some for-profits grant only certificates.

enrolled students at 2-year public institutions. Another reason why enrollment statistics understate the number and growth of nontraditional borrowers is that the duration of enrollment differs across institution types. A short-duration program serves more students over a given period of time because its student body turns over more quickly. As a result, for a given level of enrollment at 2-year and for-profit schools, there were disproportionately more new borrowers being produced.¹⁹ Hence, increases in the level of enrollment at for-profit institutions and in borrowing rates at 2-year public schools had outsized impacts on the number and composition of student loan borrowers.

III.C. Implications for the Stock of Borrowers and Debt

The inflow of these new borrowers caused both the stock of outstanding debt and the borrowers to increase in size and change in composition. Table 3 shows the number of outstanding student loan borrowers from 1985 to 2014 by the type of institution they first attended. In 2000, borrowers from for-profit and 2-year institutions accounted for less than 35 percent of all borrowers; by 2014, the number of borrowers had more than doubled at for-profit schools and 2-year institutions, rising by 114 and 167 percent, respectively. The number of borrowers at selective public and private institutions increased by much less, about 69 percent. Almost 45 percent of the increase in the number of borrowers from 2000 to 2014 (when the number of borrowers increased by roughly 21.7 million) were borrowers who started at for-profit institutions (26 percent) and 2-year institutions (18 percent).²⁰ By 2014, almost 40 percent of all federal borrowers were nontraditional borrowers. Had the number of nontraditional borrowers instead increased at the same rate as the number of traditional borrowers over this period, there would have been roughly 3.5 million (21 percent) fewer nontraditional borrowers. Moreover, the data on enrollment rates and borrowing-per-student in table 2 suggest that if a greater share of rising enrollment had occurred at 2-year public institutions or at 4-year public and

19. For example, compare a scenario in which there are two million students and one million new borrowers each year to a scenario in which there are two million students and two million new borrowers each year. In the latter case, each year there must be twice as many students exiting into the labor market with student loans.

20. Based on the institution a borrower *last* attended, the contribution of nontraditional institutions is somewhat larger, with for-profit and 2-year schools representing 29 and 15 percent of the increase, respectively. This suggests that there is substantial overlap between the for-profit and 2-year nonprofit sectors, with many students beginning borrowing spells at 2-year nonprofits and later borrowing at for-profit institutions.

Table 3. Number of Federal Borrowers by Institution Type, 1985–2014^a

<i>Fiscal year</i>	<i>Total</i>	<i>For-profit</i>	<i>2-year</i>	<i>Non-selective 4-year</i>	<i>Somewhat selective 4-year</i>	<i>Selective 4-year</i>	<i>Graduate only^b</i>
1985	8,919	1,764	1,072	1,309	1,827	2,182	765
1986	10,193	2,322	1,232	1,434	2,011	2,371	824
1987	11,411	2,983	1,340	1,533	2,163	2,523	869
1988	12,715	3,721	1,439	1,649	2,317	2,668	918
1989	13,938	4,374	1,533	1,759	2,485	2,821	962
1990	14,896	4,815	1,603	1,858	2,645	2,971	1,000
1991	15,578	5,055	1,661	1,948	2,801	3,087	1,022
1992	16,036	5,153	1,700	2,029	2,936	3,185	1,028
1993	16,403	5,102	1,740	2,118	3,107	3,305	1,026
1994	17,060	5,100	1,820	2,242	3,343	3,492	1,058
1995	17,591	5,056	1,886	2,351	3,537	3,661	1,093
1996	18,278	5,027	1,965	2,481	3,786	3,880	1,126
1997	18,949	4,997	2,052	2,620	4,025	4,084	1,156
1998	19,946	5,054	2,174	2,805	4,332	4,351	1,214
1999	20,572	5,016	2,237	2,942	4,572	4,556	1,233
2000	21,073	4,995	2,281	3,062	4,762	4,714	1,242
2001	21,673	5,043	2,345	3,201	4,958	4,858	1,251
2002	22,604	5,180	2,469	3,378	5,213	5,052	1,293
2003	23,857	5,426	2,649	3,606	5,521	5,279	1,358
2004	25,297	5,772	2,857	3,845	5,844	5,537	1,422
2005	26,756	6,140	3,076	4,075	6,172	5,782	1,491
2006	28,108	6,506	3,279	4,292	6,460	6,000	1,548
2007	29,490	6,907	3,491	4,502	6,755	6,196	1,617
2008	31,106	7,408	3,738	4,730	7,085	6,430	1,692
2009	33,491	8,181	4,123	5,055	7,533	6,776	1,802
2010	35,960	8,984	4,551	5,391	8,004	7,110	1,900
2011	38,312	9,617	5,034	5,756	8,483	7,419	1,982
2012	40,200	10,119	5,487	6,049	8,865	7,637	2,023
2013	41,555	10,425	5,834	6,278	9,170	7,795	2,033
2014	42,792	10,704	6,101	6,497	9,479	7,951	2,041

Source: U.S. Treasury tabulations of 4-percent NSLDS sample. Selectivity data come from Barron's Educational Series (see text).

a. Total borrowers (in thousands) with outstanding federal loan balances each fiscal year, by institution type of first borrowing.

b. Refers to borrowers who started borrowing at the graduate level.

private institutions, where borrowing rates are relatively low, rather than at for-profits, or had borrowing among community college students increased at rates closer to the rates at 4-year public institutions, then there would have been even fewer nontraditional borrowers.

Similarly, the increase in the number of nontraditional borrowers is an important contributor to the increase in overall debt and to the share

Table 4. Aggregate Federal Student Loan Debt by Institution Type, 1985–2014^a

<i>Fiscal year</i>	<i>Total</i>	<i>For-profit</i>	<i>2-year</i>	<i>Non-selective 4-year</i>	<i>Somewhat selective 4-year</i>	<i>Selective 4-year</i>	<i>Graduate only^b</i>
1985	64,406	8,151	5,721	10,005	12,832	18,199	9,496
1986	72,403	10,598	6,587	10,791	14,230	19,950	10,247
1987	79,209	13,507	7,059	11,234	15,223	21,280	10,889
1988	87,330	17,372	7,529	11,808	16,251	22,588	11,731
1989	95,156	20,853	8,003	12,407	17,375	23,932	12,508
1990	101,450	22,762	8,339	12,944	18,618	25,389	13,320
1991	109,914	24,334	8,937	13,976	20,572	27,557	14,460
1992	118,315	25,225	9,568	15,141	22,744	29,903	15,655
1993	130,637	26,254	10,450	16,894	26,011	33,545	17,403
1994	150,137	27,214	11,773	19,666	31,166	39,666	20,564
1995	172,258	28,223	13,290	22,866	36,964	46,649	24,156
1996	196,827	29,608	14,953	26,437	43,638	54,282	27,763
1997	225,185	31,419	17,072	30,652	51,322	63,023	31,541
1998	258,336	35,641	19,874	35,916	59,600	71,737	35,398
1999	286,876	38,412	21,912	40,391	67,253	79,988	38,749
2000	311,449	40,359	23,711	44,467	74,248	87,225	41,261
2001	340,945	43,586	26,029	49,472	82,342	95,257	44,076
2002	369,617	47,330	28,397	54,257	89,998	102,775	46,655
2003	404,376	51,961	31,520	60,029	99,066	111,694	49,885
2004	441,283	57,519	34,805	66,042	108,275	120,905	53,495
2005	478,881	62,973	38,369	71,946	117,487	129,882	57,928
2006	525,178	70,222	42,816	79,351	128,726	140,817	62,916
2007	568,054	77,369	47,199	86,024	139,092	150,266	67,765
2008	634,453	89,058	54,006	96,248	154,850	165,061	74,904
2009	706,895	104,206	62,109	107,278	171,479	179,847	81,657
2010	791,638	122,070	72,125	119,963	190,672	197,040	89,452
2011	878,741	141,322	83,431	133,518	210,170	213,308	96,683
2012	966,237	159,022	95,208	147,642	230,609	229,943	103,502
2013	1,045,180	174,097	106,293	160,835	249,924	244,667	109,068
2014	1,125,652	188,858	117,320	174,504	270,309	259,666	114,709

Source: U.S. Treasury tabulations of 4-percent NSLDS sample. Selectivity data come from Barron's Educational Series (see text).

a. Total outstanding federal loan balances in millions of 2014 dollars for borrowers each fiscal year, by institution type of first borrowing.

b. Refers to borrowers who started borrowing at the graduate level.

of debt owed by students from for-profit and 2-year institutions. Table 4 shows aggregate federal student loan debt by institution type first attended. Between 2000 and 2014, the amount of debt owed by borrowers who first attended a for-profit institution more than quadrupled from \$40 billion to \$189 billion, and nearly quintupled from \$24 billion to \$117 billion among borrowers who had first attended a 2-year public institution. The

share of outstanding loan balances attributable to for-profit school students increased from 13 to 17 percent over that period, and from 8 to 10 percent among 2-year college students.²¹ Loan volumes also increased rapidly at more selective institutions, although the rate of increase was slower. The share of loans owed by borrowers from 4-year public and private institutions and graduate-only borrowers correspondingly fell by almost 7 percentage points from 79 to 73 percent. Had the number of nontraditional borrowers merely increased at the same rate as traditional borrowers, and had per-student borrowing increased by the same amount, then total debt owed by nontraditional borrowers would have been \$94 billion (31 percent) lower.

A more concrete picture of how changes in nontraditional borrowing have shaped the student loan market is evident in table 5, which presents estimates of the cumulative debts of students according to the institutions they last attended in 2000 and 2014 for the 25 institutions whose students owed (collectively) the most in federal student loan debt. The debt of the students associated with each institution in each of the years includes the cumulative federal loan liabilities of borrowers, including undergraduate, graduate, and parent loans, plus any accrued interest. In addition, the analysis assigns each borrower's cumulative debts—including any debts incurred at previous institutions—to the last institution of borrowing.²² In 2000, with the exception of the University of Phoenix, all the institutions were either 4-year public or private nonprofit institutions, often state flagship universities and institutions with large graduate programs. In 2014, 8 of the 10 institutions whose students owed the most aggregate debt and 13 of the top 25 were for-profit institutions, and one

21. Based on the institution *last* attended, the increase is from 12 to 20 percent for for-profit institutions and 4 to 6 percent at 2-year institutions.

22. This method of assigning loan debts provides a useful measure of how the characteristics of the loan portfolio changed as a result of shifts in enrollment, because many students borrow to attend only one institution and because students' labor market outcomes and loan performance are closely related to the institution last attended. As a practical matter, this method of assignment avoids the challenges of tracing accrued interest or subsequent payments to individual institutions. However, this method overstates the amount of debt originated at certain institutions, especially those with a disproportionate number of graduate student borrowers or older borrowers, and it understates debts originated at certain primarily undergraduate institutions. The online data appendix provides an alternative measure of total cumulative federal loan disbursements and outcomes by institution and type of loan (excluding interest and payments), which shows a similar pattern of change to that presented in table 5.

Table 5. Cumulative Debt of Student Loan Borrowers by Institution Last Attended, 2000 and 2014

Rank	2000			2014			5-year cohort, default rate ^b	5-year cohort, percent balance repaid ^c
	Institution	Total debt ^a	Total borrowers	Institution	Total debt ^a	Total borrowers		
1	New York University	2,184,601	72,650	University of Phoenix, Phoenix campus	35,529,283	1,191,550	45	1
2	University of Phoenix, Phoenix campus	2,099,828	103,475	Walden University	9,833,470	120,275	7	0
3	Nova Southeastern University	1,736,919	34,900	Nova Southeastern University	8,748,887	94,350	6	-3
4	Pennsylvania State University	1,710,951	123,800	DeVry University, Downers Grove campus	8,249,788	274,150	43	-4
5	University of Southern California	1,609,511	51,525	Capella University	8,043,635	104,450	19	-5
6	Ohio State University, Columbus campus	1,533,954	82,250	Strayer University, Washington campus	6,693,570	144,400	31	-6
7	Temple University	1,531,762	59,900	Kaplan University, Davenport campus	6,664,067	220,125	53	0
8	Arizona State University, Tempe campus	1,385,858	70,675	New York University	6,307,264	110,775	6	34
9	Michigan State University	1,321,997	65,650	Argosy University, Chicago campus	6,179,207	104,325	15	-7
10	University of Minnesota, Twin Cities campus	1,289,873	66,675	Ashford University	5,891,799	205,000	47	2
11	Boston University	1,289,257	50,850	Grand Canyon University	5,881,420	145,850	36	0
12	University of Texas, Austin campus	1,264,226	64,650	Liberty University	5,678,555	142,875	14	14

13	University of Florida	1,186,645	52,050	University of Southern California	5,340,123	83,400	5	20
14	University of California, Los Angeles campus	1,159,430	54,975	Pennsylvania State University	5,310,636	210,125	14	21
15	University of Michigan, Ann Arbor campus	1,126,159	44,725	Arizona State University, Tempe campus	4,928,019	158,800	17	12
16	Columbia University	1,120,001	31,225	ITT Technical Institute	4,618,538	191,225	51	-1
17	University of Pittsburgh, Pittsburgh campus	1,106,448	48,925	Ohio State University, Columbia campus	4,362,143	132,725	12	19
18	Indiana University, Bloomington campus	1,101,234	53,225	Temple University	4,251,334	100,500	12	13
19	Rutgers University, New Brunswick campus	1,077,418	60,150	DeVry University, Keller Graduate School of Management	3,900,283	49,375	13	1
20	University of Pennsylvania	1,033,615	33,300	American InterContinental University, online campus	3,735,319	129,850	41	-3
21	University of Arizona	983,809	45,975	University of Minnesota, Twin Cities campus	3,679,264	101,650	7	18
22	University of Wisconsin, Madison campus	981,553	45,050	Michigan State University	3,596,661	99,925	11	14
23	Florida State University	976,114	49,125	Rutgers University, New Brunswick campus	3,436,474	116,925	9	19
24	Virginia Commonwealth University	965,668	39,425	Colorado Technical University, Colorado Springs campus	3,300,070	114,000	47	1
25	University of Washington, Seattle campus	954,589	51,625	Indiana University-Purdue University Indianapolis	3,141,584	74,500	15	10

Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. Total volume of student loans outstanding in thousands of 2014 dollars.

b. Percentage of the 2009 repayment cohort that had defaulted by 2014.

c. Percentage of the total balance for the 2009 repayment cohort that had been repaid by 2014. Negative numbers indicate balance has increased.

private nonprofit institution was largely an online program.²³ At certain institutions, a majority of the debt was accumulated by graduate and professional students with high average balances, such as at Walden University, Nova Southeastern University, New York University, and the University of Southern California (at these institutions a larger share of the total debt owed by students was accumulated at prior institutions). At other institutions, almost all of the debt was undergraduate debt, such as at the University of Phoenix, Strayer University, Kaplan University, Ashford University, and ITT Technical Institute.

The final two columns show, respectively, the fraction of students that defaulted and the fraction of their initial balances repaid by 2014 for the 2009 cohort. First, there is substantial heterogeneity across institution types in terms of default rates and balances repaid, with students at some for-profits experiencing 5-year default rates approaching 50 percent. Second, while the share of balances repaid and default rates are highly correlated, students from some schools maintain low default rates despite not paying down their debts. This could be due to deferment, forbearance, the use of income-based repayment plans, or other plans that allow borrowers to suspend or reduce their payments without risk of default.

III.D. Post-Recession Exodus: Rapid Increase in Repayment Flows

The lower panel of figure 2 shows the subsequent flow of borrowers into repayment by institution type. The large increase in borrowing at the onset of the recession subsequently turned into a mass exodus of borrowers into repayment as the recession waned. The exodus was magnified not just by the enrollment patterns during the recession—the fact that many new borrowers sheltered from the labor market by enrolling—but by the durations of their enrollment. Many borrowers from 4-year schools

23. Loan balances from all federal sources (undergraduate, graduate, and parent) are aggregated for each institution with an individual agreement to participate in Title IV programs (specifically by the 6-digit Office of Postsecondary Education ID). For some institutions, this aggregates over many branches or campuses, but some institutions that are a part of larger umbrella organizations are identified separately. Using an alternative method of aggregating related institutions would lead to different but qualitatively similar results. For instance, if aggregated by parent company (for large for-profit chains) or by state university systems (for 2-year or 4-year public institutions), 10 of the 25 educational systems whose students owed the most in aggregate student loan debt in 2014 would be for-profit systems; one is a nonprofit organization (Nova Southeastern University), and the other 14 are state university systems (including Florida, New York, California, Georgia, and Texas).

extended their enrollment by staying in school somewhat longer, delaying entry into repayment. The surge in borrowing at the start of the recession was driven by relatively short-duration programs (such as 1-year and 2-year certificates and degrees) or short-duration enrollments as students rapidly dropped out. The confluence of these factors resulted in a spike of borrowers into repayment.

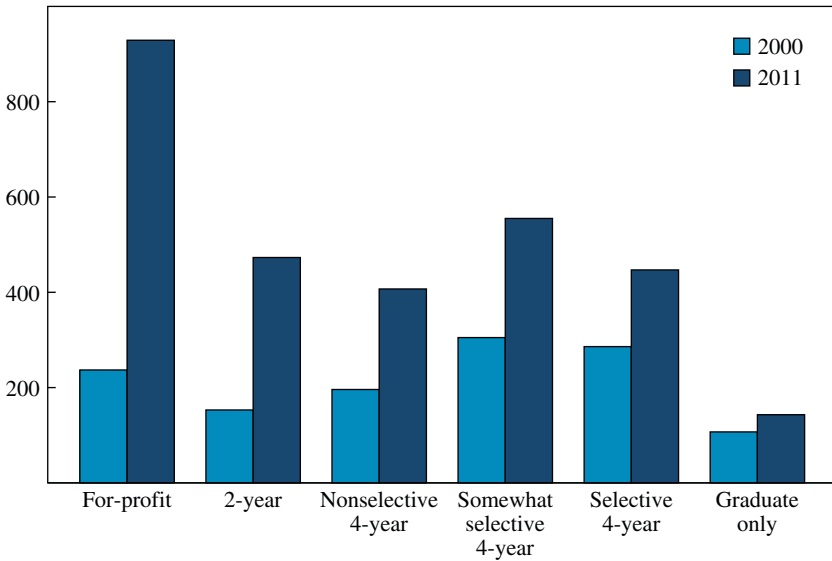
We will return to these dynamics later, but one observation worth noting here is that over the last several years of the period there were simply many more borrowers entering into repayment relative to the number of new borrowers. About 63 percent of borrowers and about 62 percent of the aggregate value of loans were in repayment in 2013. This was up from 53 percent of borrowers and 60 percent of the value of loans in 2007. Hence, a much larger share of borrowers (who hold a much larger share of total loan dollars) are feeling the burden of paying their loans today than in previous years. Moreover, many more borrowers are in the earliest years of repayment, a time when the loan burdens (relative to earnings) are highest and when default rates peak. Even absent any other changes in the loan market, this increase in the number and share of new entrants should be expected to result in high absolute numbers of students in default or struggling in their first years.

In addition to the sheer volume of borrowers entering repayment, the composition of borrowers and the institutions they attended changed substantially. To illustrate the magnitude of these changes, figure 3 compares the number of borrowers entering repayment in 2000 and 2011.²⁴ The number of (undergraduate and graduate) borrowers entering repayment from for-profit institutions increased rapidly, from about 237,000 in 2000 (18 percent of borrowers) to 930,000 in 2011 (31 percent of borrowers). At 2-year institutions, the number of borrowers entering repayment increased from about 150,000 in 2000 (12 percent) to about 470,000 in 2011 (16 percent). Hence, in 2011 borrowers from for-profit and 2-year schools represented roughly 47 percent of federal student loan borrowers entering repayment. After 2011, the number of for-profit borrowers entering repayment remained above 900,000 through 2014 and the number of 2-year borrowers continued to rise, hitting about 740,000 in 2014.

24. We choose 2011, in particular, for this comparison because it is the last cohort for which we observe both labor market outcomes and 3-year cohort default rates, and because we use this comparison in our decomposition analysis. Comparisons using alternative base years provide qualitatively similar results.

Figure 3. Student Borrowers Entering Repayment by Institution Type, 2000 and 2011 Cohorts^a

Number of borrowers (thousands)



Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. Cohorts are defined by the fiscal year when they entered repayment.

IV. Who Are These New Borrowers? Characteristics and Educational Outcomes of Nontraditional Borrowers

The changes in who borrowed and where they borrowed have important implications for the composition and credit quality of the pool of borrowers, their educational outcomes, the amount of debt borrowers accrued, and their economic well-being after enrollment. Compared to other borrowers, the students who borrowed to attend for-profit and 2-year institutions were from more disadvantaged backgrounds (based on their family income) and were older, more independent, and, especially during the recession, more likely to have struggled in the labor market. Nontraditional borrowers tended to attend institutions with relatively poor completion rates, and many appear to have failed to complete the programs they started. These latter factors, in particular, are associated with relatively poor labor market and loan outcomes.

IV.A. Demographics and Family Background

The panels of figure 4 summarize the characteristics and educational outcomes of borrowers entering into repayment in 2011 to provide an

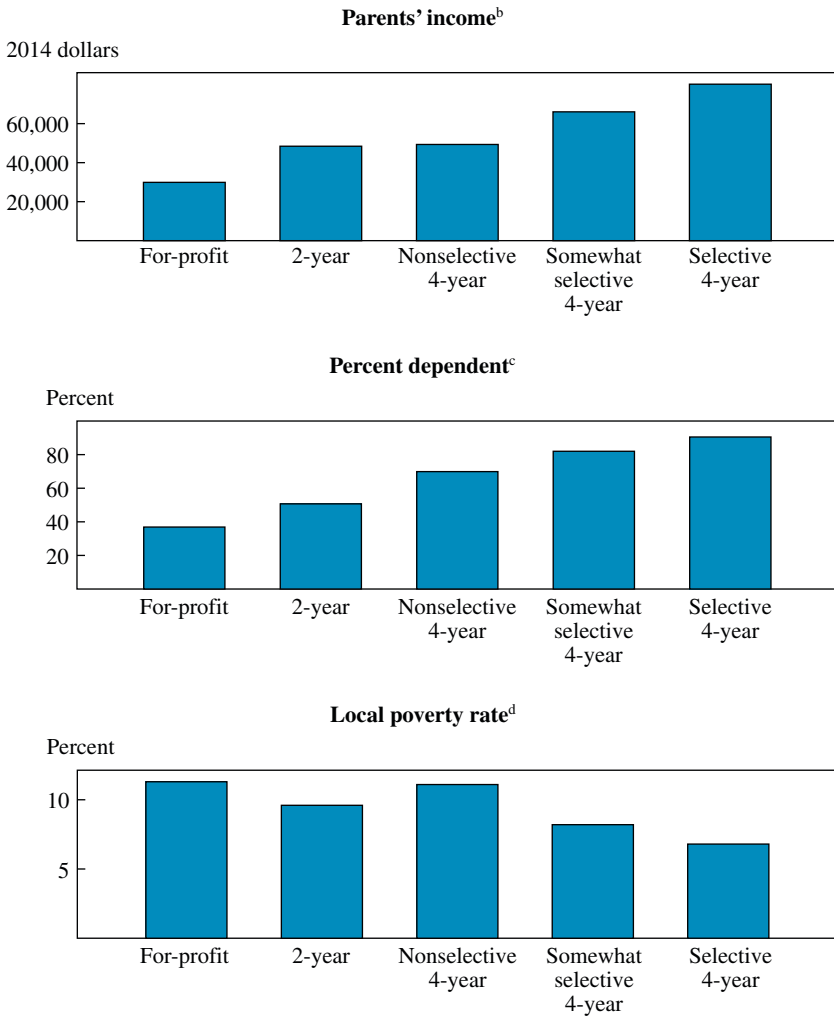
understanding of how changes in enrollment and borrowing patterns affected these borrowers' overall characteristics. In each panel, the figure presents a cross-section of the characteristics or educational outcomes of borrowers who begin to borrow at different types of institutions as undergraduates.²⁵ While their characteristics have changed within institutions over time, the cross-sectional differences are persistent and therefore give a fairly good indication of how shifts in the share of borrowers across types of institutions are likely to change the characteristics of the borrowing pool.

The top-left panel shows that borrowers at more selective institutions tend to come from relatively more affluent backgrounds, with the median family income of dependent borrowers at the most selective institutions being about \$80,000, as compared with about \$48,000 for borrowers at nonselective 4-year schools and 2-year schools and \$30,000 for those at for-profit institutions. These disparities widened modestly over the preceding decade. Because higher family income is positively correlated with labor market outcomes and negatively with default, these differences are one reason why outcomes vary across groups. It is well known that for-profit students tend to come from lower-income backgrounds (Deming, Goldin, and Katz 2012; Cellini 2009), and the observed results are consistent with more vulnerable borrowers from lower-income backgrounds increasingly borrowing to enroll in these institutions.

As the top-right and middle-left panels show, nontraditional borrowers are likely to be older and independent for financial aid purposes. For the 2011 cohort, the median age at entry was 24 for for-profit schools and 23 for 2-year institutions, compared to 19 for students at 4-year institutions; for graduate-only borrowers, the median age at entry was 26. More than 90 percent of borrowers at the most selective 4-year schools were dependent borrowers as compared with 70 percent at nonselective institutions, 50 percent at 2-year institutions, and 37 percent at for-profit schools. This pattern is important for two reasons. First, older, independent borrowers may have less ability to draw on their families for support during times of hardship. Second, independent borrowers have substantially higher loan limits, which allow them to take out more loans each year and to accumulate a higher total amount.

The middle-right and bottom-left panels illustrate two other dimensions of disadvantage. The middle-right panel shows the fraction of borrowers that are reported to be first-generation college students based on the information in their financial aid forms. About 57 percent of the 2011 repayment cohort who had attended for-profit schools were first-generation

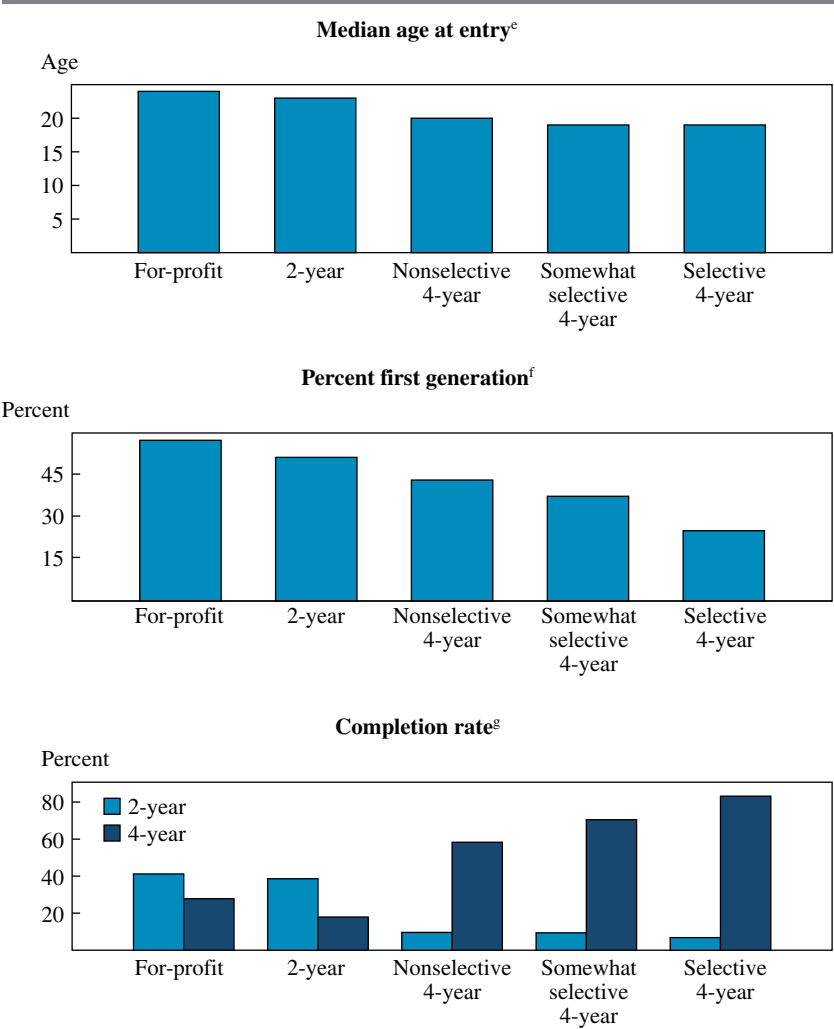
25. Graduate-only borrowers are excluded.

Figure 4. Characteristics of Student Borrowers by Institution Type, 2011^a

(continued)

postsecondary students, compared to 51 percent of those at 2-year schools, 43 percent at nonselective 4-year institutions, and 25 percent at the most selective institutions. Similarly, students from 2-year institutions and for-profit schools were more likely to live in areas with a higher fraction of households living in poverty and with a higher minority population (based on the 2000 Census).

Figure 4. Characteristics of Student Borrowers by Institution Type, 2011^a (*Continued*)



Source: U.S. Treasury tabulations of 4-percent NSLDS sample. Institution-reported degree completion of borrowers comes from the U.S. Department of Education.

a. This figure examines how changes in enrollment and borrowing patterns at different institutions affect the characteristics of student borrowers in the aggregate. Each panel presents a cross-sectional comparison of borrowers who started borrowing in 2011 as undergraduates at each institution type.

b. Median family (parents') income of dependent undergraduate borrowers.

c. Percentage of borrowers deemed dependent undergraduates in their financial aid applications in the year first borrowed.

d. Average poverty rate in each borrower's ZIP code based on the 2000 Census and the first application for federal aid.

e. Median age of borrowers in the year they first borrowed.

f. Percentage of borrowers reporting that neither of their parents had completed postsecondary education on their initial application for federal aid.

g. Average institution-reported degree completion of borrowers, by degree type.

IV.B. Educational Outcomes

Finally, the bottom-right panel in figure 4 shows that nontraditional borrowers and those from nonselective 4-year institutions appear less likely to graduate from their programs of study than borrowers from most 4-year public and private institutions, based on information reported by the institution to the NSLDS.²⁶ For instance, at 4-year public institutions, about 71 percent of borrowers completed a 4-year degree, as had 83 percent of borrowers at 4-year private institutions, as reported by the institutions to NSLDS. Among borrowers entering repayment in 2011 who had started at for-profit institutions, about 28 percent had completed a 4-year degree and 41 percent a 2-year degree. (Among borrowers who had started at 4-year for-profit institutions, about 49 percent had completed a 4-year degree and 6 percent a 2-year degree.) At 2-year public institutions, about 39 percent of borrowers were reported to have completed a 2-year degree and 18 percent a 4-year degree.²⁷ In other words, the institution of first enrollment also had important implications for whether these borrowers were likely to complete a degree and whether they would earn a 2-year or 4-year degree. As we show later, completion rates are strongly associated with subsequent student loan default.

In all, the rise of nontraditional borrowing shifted the composition to borrowers more likely to struggle with their loan burdens—toward older, mid-career borrowers; borrowers from more disadvantaged family backgrounds and poorer neighborhoods; and toward programs many were less likely to complete.

V. Labor Market Outcomes of Borrowers

Other key differences between traditional and nontraditional borrowers are their divergent labor market outcomes and the differential impact the recession has had on each group. Drawing on earnings records from tax data,

26. Because completion and withdrawal measures are solely reported by institutions to the NSLDS for purposes of determining the date at which a loan must enter repayment, institutions have no incentive to ensure the accuracy of their reports. Thus it makes no difference whether an institution reports that a student withdrew or graduated, and some institutions appear to report a student as having withdrawn even if the student graduated. Nevertheless, these completion measures are highly correlated at the institution level with better validated data and, in our analysis, are highly correlated with other outcome measures, like default rates.

27. Some students who begin their postsecondary education at a 2-year school complete 4-year degrees at another institution.

we examine the labor market outcomes of these borrowers after they have entered repayment. For each repayment cohort, the labor market outcomes of borrowers differed based on the institutions they attended, with traditional borrowers earning substantially more. In addition, the earnings and employment rates of nontraditional borrowers declined much more over time, particularly during the recession.

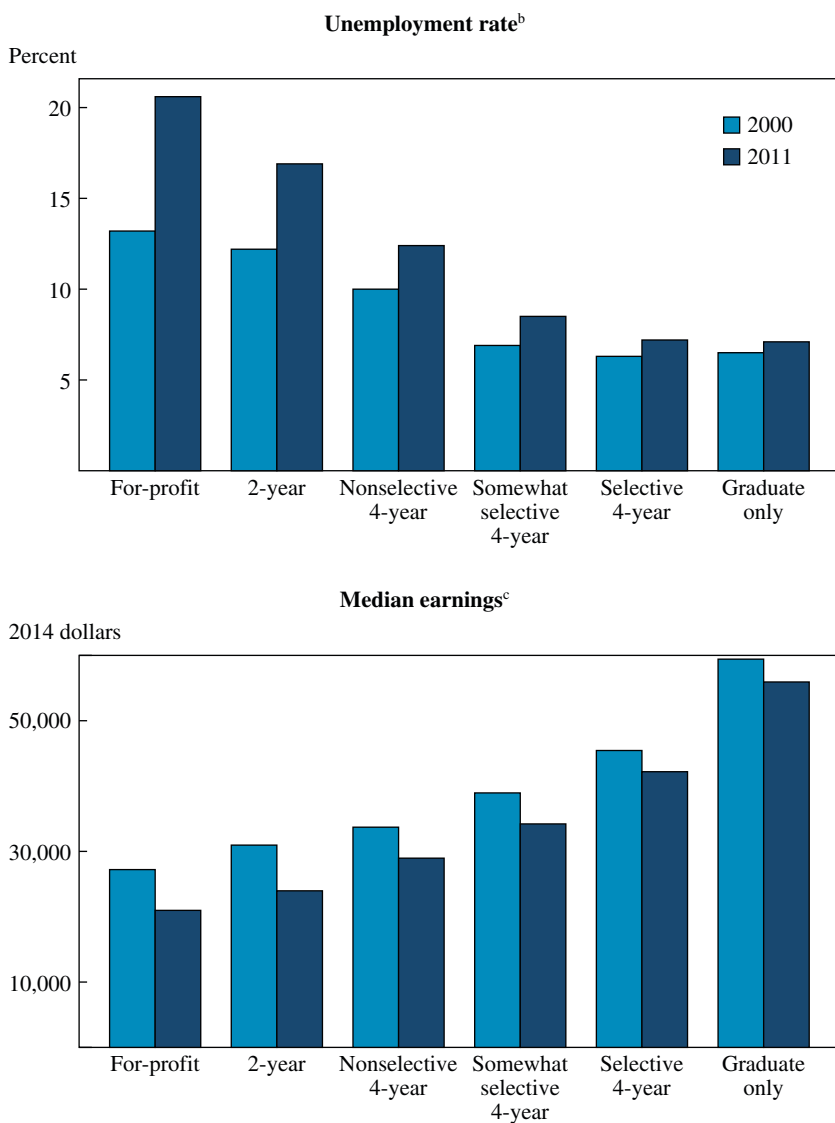
Focusing first on the outcomes of all borrowers in repayment, including those who may have entered repayment many years earlier, shows surprising strength in the outcomes of student loan borrowers. Between 2002 and 2013, the median earnings of all employed traditional borrowers in repayment actually increased. For graduate borrowers, the increase was from \$61,000 to \$63,100; for borrowers from the most selective 4-year institutions, from \$47,300 to \$48,000. During the same period, median earnings *declined* among nontraditional borrowers. The declines differed across sectors: from \$24,800 to \$23,200 for for-profit borrowers and from \$30,100 to \$25,900 for 2-year borrowers. Unemployment rates edged up slightly (by about 1 percentage point) among all groups.²⁸

Focusing more narrowly on borrowers in their earliest years of repayment, we find that while the pattern of relative outcomes is similar, all groups fared worse. The top panel of figure 5 shows the unemployment rate of borrowers by institution type and compares the experiences of the 2000 and 2011 cohorts two years after entering repayment. For the 2000 cohort, unemployment rates among traditional borrowers were low, ranging from 6.3 percent for borrowers from selective 4-year schools to 6.5 percent for graduate borrowers and 10 percent for borrowers from nonselective 4-year schools. For the same cohort, the unemployment rate for 2-year borrowers was 12.2 percent and 13.2 percent for for-profit borrowers. Hence, even prior to the recent recession, there were large differences in employment across borrowers by institution type.

During the recession, unemployment rates rose substantially for nontraditional borrowers, but they rose much less among other borrowers. Among for-profit borrowers the rate jumped to 20.6 percent and among 2-year borrowers to 16.9 percent. For relatively selective 4-year borrowers, the rate increased from 6.3 to 7.2 percent, and for graduate borrowers it

28. We define unemployment as having less than \$1,000 in earnings in a year, a definition that differs from the official definition of unemployment in that it does not differentiate voluntary nonemployment (being out of the labor market or not looking for work) from involuntary unemployment. In addition, this measures whether a borrower was employed at all during a calendar year rather than during a particular week.

Figure 5. Unemployment and Median Earnings of Federal Borrowers in Second Year of Repayment, 2000 and 2011 Cohorts^a



Source: U.S. Treasury tabulations of 4-percent NSLDS sample matched to de-identified tax records.

a. Cohorts are defined by the fiscal year that they entered repayment.

b. Percent of unemployed borrowers (defined here as having less than \$1,000 in annual earnings) two years after having entered repayment on all federal loans.

c. Median earnings in 2014 dollars of employed borrowers (defined here as having at least \$1,000 in annual earnings) two years after having entered repayment on all federal loans. Earnings defined as W-2 reported wage income plus deferred compensation plus any earnings reported on Schedule SE.

increased from 6.5 to 7.1 percent. In other words, even among students leaving school in 2010 and 2011, near the peak of the recession, there was almost no change in the rate of employment among most traditional borrowers. While the insulating effects of a college degree are apparent in the aggregate unemployment statistics, it is clear that those effects also applied to even most young college borrowers in the years immediately after enrollment.

For those who did find work, a similar pattern applies to their earnings. The bottom panel of figure 5 presents the median earnings of borrowers with earnings of at least \$1,000 by the institution type they first attended for the 2000 and 2011 repayment cohorts. In both cohorts, graduate-only borrowers and borrowers from more selective 4-year institutions earned substantially more than other borrowers. For the 2011 cohort, for instance, the median graduate-only borrower earned about \$56,100 and the median borrower from a selective undergraduate institution earned about \$42,300. In contrast, the median for-profit borrower who worked earned about \$20,900 and the median borrower from a 2-year institution about \$23,900. The median borrower from nonselective 4-year institutions earned about \$29,100.

This pattern reflects two things. First, it reflects long-standing differences in earnings levels across borrowers from different institutions; even in 2000, a borrower from a 4-year selective school earned roughly 66 percent more than a borrower from a for-profit school. Second, it reflects the disproportionate blow to the labor market outcomes of borrowers from less-selective institutions, for-profit schools, and 2-year colleges. Between the 2000 and 2011 cohorts, the median earnings of borrowers declined by 24 percent among for-profit borrowers (two years after entering repayment), 23 percent among 2-year borrowers, and 14 percent among nonselective 4-year borrowers, but only 7 percent among borrowers from the most selective institutions, and 6 percent among graduate borrowers.

Nontraditional borrowers entering the labor market in 2011 therefore faced a particularly severe outlook, with almost 20 percent of them unemployed and with the earnings of those who were working down more than 20 percent relative to their peers in earlier years. Hence, while most federal borrowers in repayment on their outstanding student loans had experienced relatively little change in earnings and employment over the course of the recession (or at least, had roughly the same earnings and employment rates as their peers in earlier years), the most recent cohorts of students faced particularly unfavorable outcomes.

VI. Debt Burdens

The previous sections illustrate that there were many more nontraditional borrowers during and after the recession, that they are a particularly disadvantaged and high-risk group, and that they face relatively poor labor market outcomes when finishing school, particularly the most recent cohorts of borrowers exiting school during and after the recession. This section examines how much they owed in federal loans and their debt service burdens.

VI.A. Increases in Borrowing per Student

Nontraditional borrowers accrued relatively less debt than other borrowers. As table 6 shows, among borrowers entering repayment in 2011, the median borrower at for-profit institutions entered with about \$10,500 in debt and the median borrower at 2-year institutions with about \$9,600, compared to median borrower debts of \$17,600 among those at nonselective 4-year public and private institutions and \$23,000 among those at the most selective institutions. Nevertheless, the increases in per-borrower debt have been much larger among nontraditional borrowers and borrowers from nonselective schools.

While the pattern of increases in average balances is largely the same across institutions, the magnitude of the increase is much larger among nontraditional borrowers because a rising share of them accumulated substantial loan burdens. For instance, among borrowers who started at for-profit institutions, the increase in average balances was 51 percent between 2000 and 2011 (from \$10,700 to \$16,200). This compares during the same period with increases of 32 percent for those at 2-year institutions (from \$13,000 to \$17,100) and 42 percent for those at the most selective 4-year institutions (from \$27,500 to \$39,100). (These balances reflect the cumulative balance over a student's career, which may include starting to borrow at a 2-year institution but subsequently borrowing at a 4-year institution, or borrowing initially at a 4-year institution and later in graduate school.) Increases in loan limits appear to have accelerated the accumulation of federal debt burdens in recent years. For instance, there is a clear increase in borrowing starting after the 2007–08 academic year, when loan limits were raised by changes made under the Higher Education Reconciliation Act of 2005.

VI.B. Repayment Burdens Relative to Earnings

The combination of higher loan amounts and worsening labor market outcomes has increased the burden on borrowers. To examine this burden,

Table 6. Median Federal Student Loan Debt in Year Entered Repayment by Institution Type, 1985–2014^a

<i>Repayment year</i>	<i>Total</i>	<i>For-profit</i>	<i>2-year</i>	<i>Non-selective 4-year</i>	<i>Somewhat selective 4-year</i>	<i>Selective 4-year</i>	<i>Graduate only^b</i>
1985	5,282	4,099	4,148	7,430	7,174	8,113	12,393
1986	4,906	4,056	4,095	7,379	7,228	8,018	12,547
1987	4,757	3,906	3,961	7,127	7,330	8,138	12,663
1988	4,520	3,916	3,971	6,267	7,188	8,490	12,485
1989	5,307	3,846	3,859	6,529	6,965	8,826	13,886
1990	5,861	4,458	4,064	6,211	6,924	9,141	14,545
1991	5,650	4,007	4,049	6,119	6,921	9,460	16,557
1992	6,014	3,921	3,946	6,516	7,374	10,417	16,835
1993	6,734	3,841	4,089	6,826	8,101	11,067	19,936
1994	7,292	4,681	4,400	7,122	8,491	11,750	20,235
1995	8,590	5,750	4,891	8,070	9,911	13,224	22,008
1996	9,865	6,304	5,643	9,124	11,772	15,388	25,291
1997	11,462	6,684	6,206	10,504	14,133	17,856	28,909
1998	12,940	7,316	6,628	12,057	15,394	19,358	30,733
1999	13,865	7,402	7,187	12,196	16,764	20,653	32,970
2000	13,942	7,526	7,125	12,812	16,929	20,575	33,272
2001	14,359	7,756	7,150	13,403	17,961	20,536	34,063
2002	14,369	7,534	7,127	13,210	18,167	20,331	33,797
2003	14,235	7,546	6,881	13,084	18,058	20,584	33,670
2004	13,806	7,346	6,709	13,342	18,113	20,527	32,573
2005	14,534	7,416	7,076	14,094	18,363	20,182	36,579
2006	14,714	7,689	7,277	14,963	18,924	20,494	37,370
2007	13,171	7,594	7,212	14,375	18,359	19,847	34,913
2008	13,504	7,775	7,529	14,712	18,186	19,662	37,874
2009	13,587	8,567	7,956	14,850	18,008	19,128	38,176
2010	14,829	10,162	9,379	17,468	20,364	20,585	41,495
2011	15,265	10,482	9,590	17,588	21,816	22,921	39,460
2012	16,883	11,447	9,861	18,851	23,467	24,767	40,945
2013	18,333	12,693	10,435	20,147	25,013	26,459	42,137
2014	19,647	14,255	11,701	21,229	25,886	26,491	45,890

Source: U.S. Treasury tabulations of 4-percent NSLDS sample. Selectivity data come from Barron's Educational Series (see text).

a. Median total debt burdens in 2014 dollars of students in each fiscal year required to make first loan payments (generally 6 months after leaving school). School types defined by the institution first borrowed to attend. Balances may include both undergraduate and graduate debt.

b. Refers to borrowers who started borrowing at the graduate level.

Table 7. Median Debt-Service-to-Earnings Ratio, Two Years after Entering Repayment, 1999–2010^a

<i>Repayment year</i>	<i>Total</i>	<i>For- profit</i>	<i>2-year</i>	<i>Non- selective 4-year</i>	<i>Somewhat selective 4-year</i>	<i>Selective 4-year</i>	<i>Graduate only^b</i>
1999	5.3	3.8	3.5	5.3	6.4	6.5	8.4
2000	5.3	3.9	3.3	5.5	6.3	6.6	8.1
2001	5.7	4.2	3.5	6.0	7.0	6.7	8.7
2002	5.4	3.9	3.2	5.5	6.6	6.2	7.7
2003	4.9	3.6	2.9	4.9	6.0	5.8	7.1
2004	4.6	3.4	2.7	4.8	5.7	5.3	6.6
2005	4.8	3.4	2.9	5.0	5.6	5.2	7.5
2006	5.2	3.9	3.3	5.7	6.1	5.6	7.8
2007	5.5	4.5	3.7	6.4	6.8	6.2	8.2
2008	5.9	4.8	4.0	6.9	7.2	6.4	8.9
2009	6.0	5.7	4.4	6.9	7.0	6.1	9.1
2010	6.8	6.8	5.2	8.0	7.9	6.6	10.3
2011	7.1	6.9	5.5	8.3	8.7	7.5	9.9

Source: U.S. Treasury tabulations of 4-percent NSLDS sample matched to de-identified tax records. Selectivity data come from Barron's Educational Series (see text).

a. Debt service estimated using 10-year amortizing loan and (weighted average) interest rate on student balances. Institution types defined as the first institution borrowed to attend. Ratios shown as percentages. See table 6 notes for additional definitions.

b. Refers to borrowers who started borrowing at the graduate level.

we produce estimates of debt-service-to-earnings (DE) ratios. To provide consistent measures of debt service, we assume the standard 10-year repayment plan (a 10-year amortizing loan) and use the (weighted average) interest rate on each student's loans in the year of repayment to estimate the annual payments.²⁹

Table 7 provides estimates of the median DE ratio (the median debt service payment divided by median earnings of employed borrowers) for borrowers two years after entering repayment, by institution type. For the cohort entering repayment in 2011, the overall DE ratio was approximately 7.1 percent, almost two percentage points above the ratio of 5.3 percent in 2000. DE ratios have edged up within all groups since 2000, from 3.9 to 6.9 percent among for-profit borrowers, from 3.3 to 5.5 percent among

29. Note that the debt service burdens we calculate here differ from those used for the Department of Education's "Gainful Employment" regulations, which use a 10-year amortizing schedule for less-than-4-year degrees or certificate programs, a 15-year schedule for bachelor's degree programs, and a 20-year schedule for graduate programs. Hence, the debt-service-to-earnings ratios we calculate will be higher and not comparable to those used in the rule.

2-year borrowers, and from 8.1 to 9.9 percent among graduate borrowers. Borrowers from selective institutions experienced the smallest increase of 0.9 percentage point. It is important to note that these ratios compare debt burdens to earnings, but not to ability to pay. Hence, the median annual debt service payment we calculate for the 2011 cohort of for-profit borrowers (\$2,200) or 2-year borrowers (\$2,300) may be a much larger share of their disposable income than the annual payments for borrowers from relatively more selective 4-year institutions (\$5,400) or graduate-only borrowers (\$8,700).

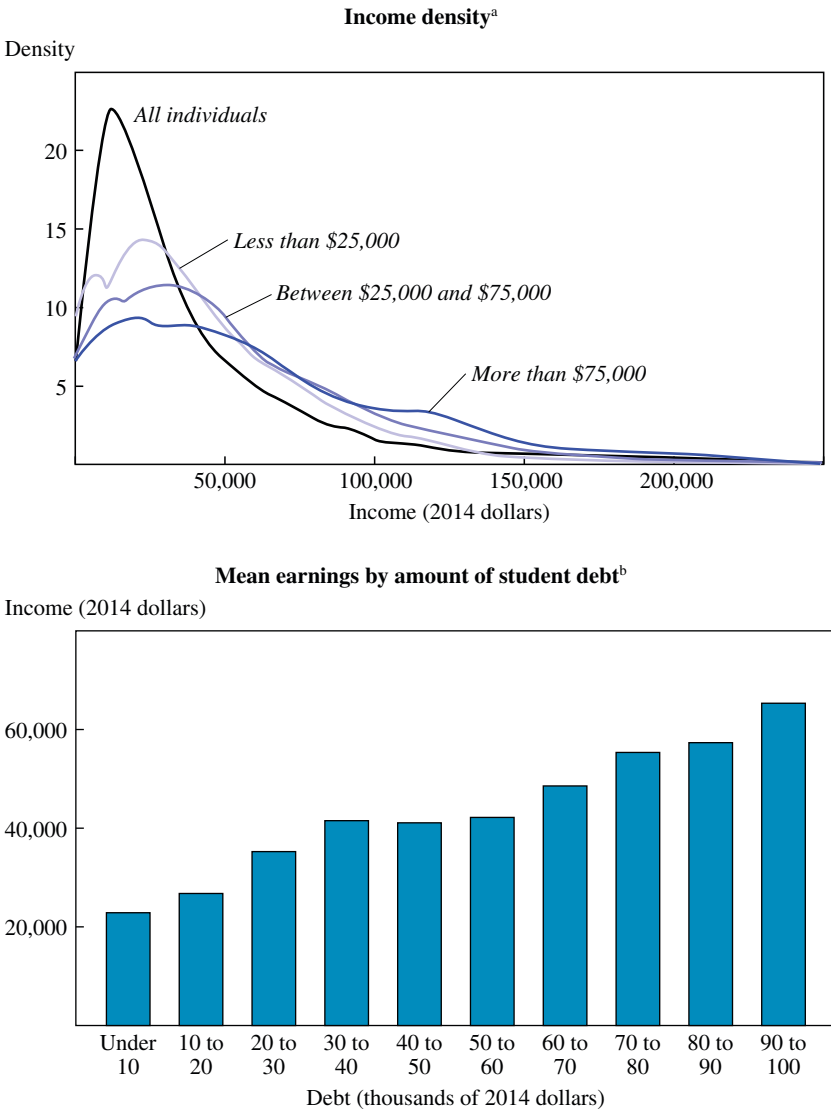
Borrowers from 2-year colleges have historically had the lowest DE ratios—around 3 percent prior to the 2007 cohort—although, as in other sectors, their DE ratios have risen as well. While the median DE ratio for 2-year borrowers increased from 3.3 percent for the 2006 cohort to 5.5 percent for the 2011 cohort, the ratio remained below that for other institution types. Borrowers at for-profit institutions historically had relatively low DE ratios, but saw the largest increases during the prior decade, rising by 3 percentage points from 2000 to 2011. DE ratios tend to be higher early in repayment, which is also when the majority of defaults tend to occur, and fall gradually over time as borrowers' nominal earnings rise during repayment. It is worth noting that the sectors driving the vast majority of defaults—the for-profit and two-year sectors—do not have higher DE ratios than other sectors. In fact, graduate borrowers have the highest DE ratios but the lowest default rates.

VI.C. The Distribution of Debt by Income Level

Figure 6 illustrates the relationship between the amount of debt a borrower has accrued and his or her earnings. The upper panel shows nonparametric estimates of the density of earnings.³⁰ The lightest line shows the earnings density for borrowers with less than \$25,000 in debt, and the moderately dark line shows the earnings density for borrowers with between \$25,000 and \$75,000 in debt. The darkest line shows the earnings density for borrowers with a large amount of borrowing—more than \$75,000, which corresponds roughly to the 95th percentile of outstanding debt. The sample is restricted to individuals between the ages of 25 and 34 and individuals with a positive loan amount. As a basis for

30. The kernel density estimate at a point x is given by $\hat{f}_K = \frac{1}{hn} \sum_{i=1}^n K\left(\frac{x - x_i}{h}\right)$, where h is the bandwidth of an Epanechnikov kernel K .

Figure 6. Relationship between Student Debt and Student Earnings



Source: U.S. Treasury tabulations of 4-percent NSLDS sample matched to de-identified tax records.

a. Figure shows kernel density estimates of the earnings distributions of borrowers with different levels of debt and of the total population of earners (both with and without debt). Sample is restricted to individuals between the ages of 25 and 34.

b. Figure shows mean earnings two years after entering repayment by student debt balance.

comparison, the dashed line shows the density of all tax filers between the ages of 25 and 34.³¹

The lower panel shows average income in \$10,000 borrowing bins in 2010. The figure shows that the larger the student debt balance, the more the student tends to earn. This relationship is intuitive—students with larger debts tend to have been enrolled longer, achieved higher levels of educational attainment, pursued higher levels of postsecondary education (such as a bachelor's or graduate degree instead of a certificate), and have attended 4-year institutions where borrowing amounts are greatest, which tend to be the more selective 4-year institutions. For these reasons, borrowers with more debt tend to earn much more.

Figure 6 also shows that borrowers tend to have higher earnings than non-borrowers. Individuals between the ages of 25 and 34 with no student debt earn \$37,545 on average, while individuals with student debt earn \$43,224. In addition, larger debt amounts are strongly correlated with higher earnings, with mean incomes of \$51,555 for borrowers with more than \$25,000 in debt and \$40,612 for borrowers with less than \$25,000 in debt. Borrowers with student debt above \$75,000 on average earn slightly more than \$60,000, and there are significantly more individuals with debt above \$75,000 than those with less debt who earn more than \$100,000. The online appendix provides additional information on debt balances and the distribution of debt by borrower incomes as well as their family income, including information regarding the characteristics of borrowers with especially large balances.

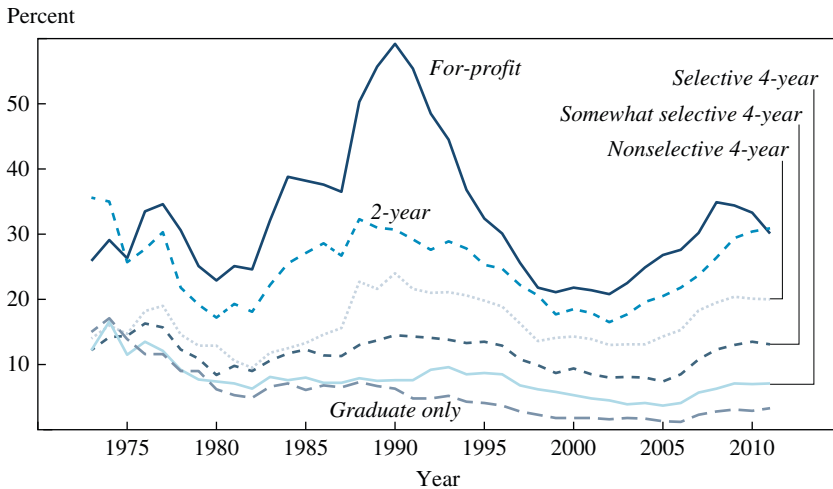
VII. Default Rates and Repayment

Since its inception in the early 1990s, the 2-year cohort default rate (presented in figure 1) has been the most common indicator of student loan defaults. Cohort default rates are defined by the year in which a cohort enters repayment and are given by the fraction of borrowers who default within a certain number of years after that cohort begins entering repayment. The analysis in this section provides more detail on historical trends in this 2-year measure by institution type and alternative measures of default beyond the 2- and 3-year cohort default rate.

VII.A. Measures of Default and Delinquency

Figure 7 disaggregates the historical 3-year cohort default rate by type of institution first attended. There are large and persistent differences in default

31. The income density is estimated from earnings information and approximated using the log-normal distribution $\mu = 10.1986$, $\sigma = 0.989679$.

Figure 7. Historical 3-Year Cohort Default Rates by Institution Type, 1972–2012^a

Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. The 3-year cohort default rate is defined as the fraction of borrowers entering repayment (on all loans) in each fiscal year who subsequently enter default by the end of the fiscal year two years later. Cohorts are defined by the fiscal year that they enter repayment.

rates across institution type, with nontraditional borrowers experiencing the highest rates of default. Moreover, default rates are most volatile among these borrowers, with default rates rising (and falling) more dramatically among for-profit and 2-year borrowers. Much of the previous 1990 peak in student loan defaults (which led to the introduction of the 2-year cohort default rate rules, the “85/15” rule limiting eligibility to Title IV funds, and automatic wage garnishment of borrowers) was driven by increasing default rates among certain fly-by-night institutions in the for-profit sector (Bennett, Lucchesi, and Vedder 2010), with default rates remaining largely unchanged and even declining in this time period at more selective institutions. Figure 7 shows that over the course of the recent recession, default rates surged among for-profit borrowers, 2-year college borrowers, and borrowers from nonselective 4-year institutions. However, default rates of traditional borrowers increased more modestly and generally remained at or below the levels that prevailed as recently as the mid-1990s.

While default is a salient outcome, it might not capture the increasing loan burdens among borrowers who use alternative payment plans or use forbearance or deferment to suspend payments. Measuring default rates within a certain time frame is important in comparing default rates

between cohorts. However, the relatively short-term cohort default rates exclude outcomes that occur later (or are deliberately deferred outside of a particular default-rate window). The use of forbearance, deferment, and income-based repayment plans is especially relevant following the Great Recession, as take-up has expanded and a large fraction of recent borrowers enroll in these programs. For instance, we estimate that about half of borrowers in recent cohorts have entered into forbearance in their first year of repayment. The use of these programs has helped many students facing labor market challenges avoid default. However, it obscures the fact that many more students may be struggling to repay their loans and that their loan balances remain unpaid, with interest that can continue to accrue.

To examine this, we focus on several alternative measures of loan performance: longer-term default rates, which are defined as the fraction of borrowers who have ever defaulted in a specified period of time after entering repayment; rates of negative amortization, which we define as the fraction of borrowers who owe more in a given subsequent year than they did when entering repayment; and repayment rates, defined as the fraction of total principal and interest a borrower has paid after a given number of years. All of these measures point to deteriorating repayment outcomes, with an especially sharp decline in loan performance among nontraditional borrowers.

The first set of columns in table 8 present the share of borrowers by institution that owe more two years after entering repayment than they did when they first entered repayment. This can occur not only because students defaulted (made no payments but accrued interest) but also in other circumstances where interest is accruing faster than payments are being made. For example, it can occur when a student is in forbearance or deferment and has unsubsidized loans and during the first few years of a graduated repayment plan. It can also occur if, under an income-based repayment plan, the borrower's income is sufficiently low that required payments fall below interest accruals and result in negative amortization. As table 8 shows, rates of negative amortization have surged, with almost three-quarters of for-profit borrowers in the 2012 cohort apparently owing more than when they started borrowing.³² Rates of negative amortization are also rising within all institution types as more borrowers avail themselves of lower payment options to manage their finances during periods of hardship. These options delay or lower monthly payments, thus alleviating short-term repayment pressure,

32. Prior to 1998, interest accruals on certain loans are missing. Hence, prior to 1996, rates of 2-year negative amortization are lower because they exclude these accruals. The series before and after 1996 are consistently defined.

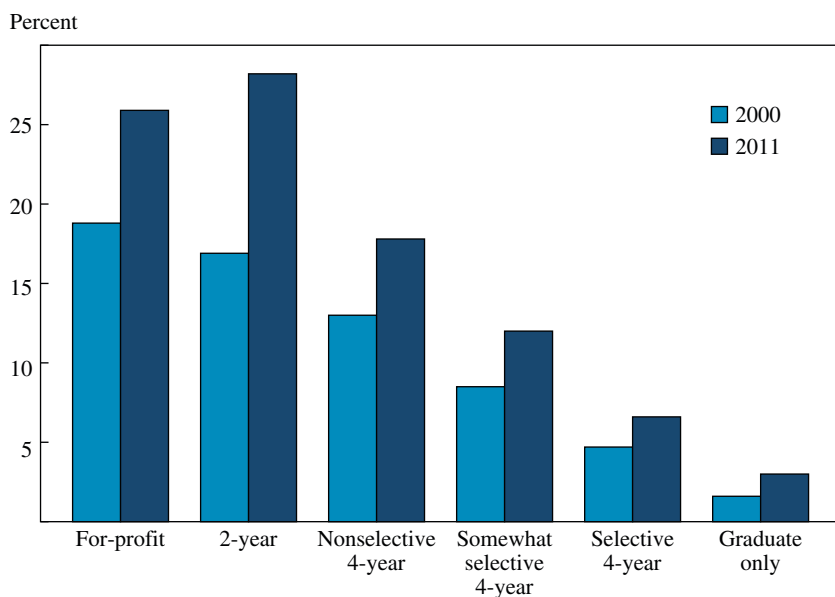
Table 8. Alternative Measures of Loan Performance: Negative Amortization and 5-Year Default Rates, 1986–2012

Repayment year	Percent of borrowers who owe more two years after entering repayment						5-year cohort default rates (percent)							
	All	For- profit	2-year	Non- selective 4-year	Somewhat selective 4-year	Selective 4-year	Graduate	All	For- profit	2-year	Non- selective 4-year	Somewhat selective 4-year	Selective 4-year	Graduate
1986	9	14	12	8	6	4	6	24	41	32	18	14	9	8
1987	9	12	12	8	8	5	6	26	42	32	19	15	10	8
1988	16	22	17	13	8	6	6	37	57	38	27	16	11	9
1989	21	31	19	14	10	6	6	40	62	37	27	17	10	8
1990	23	34	21	17	11	7	7	42	65	37	28	18	10	9
1991	21	32	20	16	10	7	6	38	61	35	26	18	10	7
1992	19	29	19	16	12	9	6	33	56	34	26	18	12	7
1993	16	23	20	16	12	9	8	30	52	36	27	18	12	7
1994	16	22	20	18	13	11	10	25	43	33	26	17	11	6
1995	17	22	22	19	15	12	11	22	38	30	24	17	11	5
1996	33	37	38	37	32	28	29	20	35	29	22	15	10	4

1997	37	42	41	41	35	30	31	18	33	28	20	14	9	4
1998	33	42	39	36	31	26	27	17	30	26	18	13	8	4
1999	34	43	39	38	31	25	26	16	29	24	19	12	8	3
2000	34	43	39	40	31	25	25	16	30	24	19	20	7	3
2001	33	42	37	39	31	25	26	16	30	23	19	12	6	2
2002	33	44	37	37	30	25	23	16	31	23	18	11	6	2
2003	33	44	37	37	29	23	23	17	33	25	18	11	6	2
2004	34	48	40	38	30	23	22	18	36	27	19	11	6	2
2005	36	52	43	40	30	23	21	18	36	27	19	10	5	2
2006	39	54	45	43	33	24	22	19	37	28	20	11	5	2
2007	42	56	46	45	35	26	23	24	40	32	24	15	8	4
2008	44	61	48	45	36	25	25	27	47	35	27	17	9	5
2009	47	66	53	48	38	27	28	28	47	38	27	18	10	5
2010	53	73	59	54	43	31	32							
2011	56	72	62	56	46	34	34							
2012	57	74	64	59	48	36	36							

Source: U.S. Treasury tabulations of 4-percent NSLDS sample. Selectivity data come from Barron's Educational Series (see text).

Figure 8. Increases in 3-Year Cohort Default Rates by Institution Type, 2000 and 2011 Cohorts^a



Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

a. Cohorts are defined by the fiscal year that they entered repayment. See notes to figure 7 for definitions of default rate.

though interest continues to accrue, and potential financial liabilities of both the student and the federal loan program continue to grow.

The right-hand side of table 8 presents a longer-term perspective on default rates by showing 5-year cohort default rates by institution type. For the 2009 cohort, 47 and 38 percent of borrowers at for-profit and 2-year public and private institutions, respectively, defaulted within 5 years. This is a sharp increase from the 1999 cohort, in which 29 and 24 percent of for-profit and 2-year borrowers defaulted. The 5-year cohort default rates increased between the 2009 and 1999 cohorts at all institution types, but the increase was much smaller at more selective institutions. For example, at the most selective institutions, 5-year cohort default rates increased from nearly 8 percent for the 1999 cohort to 10 percent for the 2009 cohort.

Figure 8 compares the 3-year default rate for the 2000 repayment cohort to that of the 2011 cohort. It illustrates that for-profit, 2-year, and non-selective schools have higher default rates than other institutions. While default rates have increased at all types of institutions, the increases have

been greatest at for-profits and 2-year institutions. This figure is the starting point for the analytical exercise that follows, which attempts to quantify the contribution of the changes described above.

VII.B. Why Have Default Rates Increased?

FACTORS ASSOCIATED WITH DEFAULT How have changes in the pool of borrowers, the institutions they attended, and their educational and labor market outcomes contributed to rising default rates? To help answer this question, we draw on Oaxaca-Blinder decomposition methods to quantify how changes in the observable characteristics of borrowers affected default rates. In this approach, we first estimate basic models of default that represent the 3-year cohort default rate as a function of the type of institution first attended, the characteristics of borrowers, and their post-schooling outcomes. We then use those models to determine how the overall default rate would change holding fixed the model parameters—that is, the likelihood of default conditional on the characteristics of borrowers—but applying the model to borrowers in an alternative year.

For example, consider a simple decomposition of the 9.7-percentage-point increase in the 3-year cohort default rate between 2000 and 2011. Over that period, the share of borrowers who were nontraditional increased from roughly 30 to 48 percent, and nontraditional borrowers in 2011 were approximately 19 percentage points more likely to default than other borrowers. Holding fixed that 19-percentage-point difference, this implies that the change in the share of nontraditional borrowers increased overall default rates by about 3.4 percentage points, or 35 percent of the total 9.7-percentage-point increase. The remaining increase is attributable to increases in default rates within groups—the 10-percentage-point increase in default rates among nontraditional borrowers and the 4-percentage-point increase among traditional borrowers.

Of course, this simple example ignores any concurrent shift in the institutions borrowers attend, the characteristics of borrowers, their educational attainment, or their labor market outcomes. In the remainder of this section, we outline a decomposition approach to examine a variety of observable factors associated with student loan default using a logit model of the following form:

$$(1) \quad D_i^* = \alpha_i + \beta X_i + \gamma Z_i + \varepsilon_i,$$

where D_i is an indicator of default and D_i^* is an unobserved latent variable such that if $D_i^* > 0$, $D_i = 1$, otherwise $D_i = 0$. The term α_i is an indicator for

institution type and school; X_i captures characteristics determined before enrollment, such as family income or dependency status; and Z_i captures characteristics determined after enrollment, such as labor market earnings or duration. The term ε_i is a standard logistic distribution error term, which is assumed to be orthogonal to the outcome conditional on the observables Z_i and X_i . The i subscript denotes the individual student. We assume that $\Pr(D_i = 1|X) = \Lambda(X'\beta)$, where Λ is the cumulative distribution function of the standard logistic distribution.

The model and results are presented in table 9. The characteristics X_i , determined before enrollment, are listed in table 9, and include dependency status, age, gender, family income, marital status, and whether the borrower was a dependent or a Pell Grant recipient. Characteristics Z_i , determined after enrollment, are also listed in table 9, and include duration of enrollment at each institution type, whether the borrower was ever a graduate student, and log income and earnings. The sample is limited to graduate and undergraduate borrowers who entered repayment within 10 years of starting school (to exclude unusual enrollment patterns and parent borrowers). Further discussion of variable construction and data sources is provided in online appendix A.

The first three columns of table 9 pool the entire sample, while columns 4 through 7 split the sample into the 2000 and 2011 cohorts. There is a strong relationship between the type of school attended and loan default, with nontraditional borrowers substantially more likely to default than other borrowers, as indicated by the larger coefficients on for-profit and 2-year indicators. Among traditional borrowers, the selectivity of institutions is strongly associated with default, with borrowers from nonselective schools experiencing default probabilities closer to those of nontraditional borrowers than to those of borrowers from selective institutions.

Even when controlling for observables, the relationship between school type and default remains substantial (and statistically significant at the 1 percent level), but the coefficients drop significantly when individual controls are added, as seen in columns 2 and 3. This is consistent with the evidence above that the rising enrollment of higher-risk borrowers is concentrated in the for-profit and 2-year sectors, at least part of the relationship between default and school type being driven by selection. For instance, students at for-profits and 2-year colleges tend to come from lower-income backgrounds, tend to earn less after graduation, and have weaker academic backgrounds compared to other students. In other words, because attending a for-profit or 2-year institution is correlated with other characteristics that increase default risk, the coefficient on the for-profit indicator pools both

Table 9. Factors Associated with Default^a

	(1) <i>Pooled</i>	(2) <i>Pooled</i>	(3) <i>Pooled</i>	(4) 2000	(5) 2011	(6) 2000	(7) 2011
For-profit	0.460*** (0.0132)	0.340*** (0.0139)	0.131*** (0.0136)	0.331*** (0.0266)	0.346*** (0.0163)	0.130*** (0.0234)	0.130*** (0.0172)
2-year	0.532*** (0.0140)	0.446*** (0.0156)	0.185*** (0.0172)	0.338*** (0.0286)	0.479*** (0.0181)	0.140*** (0.0263)	0.206*** (0.0219)
Nonselective 4-year	0.431*** (0.0152)	0.373*** (0.0159)	0.174*** (0.0170)	0.282*** (0.0256)	0.404*** (0.0193)	0.144*** (0.0247)	0.186*** (0.0221)
Somewhat selective 4-year	0.296*** (0.0144)	0.286*** (0.0146)	0.143*** (0.0151)	0.205*** (0.0204)	0.316*** (0.0188)	0.110*** (0.0197)	0.156*** (0.0204)
Selective 4-year	0.164*** (0.0137)	0.167*** (0.0137)	0.076*** (0.0140)	0.123*** (0.0175)	0.181*** (0.0184)	0.067*** (0.0174)	0.075*** (0.0194)
Age ^b		-0.003*** (0.0001)	-0.002*** (0.0001)	-0.002*** (0.0002)	-0.004*** (0.0002)	-0.001*** (0.0002)	-0.002*** (0.0002)
Female		-0.063*** (0.0019)	-0.051*** (0.0018)	-0.046*** (0.0025)	-0.071*** (0.0026)	-0.038*** (0.0023)	-0.057*** (0.0025)
Married ^c		-0.091*** (0.0032)	-0.069*** (0.0032)	-0.072*** (0.0039)	-0.096*** (0.0046)	-0.053*** (0.0038)	-0.075*** (0.0045)
Has children ^d		0.086*** (0.0057)	0.064*** (0.0051)	0.072*** (0.0087)	0.088*** (0.0074)	0.050*** (0.0074)	0.066*** (0.0068)
Family income under \$5,000 ^e		0.127*** (0.0037)	0.071*** (0.0033)	0.075*** (0.0052)	0.153*** (0.0048)	0.049*** (0.0046)	0.084*** (0.0044)
Family income \$5,000–\$25,000 ^e		0.062*** (0.0025)	0.045*** (0.0024)	0.032*** (0.0033)	0.078*** (0.0034)	0.025*** (0.0030)	0.056*** (0.0032)
Dependent		-0.028*** (0.0025)	-0.021*** (0.0024)	-0.014*** (0.0032)	-0.034*** (0.0034)	-0.010*** (0.0030)	-0.026*** (0.0033)
Pell Grant recipient		0.030*** (0.0022)	0.007*** (0.0020)	0.017*** (0.0033)	0.035*** (0.0028)	0.000 (0.0027)	0.011*** (0.0027)
Has graduate loans			-0.054*** (0.0070)			-0.041*** (0.0073)	-0.059*** (0.0106)

(continued)

Table 9. Factors Associated with Default^a (Continued)

	(1) <i>Pooled</i>	(2) <i>Pooled</i>	(3) <i>Pooled</i>	(4) 2000	(5) 2011	(6) 2000	(7) 2011
Earnings ^f			−0.051*** (0.0014)			−0.029*** (0.0017)	−0.062*** (0.0019)
Income ^f			−0.017*** (0.0008)			−0.011*** (0.0011)	−0.020*** (0.0011)
<i>Years of attendance^g at</i>							
For-profit			−0.014*** (0.0017)			−0.004 (0.0029)	−0.018*** (0.0022)
2-year			0.003 (0.0019)			0.000 (0.0029)	0.003 (0.0025)
Nonselective 4-year			−0.003 (0.0016)			−0.005* (0.0020)	−0.002 (0.0023)
Somewhat selective 4-year			−0.006*** (0.0015)			−0.004* (0.0018)	−0.007*** (0.0021)
Selective 4-year			−0.008*** (0.0019)			−0.005* (0.0021)	−0.010*** (0.0028)
Graduate			−0.005 (0.0039)			0.003 (0.0042)	−0.012* (0.0057)
No. of observations	147,770	147,733	147,703	46,774	100,927	46,753	100,918

Source: U.S. Treasury tabulations of 4-percent NSLDS sample matched to de-identified tax records. Selectivity data come from Barron's Educational Series (see text).

a. This table gives results from the logit model presented in-text. The dependent variable is an indicator of whether or not a loan defaults within three years of repayment (a loan is in default if a payment is more than 270 days overdue). The sample is restricted to individuals who entered repayment in 2000 or 2011 who had first started borrowing within the preceding 10 years at the undergraduate or graduate level (excluding parent loans). All specifications include indicator variables for institutions with more than 50 observations in 2011 (about 1,250 aid recipients per cohort), approximately the largest 600 institutions. The omitted school type category is graduate-only borrowers. Additional sample restrictions are given in the header above each column. Statistical significance indicated at the *10 percent, **5 percent, and ***1 percent levels. Huber-White robust standard errors in parentheses.

b. Refers to the age when an individual entered repayment.

c. Refers to filing status two years after entering repayment.

d. Refers to number of dependent children two years after entering repayment.

e. Family income as recorded on the borrower's first FAFSA.

f. Earnings and income are the inverse hyperbolic sine of earnings and total family income (adjusted gross income before adjustments) two years after entering repayment.

g. Years of attendance variables are years of active borrowing at each institution type.

the causal effect of attending a for-profit and unobserved characteristics correlated with both default and attending a for-profit.

Low family income is associated with default (and statistically significant at the 1 percent level). Students from lower-income backgrounds are substantially more likely to default than their peers from higher-income households. Attainment, measured by years of schooling at each institution type, shows a strong relationship with default, as students with more years of schooling generally have a lower risk of default. Accumulating more years of schooling is generally associated with better labor market outcomes and, in addition, the years-of-schooling variables are also a proxy for whether a borrower has dropped out (for example by reflecting a borrower's having attended for only a few years).³³ Labor market outcomes, like earnings and income, are also closely related to default, with higher-income borrowers substantially less likely to default.

Comparing the specifications in columns 4 through 7, the coefficients on each covariate are of the same sign and generally of a similar magnitude, indicating that the relationship between observables and default is similar across years. The basic patterns observed are consistent with the default regressions found by Laura Greene Knapp and Terry Seaks (1992). However, for the 2011 cohort, the effects of most covariates appear larger than in 2000, including family income, educational attainment, labor market outcomes, and school types; this suggests that along these dimensions, borrowers' outcomes diverged further among the 2011 cohort. The increasing effect of school types is consistent with changes in the selection of borrowers and the increasing enrollment of borrowers who are more likely to default on student loans.

DECOMPOSITION ANALYSIS We use decomposition methods to examine how much of the increase in default rates can be explained by changes in the characteristics of students, the institutions they attended, and their labor market outcomes, under the strong assumption that the relationship between these observable characteristics and the likelihood of default remained the same in 2000 and 2011. Under this assumption, we use the models estimated above to predict how default rates would have changed because of changes in these observable characteristics, holding fixed the other parameters of the model, and interpret the predicted increases in default as the amount that can be explained by changes in the characteristics. We use a

33. While institution-reported completion measures are included in the data, completion appears to be underreported in earlier years, making reliable comparisons between 2000 and 2011 difficult.

nonlinear variation on the standard Oaxaca-Blinder decomposition, which offers two significant advantages.³⁴ First, student loan defaults lie in the tail of the distribution, where linear estimators tend to perform poorly. Second, there are large gaps in explanatory variables between 2000 and 2011, and linear estimators can lead to predicted probabilities above 1 or below 0.

The results of the decomposition do not necessarily have a causal interpretation because the counterfactual depends on whether regression results reflect a causal relationship between particular variables and default. For example, changes in earnings may or may not have had a causal impact on default rates, depending on whether earnings have had a causal impact on default through liquidity constraints or another channel, and depending on whether earnings are correlated with default through unobservable channels such as primary schooling or access to family resources. The strong association between attending a for-profit and defaulting could reflect both the causal impact of attending a for-profit and the effect of unobservably riskier students sorting into for-profits. To date, there has been more descriptive evidence and less analysis of the causal impact of various factors on default, and many questions remain open. This point is important where policy recommendations are concerned. Policies aimed at lowering defaults by affecting observed correlates of default may or may not have their intended effect depending on the causal nature of the relationship between the particular variable and default.

Table 10 presents the results of the nonlinear decomposition.³⁵ The first row of table 10 shows 3-year cohort default rates in 2000, the second row shows default rates in 2011, and the third row shows the difference. The fourth row shows the change associated with observed explanatory variables (endowments) given by the procedure outlined above. The first and second columns include only indicators for the type of institution attended and school dummies for larger institutions. The first column uses the 2011 coefficients to predict default rates in 2000, while the second column uses the 2000 coefficients to predict default rates in 2011.

The results in columns 1 and 2 indicate that between one-quarter and one-half of the total increase in default is associated with changes in the types of institutions students attend. Columns 3 and 4 add family background and student characteristics (age, gender, marital status, family

34. For further detail on the nonlinear procedure developed by Blinder (1973) and Oaxaca (1973), a detailed description is given in the online appendix.

35. The results are similar using a linear decomposition.

Table 10. Nonlinear Decomposition of Increase in Student Loan Default^a

	(1) <i>Full sample</i>	(2) <i>Full sample (reversed)</i>	(3) <i>Full sample</i>	(4) <i>Full sample (reversed)</i>	(5) <i>Full sample</i>	(6) <i>Full sample (reversed)</i>	(7) <i>Nontraditional borrowers</i>	(8) <i>Traditional borrowers</i>
2000 cohort default rate	0.125	0.125	0.125	0.125	0.125	0.125	0.219	0.086
2011 cohort default rate	0.222	0.222	0.222	0.222	0.222	0.222	0.318	0.125
Difference ^b	-0.097	0.097	-0.097	0.097	-0.097	0.097	-0.096	-0.039
Endowments ^c	-0.048	0.026	-0.050	0.038	-0.061	0.051	-0.042	-0.013
School type ^d	-0.048	0.026	-0.038	0.024	-0.020	0.011	-0.025	-0.005
Background ^e			-0.012	0.015	-0.006	0.009	0.000	0.000
Education ^f					-0.007	0.009	0.022	0.002
Labor market ^g					-0.028	0.022	-0.039	-0.010
<i>Percent of total difference</i>								
Total	50	26	52	40	63	53	43	33
School type ^d	50	26	39	25	20	11	26	14
Background ^e			13	15	7	9	0	-1
Education ^f					7	10	-23	-5
Labor market ^g					29	23	41	26

Source: U.S. Treasury tabulations of 4-percent NSLDS sample matched to de-identified tax records.

a. See text and table 9 for description of the model covariates and sample selection. In columns 1, 3, 5, 7, and 8, the base year is 2011 and the counterfactual is 2000 using covariates from the 2011 model. In columns 2, 4, and 6, the counterfactual is reversed. Statistical significance indicated at the *10 percent, **5 percent, and ***1 percent levels.

b. Shows the difference between the 2000 and 2011 cohort default rate. For columns 1, 3, 5, 7, and 8, this is the 2000 cohort default rate minus the 2011 cohort default rate; for columns 2, 4, and 6, this is the 2011 cohort default rate minus the 2000 cohort default rate.

c. Shows the difference between simulated default rates using the counterfactual distribution of observables.

d. Includes indicators for type and selectivity of institution attended and institution fixed effects for institutions with more than 50 observations (large schools).

e. Includes characteristics of the borrower, including age, gender, marital status, family income, and whether borrower received a Pell Grant.

f. Includes whether a graduate student and years of attendance at each institution type.

g. Includes inverse hyperbolic sine of earnings and income.

income, and whether the student was a dependent or Pell Grant recipient). The results in these columns indicate that approximately 15 percent of the increase in default is associated with changes in family background, after controlling for institution. Columns 5 and 6 add controls for labor market outcomes (earnings and income), educational outcomes (like duration of enrollment by institution type and whether the borrower has graduate loans), and background characteristics. The results in these columns indicate that approximately one-quarter to one-third of the increase is associated with deteriorating labor market outcomes (conditional on the other factors).

Looking across columns, the association between school types and default drops when individual characteristics are included, which suggests that the school type indicators are capturing unobserved student-specific factors. Changes in family background characteristics over the time period lead to little change in default rates in the aggregate, largely reflecting the fact that family income did not change much on average as borrowing increased among both lower- and higher-income families. While nontraditional borrowers were from poorer families, traditional borrowers tended to be from somewhat higher-income families. The largest contributors are changes in labor market characteristics, which explain roughly one-quarter of the increase in student loan default. Because family background and labor market outcomes are highly correlated with the institutions borrowers attend, it is difficult to distinguish in the aggregate analysis whether changes in default are arising because of changes in where borrowers attend or changes in the characteristics of the borrowers themselves. The decomposition results indicate that, taken together, changes in observable characteristics of borrowers, institutions, and their labor market outcomes are associated with between one-half and two-thirds of the increase in default between 2000 and 2011.

The final two columns of table 10 present the full decomposition separately for nontraditional and traditional borrowers to examine how changes in borrowers' characteristics and outcomes are associated with sector-specific default rates. Changes in labor market outcomes and family background characteristics explain between one-half and two-thirds of the increase in default among nontraditional borrowers. Roughly one-third of defaults appear to arise for reasons unassociated with characteristics of students or outcomes that we observe; these other reasons may include characteristics or quality of their education or institution, as well as unobserved indicators of students' financial hardship, their expectations about future changes to loan programs, and their willingness to pay. At

nontraditional schools, decreases in earnings and increases in borrowing are associated with a substantial portion of the increase in default; however, much of this is offset by changes in education duration and completion variables, which are associated with a decrease in default rates. Among traditional borrowers at 4-year public and private institutions, changes in labor market outcomes and family background explain a smaller portion of the increase in default, changes that are somewhat offset by changes in education and background-related variables that were associated with decreases in default rates.

The final two columns also illustrate that a large portion of the increase in default rates—almost 5.5 percentage points for nontraditional borrowers and 2.6 percentage points for traditional borrowers—cannot be explained using information we observe. In other words, while a large share of the increase in default rates can be associated with changes in institutions, students, and the labor market, the overall default rate is also rising for other unobserved factors, particularly among nontraditional borrowers.

While much of the increase in default is associated with observed changes in the characteristics of borrowers, institutions, and labor market outcomes, a sizable portion is not. Several unobserved characteristics are likely to be important, leading to an underestimate of the role of institutional factors or borrower backgrounds. For instance, David Deming, Claudia Goldin, and Lawrence Katz (2012) find that students' satisfaction with their institutions is an important contributor to default and that satisfaction is lower among for-profit institutions. Similarly, it is possible that other differences in educational quality, school-specific differences in loan counseling, and other characteristics of students, like their financial situation and their employment prospects, may also have changed, contributing to higher rates of default among borrowers.

A limitation of this approach is that it does not identify the cause of any particular explanatory variable's effect on default. For instance, labor market outcomes among nontraditional borrowers could deteriorate because of (unobserved) changes in the characteristics of the borrowers themselves, such as being drawn from lower-skilled groups, or changes in the characteristics of the institutions they attended. For example, the observed effect of earnings on defaults pools several factors: not only the causal effect of earnings on default but also the fact that borrowers with low earnings might have attended programs that they were unlikely to complete or that did not lead to better jobs, as well as economic shocks that disproportionately affected those borrowers. Moreover, it is possible that part of the change in earnings is due to direct effects of the type of school attended, and it is also

possible that the observed effect of schools is partly driven by certain types of students selecting into certain types of institutions.

In summary, a substantial portion of the overall increase in defaults is associated with nontraditional borrowers, both because they are a rising share of all borrowers and because their default rates have increased. Additionally, lower earnings and deteriorating labor market outcomes are associated with a significant fraction of the increase in default rates between 2000 and 2011.

VII.C. The Outlook: Changes in Borrowing Patterns Post-Recession

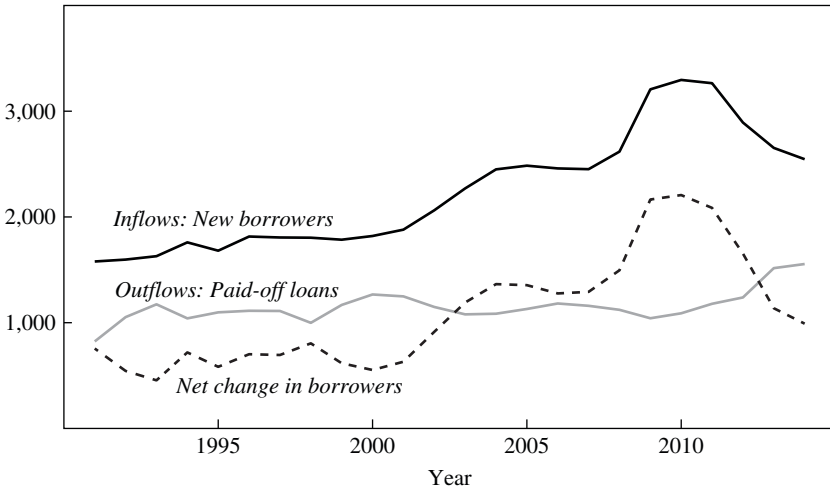
Borrowing tends to rise in recessions because enrollment increases and borrowing per enrollment increases as well. Educational enrollment is countercyclical, both because adverse economic conditions decrease the opportunity cost of college attendance and because they increase financial pressure due to lower earnings and assets.³⁶ The Great Recession was no exception to this pattern; during the period, inflows into borrowing increased sharply, and then they declined following the recovery. Moreover, three additional factors related to and coinciding with the Great Recession could have increased borrowing. First, pressure on state budgets led to cuts for many public institutions. Part of these cuts may have been passed on to students, leading to higher borrowing. Second, access was restricted in many alternative credit markets. The restricted availability of other forms of lending may have led to increased student loan borrowing, especially from students who otherwise would have relied on private parental borrowing. Finally, federal initiatives providing information to Unemployment Insurance recipients may have induced many individuals to utilize federal aid and borrowing programs to enroll in college (Barr and Turner 2015a, 2015b). Hence, whether these pressures and patterns are likely to persist has important implications for the long-term costs and benefits of federal lending programs.

Figure 9 shows that the inflow of new borrowers and the outflow of borrowers who paid off loans changed substantially during the recession, but more recently they have begun approaching prerecession levels. Prior to 2002, each year about 1.8 million new borrowers took out loans for the first time and almost 1.2 million borrowers repaid their loans in full; hence the number of outstanding student loan borrowers was increasing by just under 700,000 borrowers a year. Starting in 2003 and continuing through 2007,

36. For example, see Bound, Lovenheim, and Turner (2010).

Figure 9. Changes in the Stock of Borrowers: Flows Into and Out of Indebtedness, 1991–2014

Thousands of borrowers



Source: U.S. Treasury tabulations of 4-percent NSLDS sample.

about 2.4 million new borrowers took out first-time loans each year, and over 1.1 million paid off their loans entirely. Hence, the annual increase in the number of borrowers almost doubled to 1.3 million. At the onset of the recession, from 2009 to 2011, the number of new borrowers each year increased sharply, rising to 3.3 million, and the number of borrowers paying loans off entirely edged down to 1.1 million, leading to an increase in the number of borrowers each year of more than 2.1 million.

More recently, the number of borrowers paying off loans has also increased, rising from the recent low of about 1 million in 2009 to 1.6 million in 2014. Led by reductions at both for-profit schools, where first-time borrowing started to drop in 2011, and at 2-year colleges, where it started to drop in 2012, the number of new borrowers fell to 2.5 million in 2014. Given the lag between enrollment, borrowing, and loan repayment, many of the borrowers who enrolled during the Great Recession entered into repayment in 2010 and later (see figure 2).

Just as the sharp rise in new nontraditional borrowers during the Great Recession contributed to rising rates of default, the recent unwinding of recession-related enrollment trends (particularly at for-profit and 2-year institutions), improving economic conditions, and increasing enrollment

in income-based repayment plans are likely to put downward pressure on default rates. When the recession waned, millions of borrowers left school and became responsible for making loan payments for the first time. Hence, not only were there vastly more federal borrowers, but many of them were in their first years of loan repayment, a time when borrowers' careers are just starting and their earnings are the most variable. The wave of borrowers who had begun to borrow during the recession began to start repayment on those loans in increasingly large numbers from 2011 through 2014, when almost 4 million borrowers entered repayment—more than double the number in a typical year prior to the recession. Because borrowers are most likely to default in the first three years of repayment, that wave of borrowers has or will translate into a surge in the number of defaults in 2013 through at least 2015.

However, the life cycle of borrowing makes default a lagging indicator, and the current high rate of delinquency obscures several more favorable recent trends. In particular, the number of new borrowers at for-profit and 2-year institutions has dropped substantially, due to the end of the recession and due to increased oversight of the for-profit sector, which is likely to improve the risk characteristics of future repayment cohorts. That change in composition, together with the slowdown in the number of new borrowers and efforts by the Department of Education to expand and encourage the use of income-based repayment programs, is likely to put downward pressure on loan delinquency in the near future.

Another important metric for gauging the persistence of adverse repayment outcomes is how today's borrowers manage their loan burdens and how much of their burdens are repaid over time. Recent cohorts have been paying off their loan balances at a slower rate than earlier cohorts, with the median borrower in the 2011 cohort actually owing more after two years than he or she owed in the first year of repayment. The typical borrower in cohorts that entered repayment in the late 1990s had repaid her balance within 10 years of entering repayment, but subsequent cohorts have repaid more slowly. This is especially true of nontraditional borrowers. The slowing repayment rates appear to be due to high rates of default in recent cohorts, as well as increased use of programs such as income-based repayment, forbearance, and deferment among unemployed or low-income borrowers, in which borrowers' payments are suspended or reduced. In 2010, 62 percent of borrowers in default appeared to be eligible for income-based repayment on the basis of a means test, which could suggest that many borrowers are unaware of alternative repayment options.

The first observation above (the shift in the composition of borrowers during the recession and the reversal of flows associated with the recession) suggests that more recent borrowers will have better outcomes than those during the recession, if only because the types of borrowers and institutions attended have shifted. But the latter observation (slowing repayment rates) suggests that if recent patterns persist, the burdens owed by yesterday's students may endure for years.

VIII. Concluding Remarks

This paper uses new administrative data sources to examine the characteristics of student loan borrowers experiencing high default rates and the reasons why default rates increased in recent years. We show that high rates of default and other measures of loan delinquency, like the fraction of borrowers failing to make progress repaying loans, are concentrated among nontraditional borrowers. Moreover, since at least 2000, the number of nontraditional borrowers increased rapidly, not only in absolute terms but as a share of federal borrowers and of outstanding balances, particularly in comparison to the number and composition of postsecondary students. More than 30 percent of recent nontraditional borrowers defaulted on their loans within 3 years, and many more are not making progress repaying their loans.

Regression analysis suggests that nontraditional borrowers experience higher rates of default in part because they are drawn from more disadvantaged backgrounds. For instance, nontraditional borrowers were older, more likely to be independent of their parents, from lower-income families, and living in more disadvantaged areas. They borrowed substantial amounts to attend institutions with low completion rates and, after enrollment, experienced poor labor market outcomes that made their debt burdens difficult to sustain.

However, even controlling for borrower characteristics, the institution a borrower attended is strongly associated with his or her loan outcome, suggesting that the relative disadvantage of nontraditional borrowers is insufficient to explain their worsening loan outcomes. How and why educational institutions matter is less clear in our analysis, although important factors are likely to include the quality of the program offered, persistence and completion rates, the program's labor market return, and students' satisfaction. Whatever the fundamental cause, many nontraditional borrowers clearly were not well equipped to succeed in the difficult labor market of the last few years, nor were they able to manage their debt burdens.

Increases in the number of nontraditional borrowers, changes in the institutions they attended, and their worsening labor market outcomes were therefore important contributors to the rise in overall default rates.

In contrast, default rates of traditional borrowers have remained low, and the labor market outcomes of many traditional borrowers have remained stable or even improved in recent years, despite the recession. Traditional borrowers tend to have higher incomes than the general population and to owe larger loan balances. Even traditional borrowers with large balances tend to do well, on average, mainly because they acquired their loan balances while attending selective schools or graduate and professional programs.

While outcomes are likely to improve for today's borrowers, concerns about the student loan program are likely to persist. One concern is that many institutions whose students experience high default rates, low repayment rates, and weak labor market outcomes continue to enroll high-risk borrowers, saddling these students with loans they struggle to pay and leaving taxpayers on the hook for their losses. In the past, policymakers have used institutional accountability measures, like the Cohort Default Rate and "90/10" rules, to reduce student and taxpayer exposure to certain institutions. As the experience in the early 1990s demonstrated, strengthened accountability can reduce defaults. However, such policies have trade-offs, because they may limit the educational opportunities of higher-risk or underserved students. Gauging whether such students (and taxpayers) would be better or worse off from accountability changes or whether policy changes would encourage new and better educational outcomes requires better measures of the returns to educational investments at different institutions.

A related concern arises from recent work that finds that unqualified aid—particularly aid limited only by costs of attendance—contributes to loan burdens by increasing students' educational costs and their need to borrow (Cellini and Goldin 2014; Lucca, Nadauld, and Shen 2015; Turner 2014). Ultimately, the value of the loan program to students and to the economy at large is determined by the quality and the economic return of the programs it supports relative to the costs of providing that education. This suggests that policymakers should look beyond indicators like default rates and attempt to measure and prioritize value and quality.

Admittedly, that is no easy task. However, improvements in data quality and availability may provide many opportunities to answer key questions, such as how labor market returns differ by program and institution, or how changes in financial aid or public funding affect tuition costs and borrowing. Answers to such questions could help improve the provision of federal aid in the future.

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Comments and Discussion

COMMENT BY

CAROLINE HOXBY This paper by Adam Looney and Constantine Yannelis decomposes the striking rise in the volume of student loans and the even more dramatic rise in the default rate on such loans. This is a great paper because it shines much-needed light on the crisis in student loans. It fills, fully but succinctly, what had been a tremendous information gap. It is a tour-de-force demonstration of how useful federal agencies' existing data can be when they are analyzed with the goal of informing policymaking. Indeed, the paper already has been and should continue to be game-changing in debates on student loans. With one small exception, I have nothing but praise for this paper in terms of the questions it asks, how it answers them, and the authors' choice of which material to emphasize.¹

The paper's most important finding can be stated simply: The rise in student loan defaults is not a puzzle. Rather, the defaults are predictable even with only a limited number of variables that are already observed or readily observable by private lenders and the federal government, including the degree program in which the student is enrolling, the control of the institution (for-profit, nonprofit, public), the program's selectivity, whether the student is nontraditional, and so on. To see why this finding about predictability matters so much, we must first review some economic logic. Afterwards, I return to the implications of the evidence.

GOOD POLICY SOLUTIONS ARE THE RESULT OF ACCURATE DIAGNOSIS Only when a problem has been properly diagnosed are we likely to propose the

1. The one small exception is that the authors focused on default, paying much less attention to income-based repayment. If, as now seems likely, many people in income-based repayment will ultimately not repay their loans, then income-based repayment is merely a slow method of default, and should be counted as such.

correct policy solution for it. Proper diagnosis is almost impossible in the absence of data analysis and a sound theoretical understanding. Suppose you were to go to a physician with a medical problem, and he did not bother to analyze your symptoms or compare them to data he already had about symptoms and diseases. Worse, suppose that he did not even give you a remedy for common symptoms but rather gave you a remedy based on anecdotes in the media about rare diseases. Even worse, suppose that your disease was a consequence of policies that he himself had facilitated. Worst of all, suppose that he had put those policies in place arbitrarily and without logical foundations.

That is our current student loan situation, except that the federal government is playing the part of the physician. The federal government has been aware of the crisis in student loans for some time yet, until this paper was written, did not allow its administrative data to be used by researchers to diagnose the problem. When federal leaders, including the president of the United States, propose solutions to the loan crisis, they motivate their solutions with anecdotes about students who are extremely nonrepresentative.² Because (prior to this paper) the federal government did not analyze its own data well, it failed to grasp that the crisis was deeply connected to policies that it itself—not colleges or students or lenders—had insisted upon. Worst of all, the problematic policies have never had a logical basis in economic reasoning. Should we be surprised that policies with no economic foundations produce unintended negative consequences?

APPLYING ECONOMIC LOGIC TO STUDENT LOANS Let us briefly review the economic logic that justifies social or government intervention in the market for student loans. Loans should be the tool of choice *if and only if* the problem is students' being liquidity constrained from investing optimally in their own human capital. If the problem is not liquidity constraints but that education produces social benefits that exceed private benefits, the appropriate solution is tuition that is subsidized (such as we see at public colleges). If higher education investments in students from disadvantaged backgrounds generate especially high social benefits relative to social costs, the appropriate solution is means-tested subsidies (such as the Pell Grant).

2. See, for instance, President Obama's remarks on Ashley in his "Remarks by the President on Opportunity for All: Making College More Affordable," June 9, 2014 (<https://www.whitehouse.gov/photos-and-video/video/2014/06/09/president-obama-speaks-student-loan-debt#transcript>). In this and numerous other speeches, the president has referred to his own and the first lady's experiences with student loans. These are experiences from which it is hard to derive policy lessons for the typical borrower or defaulter.

If students from disadvantaged backgrounds have especially high option value from trying higher education (because their secondary schools were less likely to inform them about whether and where they could succeed in higher education), then front-loaded subsidies aimed at disadvantaged students are the appropriate solution. I could provide many other examples that map a market failure to an appropriate solution. The point is that the *only* problem for which loans are the appropriate solution is liquidity constraints.

That being said, economic theory also indicates that we should expect failures in the market for student loans. The first and most important problem is that, owing to the illegality of indentured servitude, human capital cannot be put up as collateral for a loan. If a person fails to repay his loan although he is capable of it (moral hazard), a private lender cannot force him to work until the loan is repaid. Moreover, because people know that indenture is illegal, they may choose to take out student loans that they expect not to be able to repay (adverse selection). Since collateral is the main remedy for asymmetric information in loan markets (think of how a bank's ability to repossess a house addresses moral hazard and adverse selection), the uncollateralizability of student loans can generate grave market failures. A second problem is that it might be socially optimal to forgive all or part of a loan if a person suffers from a disabling event or takes up nonremunerative but socially beneficial (public service) work. Private lenders would have great difficulty contracting on such contingencies. Their determination of disability would be subject to question and the definition of public service would surely change over time.

Government intervention in student loans is justified if it remedies the aforementioned problems. In particular, the government has much greater ability to garnish earnings and tax refunds than private lenders do. The government can also outlaw the discharge of student loans in bankruptcy. While these two provisions of the student loan program (wage garnishment, lack of discharge in bankruptcy) do not *solve* the collateral problem, they certainly mitigate it. Additionally, the government has unusual powers to determine and enforce definitions of disability and public service. Under its current loan forgiveness and forbearance programs, the government itself repays some or all of a loan, letting disabled students and public servants "off the hook."

We have now reviewed the economic logic that justifies wage garnishment, lack of discharge in bankruptcy, and certain types of loan forgiveness. However, there is no economic logic for the single most important government intervention in the student loan market: the prohibition on actuarially fair underwriting. That is, the federal government insists that

students face interest rates and loan limits that do not reflect their expected ability to repay. Even if we can easily gather data that show that students who enroll in a particular program have an extremely high risk of default, the federal government insists that those students be offered the same terms as students who enroll in a program for which default risk is negligible. The federal government also prohibits taking account of the share of postsecondary investment that students and colleges make from their own funds, as opposed to borrowed funds. This is akin to forbidding lenders from considering down payments when underwriting mortgages.

There is no economic logic for these prohibitions. Perversely, they introduce market failures that need not exist. Low-default-risk students face unduly high interest rates and unduly low loan limits, causing them to underinvest. Students who would avoid high-default-risk programs if the risks were signaled through fair interest rates and limits do not see any such signals. They thus enroll where they would not if we did not ban their receiving information that lenders would freely make available. Institutions that add little or no value have slight incentive to improve because loans to their students are just as attractive as loans to students who attend schools with a high value added. Moreover, as we shall see, the unjustified prohibitions on fair underwriting are deeply connected with the student loan crisis.

Before returning to the paper and its evidence, it is worthwhile addressing two often-heard concerns. First, students may be high-risk human capital investments through no fault of their own. That is, their disadvantaged backgrounds may have caused them to be poorly prepared for college, uninformed about which program would suit them, and so on. Fair underwriting would thus have the average effect of lowering their loan limits and raising their interest rates. (Note that this would only be the average effect. A disadvantaged student who was well prepared and enrolled in a program with low default rates would, under fair underwriting, enjoy more generous limits and lower interest rates than she does now.) But prohibiting fair underwriting is not an appropriate solution to disadvantaged students' tendencies to be underprepared and underinformed. These are not liquidity problems, and the lack of fair underwriting simply aggravates the information problem. These problems would best be addressed by solutions such as means-tested, front-loaded subsidies, free remediation, or a free first "trial" semester or year of schooling.³

3. A better solution would be elementary and secondary education such that students who were equally able and motivated would end up being equally prepared for and informed about college, regardless of background. This is not, however, a proximate remedy.

Second, President Obama and others often say that private lenders, before the federal takeover of student loans, took middleman profits but faced no risk because the government guaranteed repayment.⁴ Thus, they would have had no incentive to do fair underwriting had they been allowed to do it. This is true, but the fault was entirely due to the federal government's ignoring economic logic. Logic dictates that the federal government should have employed its enforcement powers (for example, wage garnishment and the ability to outlaw the discharge of loans in bankruptcy) to ensure that payments that could be made did get to private lenders—thereby collateralizing the loans to the extent possible. However, the government need not have guaranteed private lenders against default (except in cases where it wanted to offer loan forgiveness). If the government had simply stopped where economic logic told it to stop, private lenders would have had every incentive to underwrite correctly.

LACK OF FAIR UNDERWRITING IS THE PROXIMATE CAUSE OF THE STUDENT LOAN CRISIS All this discussion of underwriting would be irrelevant if researchers were to find, on digging into loan data, that little of the variation in default rates could be explained. After all, if default rates were unpredictable, lenders would offer all students similar terms even if the government allowed fair underwriting. However, Looney and Yannelis demonstrate that default is predictable even if one uses only a few simple variables that already appear in federal and lenders' databases. They show that default is highly concentrated among students (i) who attend for-profit and, to a lesser extent, public 2-year schools, (ii) who enroll in nondegree, certificate-granting, and 2-year programs, (iii) who attend nonselective schools, and (iv) who are nontraditional. The rise in default rates is not mysterious; rather, enrollment in always-default-prone categories has been rising. In contrast, the probability of default among students enrolled in selective 4-year schools remains so small that such students are almost certainly facing excessively high interest rates and excessively low loan limits. The number of students enrolling in selective 4-year programs has also increased only a little. Indeed, if the authors had gone further and showed how much of the today's default rates could be predicted by a school-times-program fixed effect (default history), they could undoubtedly have shown that fair underwriting would differentiate interest rates and limits by *specific* schools and programs, not merely *types* of schools and programs.

4. See, for instance, President Obama's "Remarks by the President on Higher Education," April 24, 2009 (<https://www.whitehouse.gov/the-press-office/remarks-president-higher-education>).

Notice that the variables considered by Looney and Yannelis are variables that lenders are allowed to use for underwriting under the Equal Credit Opportunity Act.⁵ Indeed, the authors' demonstration of predictability is all the more striking because they denied themselves the use of many variables that would be allowable under the Act. For instance, they did not use students' progress once enrolled in postsecondary school, the track record of students' high schools, or measures of students' incoming preparation.

The point is that if the federal government had not prohibited fair underwriting and, rather, had stuck to the interventions justified by economic logic, the bulk of the default crisis would not exist. Loans with fair rates and limits would have steered students away from programs with low value added. Thus, such schools would have had either to improve or close. Far fewer students would now have loans that they cannot repay. Students would have internalized some of the benefits of studying harder and gaining admission to more selective programs. Economists would not now be concerned about the future budget liability that today's student loans represent. All this would have been accomplished smoothly through the price mechanism—with no need for demagogic speeches, far-fetched “sob stories” about student borrowers, and by-fiat closures of institutions like Corinthian.⁶

(Notice that I said that the *bulk* of the student loan crisis would not have occurred. Looney and Yannelis demonstrate that part of the crisis was transitory. In a recession, more students enroll in postsecondary education because opportunity costs are low but, since the additional students are disproportionately marginal in suitability, they tend to enroll for only short periods. Thus, their repayment problems show up quickly. This causes a temporary surge in default rates. However, problems like this can be addressed by a combination of fair underwriting and conditioning repayment terms on macroeconomic factors. For instance, when unemployment is high among recent college graduates, repayment periods could be extended or back-loaded, keeping each loan's net present value the same.)

What does the Looney and Yannelis paper imply for student loan policy? It does not imply something crude like a ban on loans to students

5. The Equal Credit Opportunity Act (15 U.S.C. 1691) prohibits lenders from discriminating on the basis of race, color, religion, national origin, sex, marital status, age, because an applicant receives income from a public assistance program, or because an applicant has in good faith exercised any right under the Consumer Credit Protection Act.

6. See, for instance, Stratford (2015).

at for-profit schools. Rather, it reminds us to apply economic logic so that society benefits from government interventions that can improve the financing of higher education (grants and tax benefits, as well as loans), but does not suffer from interventions that generate problems that need never have existed.

REFERENCE FOR THE HOXBYP COMMENT

Stratford, Michael. 2015. "Corinthian Dismantling Continues." *Inside Higher Ed*, April 15.

COMMENT BY

KAREN PENCE¹ Outstanding balances on government-guaranteed student loans more than tripled between 2000 and 2014, rising from \$310 billion to \$1.1 trillion.² Default rates on these loans increased from 12 to 21 percent over a comparable period.³ These dramatic changes have raised concerns about student debt burdens and the implications for young Americans' ability to save money, purchase homes, and achieve their life goals.

Policymakers and researchers who want to understand these trends have been stymied by a lack of data, and Adam Looney and Constantine Yannelis have stepped into this void. In a tremendous act of public service, they have merged the student-loan records and wage histories for more than 4 million borrowers from administrative data sets maintained by the U.S. Department of Education and the Internal Revenue Service. They have provided extensive analyses from these data both in their paper and in supplemental spreadsheets in their online appendix available on the Brookings website.

The headline finding from their research is that much of the rise in defaults stems from an increase in the share of borrowers in repayment

1. I am grateful to Ezra Becker, Sarena Goodman, Simona Hannon, Alice Henriques, Felicia Ionescu, Alvaro Mezza, Kamila Sommer, and Chris Smith for help with this discussion. The views in this discussion are mine alone and do not necessarily represent those of the Board of Governors of the Federal Reserve System or its staff.

2. All statistics are from the paper by Looney and Yannelis in this volume or their supplemental online appendix available on the Brookings website unless otherwise noted.

3. The default statistics compare the 3-year cumulative default rates for borrowers in the 2000 and 2011 cohorts as calculated under the Looney and Yannelis preferred method.

who attended for-profit schools or 2-year colleges. This increase stems from two factors. First, as the labor market deteriorated, the number of students who enrolled in college, and took out loans to do so, surged. Between 2008 and 2009, for example, the number of new first-time borrowers increased by 22 percent, and the increases at for-profit and 2-year schools were even higher, at around 32 percent. These students also entered repayment sooner than their counterparts at more selective schools because they were more likely to enroll in short-duration programs or to drop out of school before completing their degrees. For example, between 2010 and 2011, the increase in the number of borrowers entering repayment was 26 percent for for-profit schools, 43 percent for 2-year colleges, and only 13 percent for selective schools.

Borrowers from for-profit and 2-year schools have always had higher default rates than borrowers from other schools. For example, of borrowers who entered repayment in 2011, around 30 percent of those who attended for-profit or 2-year schools were in default three years later, compared with 7 percent of those who attended selective schools. As borrowers from for-profit and 2-year schools became a larger share of all borrowers in repayment, the aggregate default rate mechanically increased. Over time, though, these borrowers will become a smaller share of students in repayment, and the aggregate default rate should decline.

This compositional explanation for the rise in defaults is somewhat unsatisfying, however, as it sidesteps some larger questions. Why are default rates so high for borrowers at these schools? Do these high default rates suggest that the decision to enroll in these schools was a mistake? I will explore these questions in the remainder of this discussion.

To frame these larger questions, it is useful to think of student loan default as the end result of three decisions: to attend school, to finance education with student loans, and to default on those loans. The attendance decision depends on the expected increase in wages after attending school relative to the cost of attendance. The financing decision depends on the cost of student loans relative to other forms of finance. The decision to default depends on the student's ability and willingness to repay the loan.

The attendance decision is complicated because the expected returns to education are uncertain and unfold over many years. The student can affect the returns through the effort that she puts into her studies. But some components of the return—such as future labor market conditions—are outside the student's control, and other factors—such as the quality of the match between the student and the chosen field of study and the idiosyncratic evolution of her life circumstances—may be unknown at the time the

student begins school. A student may make a rational and prudent decision to attend college, and yet still end up with a poor wage realization.⁴

In the aftermath of the 2007–09 recession, job prospects for college graduates appear to have been somewhat worse than after other recent recessions. Job growth after the 2007–09 recession, unlike after the 2001 recession, was disproportionately concentrated in low-wage industries (National Employment Law Project 2014). Likewise, in the aftermath of the 2007–09 recession, the share of college graduates who ended up in jobs that did not require a college degree was somewhat higher than after the previous two recessions (Abel, Dietz, and Su 2014). These findings suggest that young adults could have had reasonable forecasts of the returns to college education—at least if those forecasts were based on the previous two recessions—when they made their enrollment decisions, and in this sense their decision to enroll was not a mistake even if they subsequently struggled to obtain jobs.

The cost component of the attendance decision (tuition and fees) is easier to forecast than the future wages component, although students who assumed that tuition would stay constant might have been surprised by the sharp increases seen over the past three decades. Published tuition prices are now 3.2 times more expensive in inflation-adjusted terms than in 1985 at public universities and 2.4 times more expensive at private universities (College Board 2015, figure 6). If the increase in tuition corresponded to an increase in educational quality, such that expected future earnings were higher, the rise in tuition would be less of a concern. However, at least some of the increase may stem from students bearing more of the cost of their education rather than from an increase in educational quality. At public schools, state budgetary pressures, often coupled with complex state legislative processes, appear to be responsible for some of the tuition rises.⁵ At for-profit schools, tuition appears to be sensitive to increases in the government loan limits (Cellini and Goldin 2014). Increases in tuition that do not correspond to increases in educational quality raise the probability of default; students must borrow more to cover their educational expenses, resulting in an increase in debt payments without any increase in expected wages.

4. That said, many students do not make accurate forecasts of the returns to college education. For example, students' enrollment decisions are more sensitive to small changes to tuition and to relatively minor information interventions than would seem optimal if students realized the implications for their lifetime wages (Cohodes and Goodman 2014; Hoxby and Turner 2015).

5. See Goodman and Henriques (2015) for a discussion of the decrease in state support for higher education in the 2000s.

Debt payments also rose during this period because students' incentives increased to finance their educational expenses with government-guaranteed student loans rather than from other resources. First, terms on government-guaranteed loans became more generous during this period. In 2006, for example, the PLUS program, which was formerly open only to parents of students, was expanded to let graduate students borrow as much as the full amount of their tuition and fees; in 2008, aggregate Stafford loan limits increased. Meanwhile, interest rates on Subsidized Stafford loans decreased annually from 2009 to 2012. Second, other sources of funding that might have financed students' education in the past, such as the earnings or home equity of their parents, came under considerable strain during the recession.

Against this backdrop, the fact that defaults were higher in 2014 than in 2000 is not surprising. The actual returns to schooling may have been lower than students expected, whereas debt obligations were higher, meaning that more students would not have the resources to repay their debt. The signs of these strains are apparent even among borrowers who attended selective schools. For example, the share of such borrowers who were unemployed two years after entering repayment rose from 6 percent for the 2000 repayment cohort to 8 percent for the 2012 repayment cohort, and the share whose balances were larger two years after beginning repayment—due to forbearance, repayment plans that allowed payments smaller than the interest, or nonpayment—rose from 25 percent for the 2000 cohort to 36 percent for the 2012 cohort. Meanwhile, the share who defaulted on their student loans within five years of entering repayment rose from 8 percent for the 2000 cohort to 10 percent for the 2010 cohort.⁶ For the most part, however, college attendance appears to have been a good investment for these students, with median incomes just below \$50,000 in the year that students entered repayment even during the worst years of the recession.

For students who attended for-profit colleges, the outcomes are much worse, almost catastrophically so.⁷ Looking at the 2012 repayment cohort, two years after beginning repayment 20 percent were unemployed, 37 percent had incomes at or below the poverty line, and 74 percent had student loan balances that were larger than when they began repayment. Median incomes in the year that students began repayment hovered around \$16,500 for all the recession and postrecession repayment cohorts.

6. These increases are more dramatic if measured relative to the experiences of the 2005 cohort: 5 percent of these borrowers defaulted within five years of beginning repayment.

7. A considerable share of borrowers who attended 2-year and nonselective 4-year colleges also had poor outcomes upon entering repayment, although not to the same extent as borrowers from for-profit schools. I focus on for-profit schools here for simplicity.

Why do so many of these borrowers have such terrible outcomes? Three possible and nonexclusive reasons come to mind. First, these borrowers come from families with fewer resources than other students, so they would have struggled more in any circumstance. Indeed, as shown in the paper, borrowers at for-profit schools are disproportionately likely to come from families with few financial resources and around 55 percent of them are first-generation college students.

Second, the education for-profit schools provide may not be effective in increasing borrowers' future earnings. Although this paper does not speak to that question, other researchers have documented that students with credentials from for-profit schools are less likely to be invited for a job interview than comparable students with credentials from public schools (Darolia and others 2015; Deming and others forthcoming). Likewise, students who attend for-profit schools appear to have lower wage trajectories after graduation than other students (Cellini and Chaudhary 2014).

Third, the outcomes for these students may be particularly sensitive to the business cycle. The evidence in the paper supports this idea. For instance, compare students who entered repayment in 2004—who experienced strong labor market conditions for the next two years—to those who entered repayment in 2009, at the depths of the recession. Two years after entering repayment, the unemployment rates for students who attended selective schools were 6 percent for the 2004 repayment cohort and 8 percent for the 2009 cohort; the corresponding shares of borrowers with incomes below the poverty line were 8 percent and 11 percent. For students who attended for-profit schools, the unemployment rates were 14 percent for the 2004 cohort and 21 percent for the 2009 cohort. The equivalent shares with incomes below the poverty line were 26 percent for the 2004 cohort and 35 percent for the 2009 cohort.

What do these data suggest about whether education is a good investment for students who enrolled in for-profit schools? The answer is hard to establish without knowing the wage profiles that the students would have experienced without attending for-profit colleges. However, as one rough benchmark, Jaison Abel and Richard Dietz (2014) suggest that the average income for 25- to 30-year-olds in 2013 with a high school degree was between \$25,000 to \$30,000.⁸ The estimates by Looney and Yannelis indicate that average income for a borrower from a for-profit school during the first couple of years of repayment in 2013 and 2014 was \$22,000 to \$27,000. This wage comparison—which admittedly does not control for

8. See chart 2 in Abel and Dietz (2014, p. 4).

Table 1. Distribution of Credit Scores in Year before Entering Repayment by Type of School Attended

<i>School type</i>	<i>Credit Score^a</i>				<i>No. of observations</i>
	<i>Less than 550</i>	<i>550–600</i>	<i>600–660</i>	<i>660 or higher</i>	
Public 4-year	24	10	17	50	2,879
Private 4-year, nonprofit	20	9	17	54	1,425
Public 2-year	48	11	14	27	1,220
Public, for-profit	63	8	9	20	532

Source: Tabulation by Alvaro Mezza, based on data set described in Mezza and Sommer (2015).

a. Credit score is the TransUnion Account Management Score version 2.0 as measured in the year before the student began repaying the loan. All values are in percentages. The sample spans the years 1998 to 2005.

many important differences between these groups—suggests that attending a for-profit school does not pay off for many students.

What do these data suggest about whether these students are in appropriate debt contracts? Student loan debt, unlike mortgages or auto loans, is not collateralized by objects that a lender can repossess in the event of default. Instead, the collateral is the borrower's future wages. Typically, debt secured by future wages—such as credit card debt—is considered uncollateralized. However, the Department of Education's extraordinary collection authorities, including its ability to garnish borrowers' wages, tax refunds, and Social Security benefits, and the fact that student loans are very difficult to discharge in bankruptcy, have essentially turned student loans into collateralized debt. And indeed, the Department of Education generally recovers at least 80 percent of defaulted loan amounts on a net-present-value basis, after taking collection costs into account (Department of Education, 2014, p. S-31).

Without this ability to attach wages, a lending market might not exist for students at for-profit colleges, because many are not good credit prospects. To illustrate this point, my table 1 shows the distribution of credit scores by type of school attended. The score is measured in the year before students start repayment. In other words, this score measures a student's ability to repay before she has the additional burden of repaying her student loans. The borrowers in this sample started repaying their loans in the 1998–2005 period.⁹

9. The credit score shown is the TransUnion Account Management Score version 2.0. For more details on this sample, see Mezza and Sommer (2015). I thank Alvaro Mezza for creating these estimates.

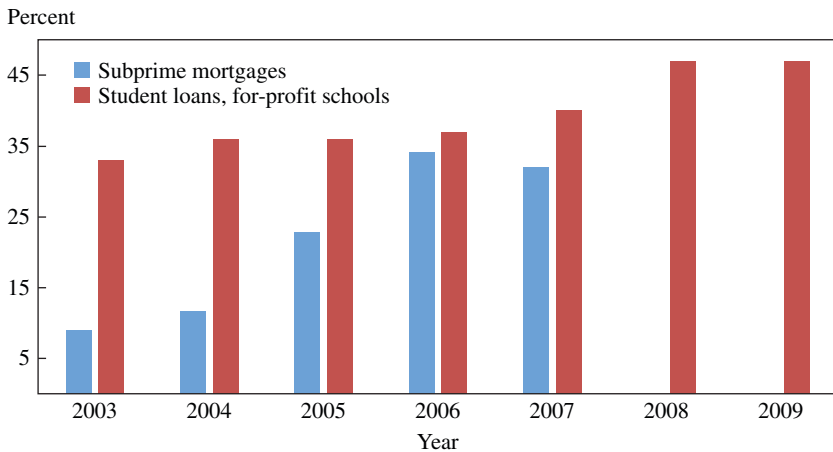
The table indicates that more than 60 percent of students enrolled at for-profit schools had credit scores lower than 550 in the year before they started repaying their loans. To put this score in perspective, borrowers in this category have at least a 12 percent chance of becoming 60 or more days delinquent on any loan in a two-year period.¹⁰ Only 20 percent have a credit score exceeding 660, corresponding to a 4 percent or less chance of becoming 60 or more days delinquent. In contrast, nearly the reverse is true for students who attended a nonprofit private institution before beginning repayment: 20 percent had credit scores less than 550, and 54 percent had credit scores exceeding 660. Alvaro Mezza and Kamila Sommer (2015) show that including these credit scores—again, which are measured before the student enters repayment—substantially improves the predictive power of a model of student loan default.

While the ability to recover collateral may mean that a loan program exists for these students, it also means that students bear all the downside risk of their educational investments. If the returns to education were within students' control, this allocation of risk might be appropriate. However, as noted earlier, returns to for-profit education appear to vary significantly with overall labor market conditions, which are outside students' control. In addition, the fact that more than half of these borrowers are first-generation college students suggests that they may not have much expertise within their networks of family and friends to draw upon in order to evaluate whether attending certain schools is a good investment.

As a thought experiment, it is interesting to compare the default outcomes of borrowers who took out subprime mortgages compared with those who took out student loans to attend for-profit colleges. Both types of borrowers tend to have poorer-quality credit records, and the returns to their investments were dependent on macroeconomic factors beyond their control—house prices in the case of subprime mortgages and wage growth in the case of student loans. At the peak of the housing bubble, both types of loans were about equally risky investments, at least as measured by default rates: Around 35 percent of borrowers who entered into repayment on these products in 2006 defaulted within the next five years (see my figure 1). The total number of borrowers in repayment was also about the same—around 6 million for both loan products in 2006 (my figure 2). The dollars in repayment, of course, were vastly different, as the average dollar

10. The source for this information is the TransUnion Account Management Score, version 2.0, validation odds summary.

Figure 1. Five-Year Cumulative Default Rates by Year Borrower Entered Repayment, 2003–09



Sources: Looney and Yannelis; Palmer (2015).

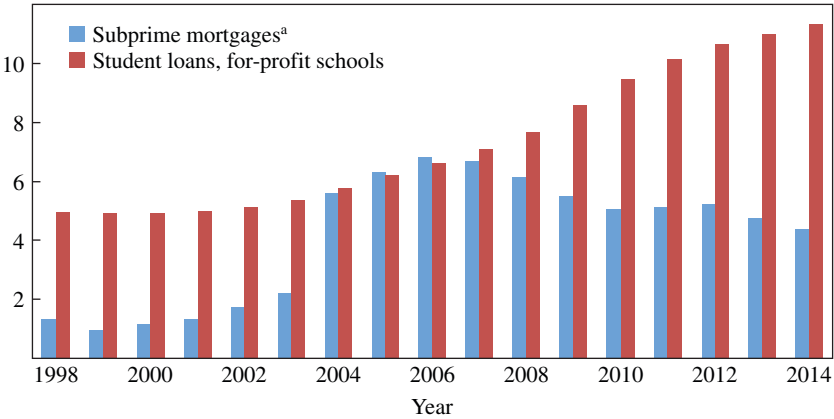
balance was around \$175,000 for a subprime mortgage and \$20,000 for a student loan for a for-profit college (my figure 3).¹¹

However, the incidence of the losses was quite different for the two products. Borrowers who defaulted on subprime mortgages lost their homes, but for the most part financial institutions bore the loss of the underwater part of the mortgage—that is, the difference between the mortgage amount and the house value—as well as any interest or fees that accumulated between the time of default and foreclosure, and the expenses associated with maintenance of the property. Borrowers who defaulted on student loans kept the human capital associated with the education, but were not able to discharge the underwater part—that is, the extent to which the increase in lifetime earnings fell short of the loan balance—and were responsible for the interest and fees that accumulated throughout the life of the loan.

11. Subprime mortgages also had profound consequences for the economy and for financial stability that seem unlikely to be repeated in the case of student loans. In addition to being much larger in aggregate dollar volume than student loans originated to borrowers at for-profit schools, subprime mortgages were repackaged into securities that were dispersed throughout the financial system as collateral for a wide variety of financial transactions and obligations. In contrast, the majority of outstanding student loans are held directly by the U.S. government. Subprime mortgages also appear to have had feedback effects on house prices; student loans do not have a similar effect on their collateral (human capital).

Figure 2. Borrowers with Outstanding Loans, 1998–2014

Millions of borrowers

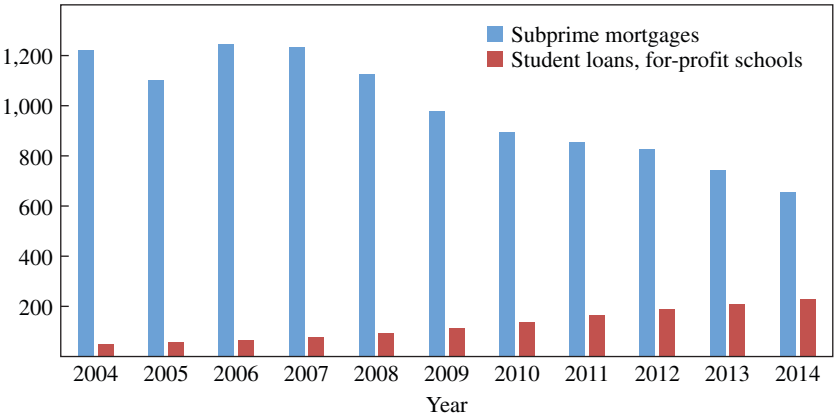


Sources: Looney and Yannelis; Federal Reserve Board staff tabulation based on data from the Mortgage Bankers Association; McDash Analytics LLC, a wholly owned subsidiary of Lender Processing Services; CoreLogic; the Federal Housing Administration; and the Federal Reserve Statistical Release Z.1, “Federal Accounts of the United States.”

a. Assumes number of subprime mortgages is equivalent to number of borrowers.

Figure 3. Outstanding Balances, 2004–14

Billions of dollars



Sources: Looney and Yannelis; Federal Reserve Board staff tabulation based on data from the Mortgage Bankers Association; McDash Analytics LLC, a wholly owned subsidiary of Lender Processing Services; CoreLogic; the Federal Housing Administration; and the Federal Reserve Statistical Release Z.1, “Federal Accounts of the United States.”

The heavy losses borne by private sector financial institutions resulted in a significant contraction of mortgage credit to subprime borrowers. As shown in my figures 2 and 3, the number and dollar amount of subprime mortgage balances have been decreasing since 2006, reflecting defaults and pay-downs on existing loans coupled with almost no new originations. Meanwhile, the fact that borrowers bear the losses for student loans has allowed the student loan market to continue to expand. In 2014, more than 11 million borrowers were repaying student loans originated to attend for-profit institutions, almost twice the number in 2006. Meanwhile, outstanding balances on these loans tripled in nominal terms over this period, from \$76 billion to nearly \$230 billion. The other major difference between these two types of loans, of course, is that borrowers who defaulted on their mortgages in 2006 have expunged the debt and moved on with their lives. Borrowers who defaulted on their student loans are likely still repaying that debt.

Is there a better way between these two alternatives—one that preserves access to education and credit for disadvantaged borrowers, but also shields borrowers from some of the consequences of macroeconomic events beyond their control? Some initiatives and programs under way will likely help students better forecast the returns to attending different colleges and provide some insurance against poor labor market outcomes. For example, the Department of Education has launched a College Scorecard website (<https://collegescorecard.ed.gov>) that contains comprehensive data on the average annual costs, graduation rates, and post-attendance earnings for more than 3,500 colleges and universities; these data will help students estimate the returns to education and put pressure on schools to improve outcomes for their students. Enhancing these data with forecasts of students' debt payments relative to earnings might further improve transparency. The Department of Education has also designed a variety of income-based repayment plans, under which a student's payment fluctuates with her income, and any unpaid balances are forgiven after 20 or 25 years. However, some students will end up paying more interest under these plans, and may owe taxes on any forgiven debt balance.

One possibility is giving schools more of an equity stake in their students' success or failure. Schools are in a better position than lenders to monitor the students that they are admitting, and can influence the quality of the students' education and thus their eventual economic outcomes. Under existing regulations, schools lose their eligibility to participate in the Pell Grant and Direct Loan programs if their default rates exceed certain thresholds. Additional proposals along these lines might better align incentives and

improve outcomes for students. However, because schools have the option to go out of business, such proposals will not be able to align incentives fully.

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GENERAL DISCUSSION Much of the discussion centered around whether it was the characteristics of the *students* or the *schools* that were more important in the apparent student loan debt crisis. David Romer observed that a common narrative is that the problems associated with rising student debt and default are attributable to the rise in for-profit schools, but that an alternative story is that the students who were more likely to have trouble in college began going to for-profit schools and community college when previously they were largely not going to school at all. He noted that Adam Looney and Constantine Yannelis's decomposition analysis appeared to provide significant support for the alternative story. His reading of their results was that they indicated that a smaller proportion of the rise in default rates was attributable to shifts in the composition of schools, and that a larger proportion came from student characteristics. Students who were likely to have difficulty in school or difficulty repaying student loans were going disproportionately to for-profit schools and community colleges. Romer therefore suggested that more emphasis be put on the students, and less on the schools themselves.

Martin Feldstein engaged discussant Caroline Hoxby regarding a claim that roughly two-thirds of student loan defaults are predictable. In response, Hoxby noted that the U.S. Department of Education, through its longitudinal surveys, can match very basic characteristics of the student—such as age and gender—with basic information on the student's achievement—such as test scores, high school grades, and the high schools they come from—to predict roughly 75 percent of the variation in default and repayment problems. She also agreed with Romer that the characteristics of the students are more important in predicting default than the institutions they attend, though the institutions do matter some. At the end of the day, it is the students who are good risks or bad risks, and the institutions add to that.

Henry Aaron stressed that even if default was more strongly associated with the characteristics of students than of schools, this did not imply that the students were more to blame than the institutions, a view he called “exceedingly misleading.” On the contrary, he argued that public policy flawed in design, as Hoxby emphasized, had created an enormous financial incentive for private institutions to exploit a particular population. To then say that the students are to blame for the resulting exploitation places responsibility in the wrong place, and is a misdirection in terms of appraising where the remedies to the policy come from.

Christopher Carroll also thought that accountability needed to lie with the institutions and less so with the students. While there is a lot of idio-

syncratic risk of default at the level of the individual person, the responsibility is at the place where the insurance across persons happens, namely, at the institution. He suggested that if an institution's students historically have a high rate of default on their loans, then the institution should have to put up collateral to the federal government, which would effectively accomplish the sharing of the idiosyncratic risk in a much more efficient way than is available to the students themselves. The right focus is the schools, he concluded; in order to align incentives properly while still allowing for insurance, it is the schools that should be held accountable.

Bruce Fallick agreed with Aaron and Carroll that more emphasis should be given to the institutions. One objective of public policy in the education domain, he claimed, is to allow students from disadvantaged backgrounds, who may have the capacity, to have the opportunity to achieve higher education. Traditional nonprofit institutions have an incentive to evaluate students on the basis of information beyond what is readily available in the public domain. By cutting off loans by institutional characteristics, as opposed to by individual characteristics, these incentives can be more easily aligned, and the "diamond in the rough" can more easily obtain higher education, he concluded.

Alan Blinder noted that one reason why student loans involve "horrendous" underwriting is that the distribution of income inevitably excludes some students who otherwise would not be able to avail themselves of higher education. By and large, it is a good idea to help those people, according to Blinder. He wondered if, in terms of policy, this might push the conversation away from loans and more toward grants.

Frederic Mishkin emphasized that what is important is thinking about exactly what the market failure is when it comes to student loans, which Douglas Elliott seconded. Perhaps it is an information problem, Mishkin suggested, in which students are not getting the information that they need to make informed decisions about higher education. The idea that for-profit institutions are just "bad guys" who need to be taken care of is not the right way to think about solving the problem, he argued. Focusing on the market failure aspect may help bring to light the kinds of innovations that could come from for-profit institutions, particularly in the online sector. The idea of simply closing down or otherwise severely punishing for-profit institutions, he concluded, could actually be very bad public policy.

Greg Mankiw asked the authors and discussants to comment on two ideas that have been floated that are related to postsecondary education and student debt. The first, most notably advocated by Charles Murray, is the idea that too many people are being pushed into postsecondary

education. Murray has argued that some people are not cognitively ready for college, and that more people should be pushed into apprenticeships after high school.

The second, which Mankiw associated with Luigi Zingales, is the idea of having equity investment in students. That is, a private investor could pay for a student's education in return for a small percentage of her eventual income over, say, the next 30 years. He added that the Internal Revenue Service might be the best agency for enforcing such a contract because it actively observes incomes. If such a policy were ever implemented, investors would have incentives to pick the best students and direct them to the best programs. Such a system, as opposed to the current student loan program, might provide higher incentive compatibility between the student and the financier. Aaron agreed that it might be interesting to play with the incentive schemes that might emerge under such a contingent repayment arrangement.

Jan Eberly suggested that future work look more seriously at PLUS loans. She noted that PLUS loans, which are generally held by parents of the students, do not have the same flexibility as federal undergraduate loans, and often they are not only held by parents, but sometimes by grandparents, aunts, uncles, and other adults who may have very little influence on the behavior of the borrower. PLUS loans, she concluded, are large and not well understood.

Adam Looney conceded that a lot of the increase in default rates among for-profit borrowers is unexplained by regression analysis. The real question, he argued, is how to apportion between the characteristics that are observed in the data and the unobserved characteristics of the students or the institutions. One explanation for why students sometimes default is that they were unsatisfied with their education when they left, which is generally not observable in the data, he noted.

Regarding Blinder's comments about grants and the distribution of income, Constantine Yannelis noted that student loans under the current system are not an effective form of redistribution, primarily for two reasons. First, student loans are not dischargeable in bankruptcy, and wages as well as Social Security payments can be garnished later in life. Secondly, student loans are regressive in that people who borrow more tend to earn more in the future.

On the question of grants, Yannelis noted that from the free market perspective, there is something very attractive about grants and vouchers more generally, and he wondered why they seem to perform so poorly in the education space. The current structure of the education market is one

in which nobody is paying with their own money, and where vouchers have virtually zero shadow cost. There is a certain market tension missing, and there does not seem to be a real cost to the investor. That tension is in play in a place where nobody is playing with their own money, and it is also in play when there are no loans and only grants.

Regarding the problem of underwriting, Yannelis noted that structuring the right kind of underwriting is a tough thing to think about because one would not want it to be conditioned on, for example, a student's economic background. Furthermore, the individuals themselves are probably not in a great place to understand what institution is going to be right for them, and whether they are qualified to make that decision. The institution, he argued, acts as an intermediary; by focusing more on the institutions than on the individuals as the place where the incentives could be strengthened, that could help achieve higher returns. In the current system, incentives are not aligned between the institutions and the students because the institutions do not currently bear the costs of defaults.

Regarding Mankiw's first question about whether or not some people should even go to college, Yannelis expressed optimism that there are higher returns to education more generally, including way down the income distribution. He noted that there are already some postsecondary programs that cater to extremely disadvantaged people, are entirely reliant on aid, and generally produce fairly good outcomes. He observed that it seems like there are way too few people who are taking advantage of those programs, and way too many people who are entering programs that they cannot finish and that do not lead to a degree that produces a high return. He advocated for trying to move people into places where they are going to have a high return, and to move people out of places where they have very low returns.

On Mankiw's second question about human capital contracts, Yannelis noted that they depend crucially on adverse selection into those contracts, and that currently there is not a lot of information about those parameters. He noted that Yale University tried a similar experiment in the 1970s, though the plan effectively fell apart precisely due to adverse selection concerns. On the other hand, some countries like Australia have income-based repayment systems that everyone is defaulted into, and that appears to work fairly well.