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## Is a Student Loan Crisis on the Horizon?



*Reuters*

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## Executive Summary

College tuition and student debt levels have been increasing at a fast pace for at least two decades. These well-documented trends, coupled with an economy weakened by a major recession, have raised serious questions about whether the market for student debt is headed for a crisis, with many borrowers unable to repay their loans and taxpayers being forced to foot the bill.

Our analysis of more than two decades of data on the financial well-being of American households suggests that the reality of student loans may not be as dire as many commentators fear. We draw on data from the Survey of Consumer Finances (SCF) administered by the Federal Reserve Board to track how the education debt levels and incomes of young households evolved between 1989 and 2010. The SCF data are consistent with multiple other data sources, finding significant increases in average debt levels, but providing little indication of a significant contingent of borrowers with enormous debt loads.

First, we find that roughly one-quarter of the increase in student debt since 1989 can be directly attributed to Americans obtaining more education, especially graduate degrees. The average debt levels of borrowers with a graduate degree more than quadrupled, from just under \$10,000 to more than \$40,000. By comparison, the debt loads of those with only a bachelor's degree increased by a smaller margin, from \$6,000 to \$16,000.

Second, the SCF data strongly suggest that increases in the average lifetime incomes of college-educated Americans have more than kept pace with increases in debt loads. Between 1992 and 2010, the average household with student debt saw an increase of about \$7,400 in annual income and \$18,000 in total debt. In other words, the increase in earnings received over the course of 2.4 years would pay for the increase in debt incurred.

Third, the monthly payment burden faced by student loan borrowers has stayed about the same or even lessened over the past two decades. The median borrower has consistently spent three to four percent of their monthly income on student loan payments since 1992, and the mean payment-to-income ratio has fallen significantly, from 15 to 7 percent. The average repayment term for student loans increased over this period, allowing borrowers to shoulder increased debt loads without larger monthly payments.

These data indicate that typical borrowers are no worse off now than they were a generation ago, and also suggest that the borrowers struggling with high debt loads frequently featured in media coverage may not be part of a new or growing phenomenon. The percentage of borrowers with high payment-to-income ratios has not increased over the last 20 years—if anything, it has declined.

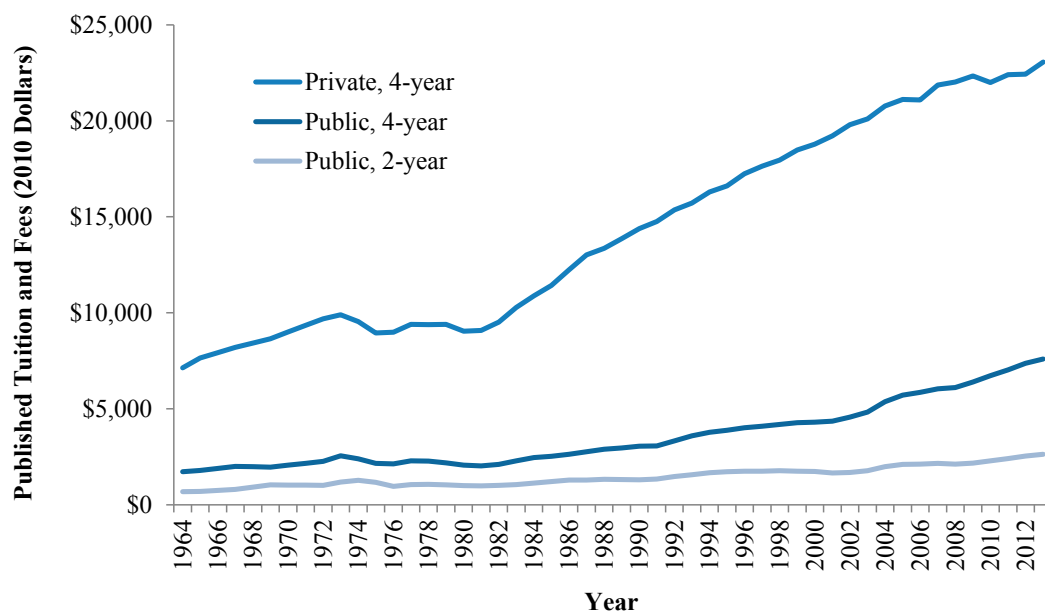
This new evidence suggests that broad-based policies aimed at all student borrowers, either past or current, are likely to be unnecessary and wasteful given the lack of evidence of widespread financial hardship. At the same time, as students take on more debt to go to college, they are taking on more risk. Consequently, policy efforts should focus on refining safety nets that mitigate risk without creating perverse incentives.



## Introduction

When the total balance of outstanding student debt passed the \$1 trillion mark two years ago, it prompted many to question whether the student lending market was headed for a crisis, with many students unable to repay their loans and taxpayers being forced to foot the bill (Mitchell and Jackson-Randall 2012). There is clear evidence that the number of students taking on debt to pay for tuition, fees, and living expenses while in college has been increasing and that debt burdens have been growing (see, e.g., Woo 2013). Over the last 20 years, inflation-adjusted published tuition and fees have more than doubled at four-year public institutions, and have increased by more than 50 percent at private four-year and public two-year colleges (Figure 1).

Figure 1. Trends in Published Tuition and Fees, 1964-2013 (2010 Dollars)



Source: Digest of Education Statistics 2013, Table 330.10

Media reports of students with large debts—often in excess of \$100,000—have garnered a great deal of public attention. However, the debt picture for the typical college graduate is not so dire. For example, bachelor’s degree recipients in 2011-12 who took out student loans accumulated an average debt load of approximately \$26,000 (\$25,000 at public institutions, and \$29,900 at private, nonprofit institutions). However, current debt levels represent substantial increases over previous levels, with debt per borrower 20 percent higher in inflation-adjusted terms in 2011-12 than it was ten years prior (Baum and Payea 2013). At the same time, extremely high debt levels remain quite rare: in 2012, only four percent of student loan balances were greater than \$100,000 (Brown 2013).

And despite the recent recession, the significant economic return to college education continues to grow, implying that many of these loans are financing sound investments. In 2011, college graduates between the ages of 23 and 25 earned \$12,000 more per year, on average, than high school graduates in the same age group, and had employment rates 20 percentage points higher. Over the last 30 years, the increase in lifetime earnings associated with earning a bachelor's degree has grown by 75 percent, while costs have grown by 50 percent (Greenstone and Looney 2010). There is also an earnings premium associated with attending college and earning an associate's degree or no degree at all, although it is not as large (Greenstone and Looney 2013a). These economic benefits accrue to individuals, but also to society, in the form of increased tax revenue, improved health, and higher levels of civic participation (Baum, Ma, and Payea 2013).

Consequently, it is not obvious that the growth in debt is problematic. Commentators have expressed concerns that increasing education debt loads are making it more difficult for borrowers to start families, buy houses, and save for retirement (see, e.g., Brown and Caldwell 2013, Lieber 2014, Shellenbarger 2012). But these concerns rest on an evidence base that is insufficient to determine what these increases in debt mean for the financial well-being of borrowers and for the health of the overall student lending market (see, e.g., Akers 2014b).

In this analysis, we build on the limited existing empirical evidence on student loans by using data from the Federal Reserve Board's Survey of Consumer Finances (SCF) to examine how and why education loan balances have evolved over time. Previous research has used the SCF to report trends in education debt for the U.S. population and various subgroups (see, e.g., Fry 2012). We contribute to this line of research by focusing on households led by adults between the ages of 20 and 40 (those most likely to be paying off their own student loan debt) and measuring the extent to which changes in degree attainment, tuition, demographics, and borrowing behavior have contributed to the observed increase in student debt. We find that changes in educational attainment, particularly the rising share of households with graduate degrees, explain about a quarter of the rise in loan balances. Increases in tuition are likely the largest driver of debt increases, but data limitations make it difficult to accurately quantify that impact.

Finally, we examine how the financial well-being of borrowers has evolved over time, using data on monthly payments and incomes. We find that, on average, increases in lifetime incomes among households with student loan debt more than offset increases in borrowing. We also find that the average burden of monthly payments for student loans has not increased over time, likely due to the fact that borrowers are repaying debts over longer periods of time. Taken together, these findings suggest that although there are surely individual borrowers facing financial hardship due in part to their student loans, the overall health of the student loan market is not nearly as dire as many popular narratives seem to suggest.

## Background and Data

In the United States, student lending takes place through two channels, the federal lending programs and the private market for student loans.<sup>1</sup> The federal lending program exists because, in the absence of government intervention, the private market would provide too few students access to loans, which would result in underinvestment in education at the national level. The basis for this theory is that, unlike physical capital, human capital—or the skills that one obtains through education—cannot effectively serve as collateral for a loan. This makes student lending inherently risky, because a lender cannot foreclose on a student’s education the same way it can foreclose on a borrower’s home if he goes into default. More generally, the federal loan program ensures that all students have access to higher education, regardless of their ability to pay.

Most student lending takes place through the federal government because the interest rates offered in federal lending programs are below those typically offered by private lenders. Interest rates on federal loans are set by legislation and do not depend on the likelihood that a borrower will default. The amount that students can borrow from the government depends on whether they are financially dependent on their parents (as defined by a federal formula) and on their year in college (including whether they are a graduate student). Students from households judged to have more financial need are eligible to borrow a larger portion of their federal loans through the subsidized loan program, in which the government pays interest while the student is in school. Federal student loans carry additional benefits beyond the below-market interest rates and in-school interest subsidies for eligible families. Borrowers who face financial hardship after leaving college are eligible for deferral or reduction of monthly payments, and even forgiveness through a number of repayment programs.

Some students also borrow from private financial institutions, usually after they have exhausted their ability to borrow from the government.<sup>2</sup> Unlike the loans offered in the federal lending programs, private lenders offer loans with interest rates that reflect a borrower’s likelihood of default. This means that borrowers from low-income households or borrowers attending colleges with lower completion rates are likely to face the highest rates. In addition, private student loans carry less generous repayment terms than federal loans, an important distinction given that both federal and private student loans are more difficult to discharge in bankruptcy than other types of consumer debt.

Despite the tremendous interest in the perceived problems in the student loan market, there is relatively little empirical evidence to support the discussion. This is partly due to the limitations of existing data sources. One important source of data on student aid is the Integrated Postsecondary Education Data System (IPEDS). These data, which are derived from the Department of Education’s survey of all institutions participating in federal student aid programs, report institution-level lending variables, including total outlays within the federal loan program and number of borrowers. Although this information is incredibly important, it does

not tell the whole story. For instance, IPEDS does not track the use of private loans, or contain any student-level information.

In addition to the data available through IPEDS, the U.S. Department of Education publishes the findings from a few different longitudinal studies, including Baccalaureate and Beyond (B&B) and Beginning Postsecondary Students (BPS), both of which draw their participants from the National Postsecondary Student Aid Study (NPSAS). NPSAS, which has collected detailed information on a representative sample of students every three to four years since the late 1980s, is the primary source of information on student aid. B&B and BPS are follow-up studies that track a specific group of NPSAS students for a set number of years. The B&B study collects data for up to 10 years following graduation from a bachelor's degree program, and the BPS study collects data for six years following initial enrollment in postsecondary education. These longitudinal data sources enable us to observe cumulative debt burdens for student borrowers, but only for select cohorts of specific types of students (first-time beginning students or bachelor's degree recipients). The most valuable feature of these studies for this area of research is that they collect information on both earnings and education liabilities. However, the small number of cohorts available and the relatively short periods of observation limit the usefulness of these data.

Two additional data sources not collected by the U.S. Department of Education have been used to answer questions about the evolution of the student loan market. First, the College Board has compiled annual reports that summarize both public and proprietary data on student borrowing. The public sources include those described above and additional data made available by the U.S. Department of Education. The proprietary data are collected through a survey of institutions administered by the College Board. The annual, Web-based survey collects data from nearly 4,000 accredited undergraduate colleges and universities. Although this data set succeeds in filling a void left by federal data, its usefulness is limited by the fact that some of the data are self-reported by institutions and thus are subject to inconsistencies in reporting and potential manipulation by institutions.

Another data source that has been used to produce evidence on the student loan market is the Federal Reserve Bank of New York's (FRBNY) Consumer Credit Panel. These data, which are based on the proprietary data used in credit bureau reports, capture longitudinal information on the debt portfolio of all individuals who have ever applied for credit. Researchers at the FRBNY have used this resource to compile data on outstanding student loan debt (Brown 2013). The primary shortcoming of these data for the purpose of understanding the state of the student loan market is that they do not capture much background information on borrowers, in particular their level of educational attainment and income.

The Federal Reserve Board administers a nationally representative survey that generates data with many of the features not available in the previously discussed data sources. The Survey of Consumer Finances (SCF)



is administered every three years and collects information on household finances. Unlike the Consumer Credit Panel, the SCF generates cross-sectional data. The most important advantage of the SCF is that it captures information on both earnings and liabilities, including student loans. Unlike the other data sources, the SCF is a household-level survey. This is advantageous for our analysis. Since financial decision-making often takes place at the household level, individual analysis could easily misrepresent an individual's financial well-being. Although the SCF lacks some background variables that would be useful to allow us to more fully understand the decision to take out education loans, it does report educational attainment, which is critical for this work. Since the SCF has been administered in a relatively consistent manner since 1989, it allows for thorough analysis of changes over time for the full U.S. population.

## Trends in Debt over Time

We measure student loan debt as the total outstanding balance, in 2010 dollars, of all education debt held by households, calculated on a per-adult basis (that is, we divide household debt by two for households where a spouse is present).<sup>3</sup> It is important to note that we measure the amount owed at the time of the survey, which will differ in many cases from the amount originally borrowed.<sup>4</sup>

The SCF data show a dramatic increase in education debt among households where the average age of adults is between 20 and 40 (we refer to this group as young households). Table 1, with key indicators depicted in Figure 2, shows that the share of young U.S. households with education debt more than doubled, from 14 percent in 1989 to 36 percent in 2010. Not only were more individuals taking out education loans, but they were taking out larger loans—not necessarily what you would expect as people cross the margin from being non-borrowers to borrowers. Among households with debt, the mean per-person debt more than tripled, from \$5,810 to \$17,916. Median debt grew somewhat less rapidly, from \$3,517 to \$8,500. Among all households, including those with no debt, mean debt increased eightfold, from about \$800 to about \$6,500.

Table 1. Incidence and Amount of Debt Over Time, Age 20-40

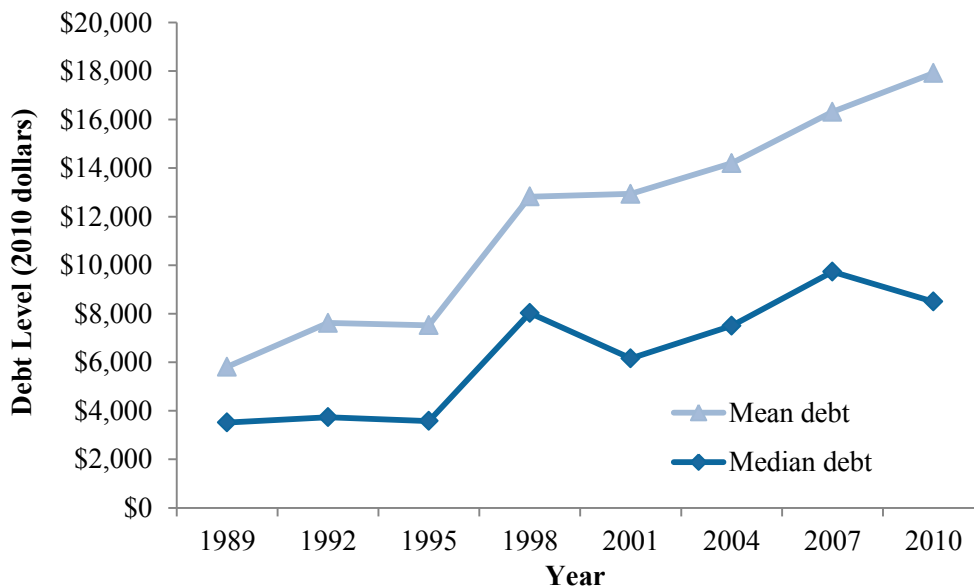
Year	Incidence	Mean Debt	Those with Debt		Cell size
			Mean	Median	
1989	14%	\$806	\$5,810	\$3,517	971
1992	20%	\$1,498	\$7,623	\$3,730	1,323
1995	20%	\$1,475	\$7,521	\$3,577	1,429
1998	20%	\$2,539	\$12,826	\$8,027	1,362
2001	22%	\$2,881	\$12,939	\$6,156	1,307
2004	24%	\$3,402	\$14,204	\$7,503	1,246
2007	28%	\$4,583	\$16,322	\$9,728	1,144
2010	36%	\$6,502	\$17,916	\$8,500	1,865

Notes: All amounts are in 2010 dollars.

In earlier decades, not only was the incidence of debt low, but most borrowers had very small loan balances. The change in the distribution of debt between 1989/1992 (combined to increase precision) and 2010 is depicted in Figure 3. Only a trivial number of households had more than \$20,000 in debt (per person) in 1989/1992, whereas in 2010, about a quarter of those with debt had balances exceeding \$20,000. The incidence of very large debt balances is greater now than it was two decades ago, but it is still quite rare. In 2010, seven percent of households with debt had balances in excess of \$50,000 and two percent had balances over \$100,000.

The focus on the age range 20-40 allows us to examine households that are likely to be within the repayment period of student loans while also capturing individuals who potentially take on graduate as well as undergraduate debt.<sup>5</sup> Because we focus on the remaining total balance of education debt, the trends over time we observe will reflect changes in both borrowing and repayment behavior.

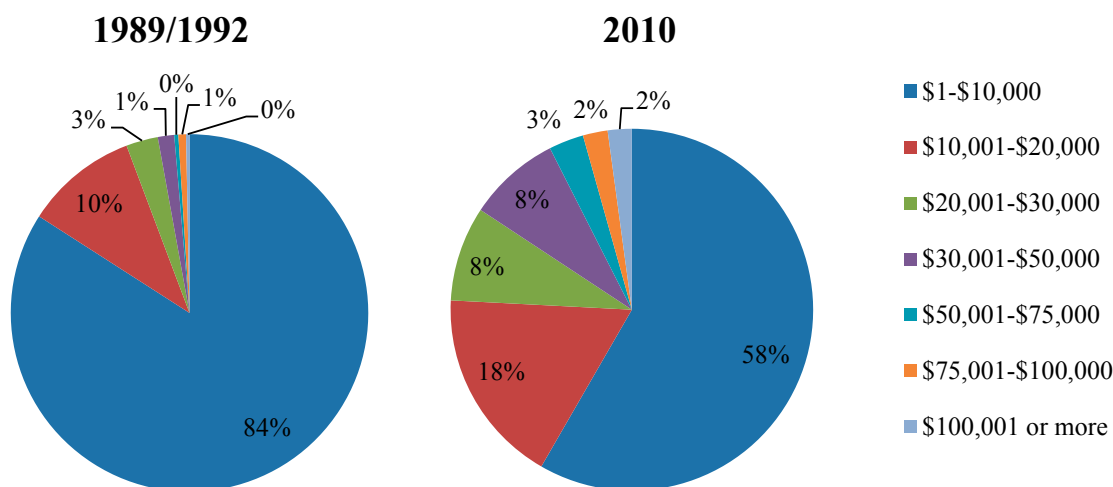
Figure 2. Trends in Debt over Time, 1989-2010



Notes: Based on households age 20-40 with education debt.



Figure 3. Distribution of Debt, 1989/1992 and 2010



Notes: Based on households age 20-40 with education debt. All amounts are in 2010 dollars.

## Explaining Changes in Education Debt

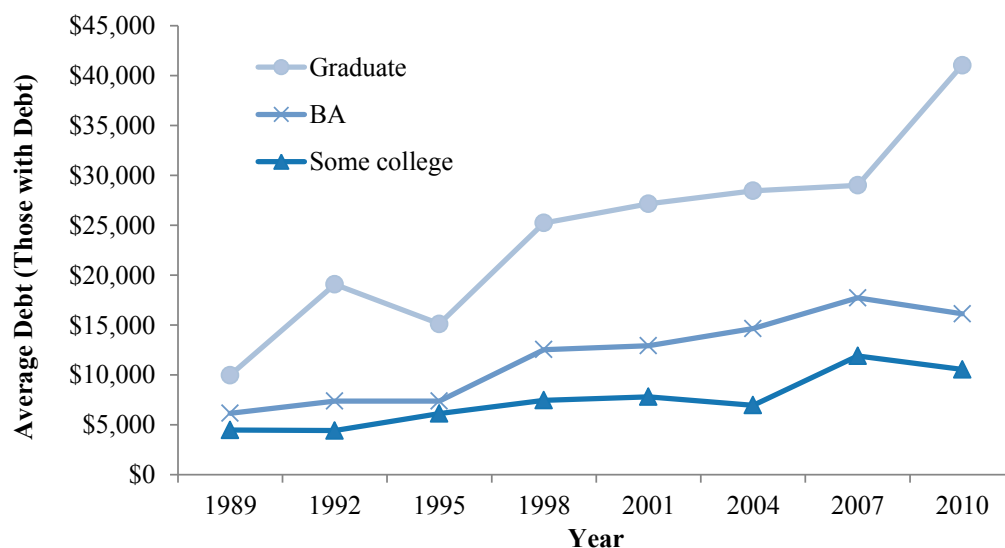
The large increases in education debt levels over the last two decades documented in the SCF data and other data sources are often attributed to the increases in tuition charged by colleges and universities. The tuition trends shown in Figure 1 certainly support that theory, although it is important to bear in mind that net price, what students actually pay after factoring in grants, has increased less rapidly (Baum and Ma 2013). There is also evidence that college students are relying more on debt to finance college costs and paying less out-of-pocket (Greenstone and Looney 2013b), suggesting that student behavior is changing in ways that favor loans over other ways of paying for college. Furthermore, there have been shifts in the educational attainment level and demographic characteristics of the U.S. college-age population that could impact observed student borrowing.

We begin by examining the extent to which changes in education debt levels can be explained by changing population characteristics. We primarily focus on educational attainment, as increased debt due to rising educational attainment may reflect rational human capital investments given the large and growing economic returns to education. Appendix Table 1 shows that educational attainment of young households rose between 1989 and 2010. The share of households with no college experience fell from 41 to 31 percent, the share with at least one person with a bachelor’s degree increased from 20 to 24 percent, and the share with at least one person with a graduate degree increased from 9 to 13 percent.<sup>6</sup>

It is not surprising that education debt levels vary markedly by educational attainment, but debt trends also vary noticeably along this dimension, with the largest increases in debt occurring among the most educated

households, as shown in Figure 4 and Appendix Tables 2a and 2b. Among households with some college but no bachelor’s degree, the incidence of debt increased from 11 to 41 percent.<sup>7</sup> Households where at least one member holds a bachelor’s degree saw an increase from 22 to 50 percent, and households with at least one graduate degree went from 33 to 58 percent. Among those with debt, the average per-person debt load increased 135 and 162 percent among households with some college and a bachelor’s degree, respectively. Households with a graduate degree saw an increase of 311 percent, from just under \$10,000 to more than \$40,000. The dramatic increase in debt taken on by graduate students observed in the SCF is consistent with trends from U.S. Department of Education data reported by Delisle (2014).

Figure 4. Average Debt by Educational Attainment, 1989-2010



Notes: Based on households age 20-40 with education debt. All amounts are in 2010 dollars.

Given the rising levels of educational attainment over the 21-year period from 1989 to 2010, and the concentration of debt increases among the more educated, to what extent do the changes in attainment explain the changes in debt? We address this question by calculating what the average debt in 2010 would have been had educational attainment remained at its 1989 level. We do this by calculating a weighted average of mean debt (including those without debt, in order to reflect changes in incidence) in 2010 by educational attainment, using the percentage of borrowers in the educational attainment category in 1989 as the weights. Between 1989 and 2010, average debt increased from \$806 to \$6,502, a change of \$5,696 (as shown in Table 1). Had attainment (measured as the maximum value in two-person households) remained the same, average debt in 2010 would have been \$5,343, a change of \$4,537. In other words, the change in attainment explains (statistically) about 20 percent of the observed change.

This calculation only takes into account educational attainment, and does so in a simple way by taking the maximum level of attainment for households. This will understate the role of increases in educational attainment, because an increase in the attainment level of the less-educated spouse in a couple will not alter the maximum attainment of the household. We next implement a multivariate decomposition that allows us to more accurately capture changes in educational attainment of the household and also adjust for race/ethnicity (the only potentially relevant demographic characteristic recorded in the SCF data). Appendix Table 1 shows that, between 1989 and 2010, the white share of the population fell and the Hispanic share rose. To the extent that race and debt are correlated, perhaps due to differences in debt aversion or wealth accumulation, these changes could also have contributed to (or mitigated) rising debt levels.

To more carefully account for changes in educational attainment and race, we implement a multivariate decomposition approach along the lines of the one used by Bound, Lovenheim, and Turner (2012). As above, we reweight the 1989 SCF to create a counterfactual distribution of debt in 2010 that captures what student debt would look like if population characteristics had remained constant between 1989 and 2010. To do this, we stack the 1989 and 2010 data and run the following logit regression:

$$I(\text{Year}=1989) = \beta + \delta Ed_{hh} \times Ed_{sp} + \gamma Race_{hh} + \epsilon,$$

where  $I(\text{Year}=1989)$  is a dummy variable identifying whether the observation is from the year 1989 (as opposed to 2010),  $\beta$  is a constant,  $Ed_{hh} \times Ed_{sp}$  is a vector of dummy variables identifying the full set of interactions between the educational attainment of the household head and the spouse (with one of the spouse education categories identifying households where there is no spouse),  $Race_{hh}$  is a vector of dummies identifying the race of the household head, and  $\epsilon$  is the error term. We then obtain predicted values  $\hat{I}$  from the logit regression and calculate a set of adjustment factors,  $\hat{I}/(1-\hat{I})$ , which are combined with the SCF survey weights.<sup>8</sup>

We then apply these adjusted weights to the 2010 data to calculate an estimate of what debt would have been in 2010 had educational attainment and race remained at their 1989 values. We find that mean per-person debt (among all households) would have been \$4,932 (instead of \$6,502) in 2010 had educational attainment and race remained at their 1989 values. In other words, the changes in educational attainment and racial composition explain 28 percent of the observed change.<sup>9</sup> Table 2 shows that changes in educational attainment explain most of this change, with shifts in race explaining very little. It is important to note that the SCF data do not include additional borrower characteristics that may contribute to changes in debt, such as their families' income when they were children, or the age at which they attended college. For example, the percent of postsecondary students who were age 30 or older increased from 15 percent in 1970 to 27 percent in 2011 (Digest of Education Statistics 2012, Table 224).

Table 2. Decomposition of Changes in Mean Debt, 1989-2010

	Mean Debt	Change from 1989	Share of Change Explained
1989 Debt	\$806		
2010 Debt			
No Adjustment	\$6,502	\$5,696	0%
Applying 1989 race	\$6,643	\$5,837	-2%
Applying 1989 education	\$5,006	\$4,200	26%
Applying 1989 education and race	\$4,932	\$4,126	28%
Applying 1989 tuition	\$3,573	\$2,767	51%
Applying 1989 tuition, education, and race	\$2,679	\$1,873	67%

Notes: All amounts are in 2010 dollars. See text for description of decomposition methodology.

We next explore how much changes in education debt can be explained by rising college tuition by deflating the 2010 distribution of debt to a simulated 1989 level using data on published tuition and fees by year, assuming that the percentage increase in debt would have been the same as the percentage increase in published tuition. Given data limitations, this is a necessarily inexact exercise that can provide at best a rough estimate of the degree to which rising tuition may have contributed to rising debt levels.

Specifically, we calculate counterfactual debt in 2010 as the actual 2010 debt multiplied by the ratio of counterfactual tuition (average tuition 21 years prior to when the respondent was age 20) to actual tuition (average tuition when the respondent was age 20).<sup>10</sup> Tuition is calculated as a weighted average of published tuition and fees for full-time undergraduates at degree-granting U.S. postsecondary institutions, using the number of full-time equivalent undergraduates as weights (Digest of Education Statistics 2013, Table 330.10). We use published tuition and fees, even though net price (tuition and fees minus grants and scholarships) would be a better measure, because the latter is not available for a sufficiently long period of time. As a result, we likely overstate the contribution of rising prices to growth in debt (Baum and Ma 2013).

The results of this analysis are reported in Table 2. The tuition adjustment explains 51 percent of the 1989-2010 increase in mean debt. Applying the reweighting procedure, which adjusts for changes in educational attainment and race, increases the total share of the change explained (by tuition, educational attainment, and race combined) to 67 percent. Our use of published rather than net price implies that this is an overestimate, but it still leaves 33 percent of the change unexplained.<sup>11</sup> This remaining share of the change could be the result of some combination of changes in characteristics not measured in the SCF data and changes in borrowing behavior, including those that result from policy changes. For example, in 1992, Congress expanded the availability of federal loans to all borrowers, regardless of financial need, the effects of which would show up in the SCF data gradually over time.<sup>12</sup> Borrowing behavior might also shift due to changes in the cost of debt (i.e., changes in interest rates) or changes in attitudes toward debt (e.g., loan aversion).

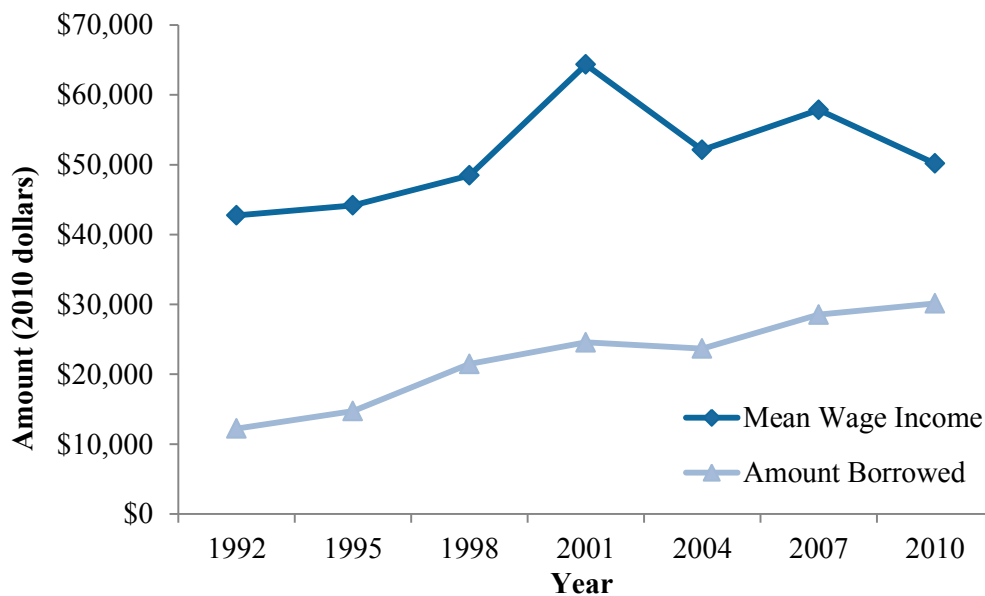
## Measuring the Burden of Student Loan Debt

The growth in student loan debt is often discussed as a problem in and of itself. However, to the extent that borrowers are using debt as a tool to finance investments in human capital that pay off through higher wages in the future, increases in debt may simply be a benign symptom of increasing expenditure on higher education.<sup>13</sup> This would be the case if the observed increases in borrowing occurred in tandem with improvements in financial well-being. On the contrary, if these expenditures were spent in ways that don't pay dividends in the future, then the observed growth in debt may indicate problems for the financial future of borrowers. In order to explore this notion empirically, we examine how incomes have evolved alongside debt over the past two decades.

Discussions of the well-being of borrowers often focus on comparing debt to annual earnings (see, e.g., Fry 2014). This is not necessarily incorrect, but since debt measures a “stock” while annual earnings measures a “flow,” it can generate misleading results. It would be more useful to compare debt to the “stock” measure of earnings, namely lifetime earnings. Since lifetime earnings are not observable and difficult to estimate, the best approach is to recognize this point when interpreting relationships between earnings and debt.

Among households with outstanding student loan debt, average household wage income increased from just under \$43,000 in 1992 to just over \$50,000 in 2010, amounting to an increase of \$7,411 over this 18-year period (Figure 5).<sup>14</sup> During that same period, the amount of student loan debt taken on by the average household increased from approximately \$12,000 to \$30,000, amounting to an increase of \$18,000.<sup>15</sup> According to these estimates, the increase in student loan debt faced by a typical household (i.e., one facing mean income and mean debt) is more than compensated for with increased earnings over the course of a lifetime. In fact, the increase in earnings received over the course of 2.4 years by a household with earnings at the mean of the distribution would pay for the increase in debt incurred at the mean of the borrowing distribution.<sup>16</sup>

Figure 5. Borrowing and Wage Income, Households with Positive Monthly Payments and Earnings, 1992-2010



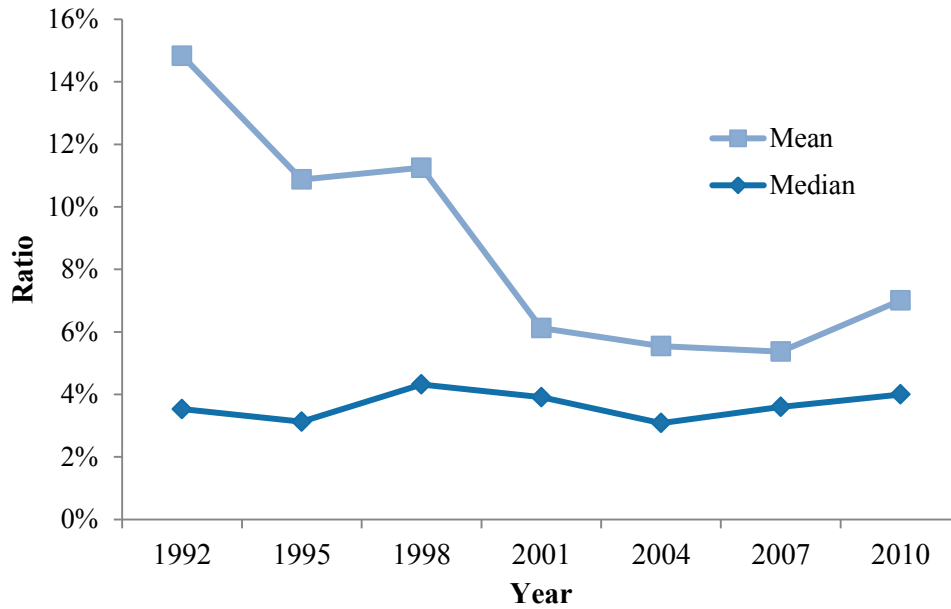
Notes: Based on households age 20-40 with education debt, wage income of at least \$1,000, and that were making positive monthly payments.

This does not imply that every household with student loan debt in 2010 is necessarily better off than every household with student loan debt in 1992, but the data in Appendix Table 3 indicate that the increases in borrowing in the right tail of the distribution were not enormous relative to the increase in mean earnings. For example, the increase in borrowing at the 75th percentile was 2.8 times the increase in mean earnings, and the increase in borrowing at the 90th percentile was 6.4 times the increase in mean earnings.<sup>17</sup> In all cases, it appears that the increase in borrowing would be made up for relatively early in the career of a worker with mean earnings.

Increases in lifetime earnings relative to debt provide a picture of long-run (or “permanent”) financial well-being, but may obscure more transient challenges faced by households. For example, an increase in debt may be affordable in the long run but impose monthly payments that squeeze borrowers in the short run, especially early in their careers. We address this question by examining trends in the ratio of monthly payments to monthly income, a comparison of two “flow” measures, which is reported in Figure 6. Surprisingly, the ratio of monthly payments to monthly income has been flat over the last two decades. Median monthly payments ranged between three and four percent of monthly earnings in every year from 1992 through 2010.<sup>18</sup> Mean monthly payments, which are larger than median payments in each year due to the distribution being right-skewed, declined from 15 percent in 1992 to 7 percent in 2010.



Figure 6. Monthly Payment-to-Income Ratios, 1992-2010



Notes: Based on households age 20-40 with education debt, wage income of at least \$1,000, and that were making positive monthly payments.

We observe the same patterns among households at each percentile in the distribution of payment-to-income ratios (Appendix Table 4) and in each category of educational attainment (Appendix Table 5). The ratio of monthly payments to monthly income stayed roughly the same over time, on average, at each percentile and for each education category. By this measure, the transitory burden of loan repayment is no greater for today's young workers than it was for young workers two decades ago. If anything, the monthly repayment burden has lessened.

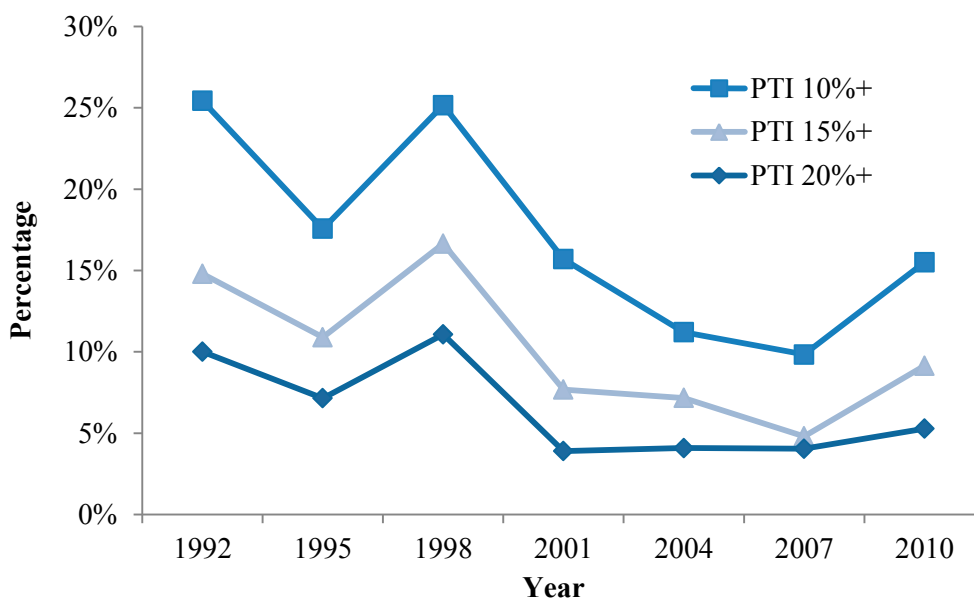
This surprising finding can be explained in part by a lengthening of average repayment terms during the same period (Table 3). In 1992, the mean term of repayment was 7.5 years, which increased to 13.4 years in 2010. We suspect that this increase was due primarily to loan consolidation, which increased dramatically in the early 2000s (Department of Education 2014, S-16). Loans consolidated with the federal government are eligible for extended repayment terms based on the outstanding balance, with larger debts eligible for longer repayment terms.<sup>19</sup> Average interest rates also declined during this period, which would also lower monthly payments.

Table 3. Average Repayment Term and Interest Rate, Largest Loan

Year	Term	Interest Rate
1992	7.5	8.3%
1995	8.8	8.3%
1998	10.5	8.4%
2001	9.9	8.0%
2004	13.7	4.7%
2007	14.1	5.5%
2010	13.4	5.5%

The fact that the 90th percentile of the debt-to-income distribution has not grown over the last decades suggests that the outliers featured in media coverage of student loan debt may not be part of a new or growing phenomenon. There is no absolute measure of when a payment-to-income ratio is too high, but Figure 7 shows the share of borrowers with payment-to-income ratios at or above three different thresholds. We do not find any evidence that the share of borrowers with high payment-to-income ratios has increased consistently over time, with high ratios more common during the 1990s than during the 2000s.

Figure 7. Incidence of High Payment-to-Income Ratios, 1992-2010



Notes: Based on households age 20-40 with education debt, wage income of at least \$1,000, and that were making positive monthly payments.

## Conclusion

The media has provided many anecdotes about recent graduates with large amounts of student loan debt who are in financial distress. Data on the distribution of loan debt, both from the SCF and other sources, indicate that extremely large debt burdens remain exceptional cases. And large debt burdens are not necessarily an indicator of financial hardship, as they may be used to finance lucrative degrees in business or law. In related work, one of us (Akers 2014a) reported that there is not a strong positive relationship between student debt and various measures of financial hardship, with low-debt households most likely to struggle financially.

Our analysis of the SCF data also provides some initial estimates of the role that different factors have played in driving up student debt over the last two decades. Rising educational attainment explains some of the trend: debt data disaggregated by highest degree earned suggest that graduate education has played a particularly important role, especially for the cases of large debt balances. Better understanding the increase in debt used to finance graduate degrees, which likely vary widely in their economic return, is a ripe subject for future research, as is further exploring the rising debt burdens of individuals who borrowed to attend college but did not complete a degree.

Tuition is also a likely culprit for rising debt, although the limitations of historical data on tuition make it difficult to tell exactly how much of an impact it has had. Our analysis suggests that inflation in published tuition prices may account for upward of half of the increase in debt, leaving a significant share of the rise in debt that is unexplained. Our inability to use net price instead of sticker price means that the importance of tuition is likely overstated, and the unexplained share is probably higher. These facts, coupled with evidence that students are substituting away from paying for college out-of-pocket toward financing (Greenstone and Looney 2013b), suggest that policy changes, such as lower interest rates and longer loan terms, and behavioral shifts, such as decreased loan aversion, may account for some of the increase in education debt.

We also provide evidence on the evolution of financial well-being of borrowers with student loan debt over the past two decades. Despite the widely held belief that circumstances for borrowers with student loan debt are growing worse over time, our findings reveal no evidence in support of this narrative. In fact, the average growth in lifetime income among households with student loan debt easily exceeds the average growth in debt, suggesting that, all else equal, households with debt today are in a better financial position than households with debt were two decades ago. Furthermore, the incidence of burdensome monthly payments does not appear to have become more widespread over the last two decades.

Future policymaking on student loans should be guided by accurate evidence on the health of the entire market, not atypical anecdotes. The evidence reported above suggests that broad-based policies aimed at all student borrowers, either past or current, are likely to be unnecessary and wasteful given the lack of

evidence of widespread financial hardship. Such policies tend to provide the largest benefits to borrowers with the largest debt burdens, who may be the opposite of those most in need. For example, the 2010 SCF indicates that the top quartile of households in terms of income hold 40 percent of outstanding student loan debt (Akers and Chingos 2014a).

At the same time, as students take on more debt to go to college, they are taking on more risk (Benson, Esteva, and Levy 2013). This risk is rewarded for the average borrower with increased earnings, but individuals who make bad or unlucky bets will be farther from financial security than borrowers in the past. This fact highlights the need for robust social safety nets such as income-based repayment and payment deferral for financial hardship, programs which exist but are in need of simplification and improvement (Akers and Chingos 2014b, Dynarski and Kreisman 2013). In particular, these programs need to be carefully targeted at borrowers facing significant financial hardship and designed to minimize any perverse incentives such as over-borrowing and tuition inflation.

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## End Notes

1. For a more detailed overview of student lending in the United States, see Avery and Turner (2012).
2. Some borrowers take out private student loans without exhausting their eligibility for federal debt, which is often a mistake due to the fact that private loans tend to have higher interest rates and fewer borrower protections (Cunningham and Santiago 2008, Kantrowitz 2009).
3. We apply survey weights throughout the analysis so that the results are representative of the U.S. population of households. The use of survey weights is particularly important in the SCF because the sample design oversamples high-income households to properly measure the full distribution of wealth and assets in the United States. This high-income sample makes up approximately 25 percent of households in the SCF.
4. In a subsequent section we make use of SCF data on the amount originally borrowed, but these data are limited by the fact that SCF only records the amount consolidated for consolidation loans, not the amount originally borrowed.
5. In addition, the SCF does not record the individual associated with loan origination. Therefore, with individuals no older than 40, we are more confident that the loans on their balance sheets are associated with an adult rather than a child in the household.
6. We find similar attainment trends after converting the household-level SCF data into individual-level data (assigning one-half the survey weight to each individual in a two-person household). These summary statistics are available from the authors upon request.
7. These trends likely reflect changes in the probability of part-time and non-continuous enrollment, especially among households with some college but no bachelor's degree.
8. Specifically, the weights we use for reweighting are the product of the adjustment factors generated by the logit regression and the original survey weights.
9. These types of reweighting exercises assume that the relative borrowing behavior of demographic groups remains constant over time. This is obviously a strong assumption, and understanding changes in borrowing behavior is left for future research.
10. We calculate the years to use for tuition using the average age of the household rounded to the nearest year.
11. In related work, Hershbein and Hollenbeck (2014) examine the borrowing levels of bachelor's degree recipients between 1990 and 2008 using student-level NPSAS data. They find that college costs (taking into account scholarships and grants) are the largest driver of increases in borrowing over most of this period.

12. See Historical Loan Limits at <http://www.finaid.org/loans/historicallimits.phtml>. Hershbein and Hollenbeck (2014) report suggestive evidence that the creation of the federal unsubsidized loan program led to increases in borrowing.
13. Increases in debt can also reflect a shift in the method of financing higher education.
14. In this section we focus on trends beginning in 1992 because the structure of the SCF data changed between 1989 and 1992.
15. In the previous section, the analysis is based on outstanding debt at the time of the survey. However, total borrowing is more appropriate in this context. In practice the difference between these measures is small (see Appendix Table 3).
16. We calculate the ratio of the increase in annual earnings to the increase in borrowing to illustrate the relative magnitude of these statistics, but it is important to note that this comparison does not account for factors such as interest rates, discount rates, and tax rates.
17. The increase in median earnings was less than the increase in mean earnings, so the ratios of amount borrowed to median earnings are larger at the 50th, 75th, and 90th percentiles of the borrowing distribution.
18. These statistics are based on households that had education debt, annual wage income of at least \$1,000, and that were making positive monthly payments on student loans. Between 24 and 36 percent of borrowers with wage income of at least \$1,000 were not making positive monthly payments, likely due to use of deferment and forbearance (see <https://studentaid.ed.gov/repay-loans/deferment-forbearance> for details). However, this statistic has not exhibited a clear trend over time and including these zero payments in the averages does not qualitatively alter the pattern of results reported above (these results are available from the authors upon request).
19. For additional historical information on loan consolidation, see General Accounting Office (2003, 2004).



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# Appendix

Appendix Table 1. Summary Statistics, Household Level, Average Age 20-40

Year	Race/Ethnicity of Household Head				Couple	Maximum Education of Household			
	White	Black	Hispanic	Other		HS or less	Some Coll	BA	Graduate
1989	72%	11%	11%	6%	62%	41%	29%	20%	9%
1992	71%	14%	10%	5%	61%	37%	29%	25%	9%
1995	73%	14%	9%	4%	59%	36%	31%	23%	10%
1998	71%	14%	11%	4%	62%	36%	32%	21%	11%
2001	68%	16%	12%	4%	60%	38%	28%	23%	11%
2004	67%	15%	14%	4%	58%	34%	31%	23%	12%
2007	63%	16%	15%	6%	62%	33%	33%	22%	12%
2010	62%	15%	17%	6%	58%	31%	32%	24%	13%

Appendix Table 2a. Incidence and Amount of Debt Over Time, Age 20-40, by Educational Attainment

Year	Incidence			Mean Debt		
	SC	BA	Grad	SC	BA	Grad
1989	11%	22%	33%	\$503	\$1,360	\$3,289
1992	21%	29%	32%	\$909	\$2,144	\$6,173
1995	24%	29%	31%	\$1,457	\$2,143	\$4,693
1998	20%	36%	36%	\$1,523	\$4,543	\$9,112
2001	27%	34%	37%	\$2,130	\$4,440	\$10,071
2004	29%	37%	42%	\$1,999	\$5,426	\$11,921
2007	35%	42%	42%	\$4,196	\$7,387	\$12,325
2010	41%	50%	58%	\$4,361	\$8,045	\$23,739

Notes: All amounts are in 2010 dollars. Educational attainment is the maximum of the household. SC refers to households with some college but no bachelor's degree.

Appendix Table 2b. Amount of Debt Over Time, Age 20-40, by Educational Attainment, Households with Debt

Year	Mean Debt			Median Debt		
	SC	BA	Grad	SC	BA	Grad
1989	\$4,488	\$6,155	\$9,987	\$3,517	\$3,517	\$6,155
1992	\$4,428	\$7,375	\$19,094	\$3,108	\$3,870	\$6,372
1995	\$6,148	\$7,390	\$15,124	\$3,434	\$3,863	\$6,367
1998	\$7,472	\$12,544	\$25,247	\$5,017	\$9,699	\$18,729
2001	\$7,819	\$12,932	\$27,164	\$5,541	\$6,772	\$12,313
2004	\$6,968	\$14,650	\$28,458	\$4,040	\$9,812	\$19,682
2007	\$11,909	\$17,730	\$29,015	\$7,362	\$13,146	\$21,033
2010	\$10,550	\$16,139	\$41,053	\$6,000	\$10,000	\$26,500

Notes: All amounts are in 2010 dollars. Educational attainment is the maximum of the household. SC refers to households with some college but no bachelor's degree.

Appendix Table 3. Borrowing, Debt, and Income

Year	Mean Income	Median Income	Debt Balance	Amount Borrowed			
				Mean	Median	P75	P90
1992	\$42,756	\$38,855	\$11,480	\$12,212	\$6,683	\$13,988	\$23,313
1995	\$44,187	\$37,201	\$11,489	\$14,709	\$8,585	\$17,170	\$28,616
1998	\$48,464	\$41,471	\$18,974	\$21,484	\$14,983	\$28,093	\$49,899
2001	\$64,338	\$46,788	\$18,627	\$24,567	\$14,529	\$28,319	\$53,806
2004	\$52,095	\$46,174	\$20,563	\$23,672	\$15,007	\$29,667	\$48,483
2007	\$57,842	\$46,273	\$24,707	\$28,546	\$18,930	\$34,600	\$65,204
2010	\$50,167	\$41,000	\$26,193	\$30,158	\$16,000	\$35,000	\$70,400
Change, 1992-2010	\$7,411	\$2,145	\$14,713	\$17,947	\$9,317	\$21,012	\$47,087

Notes: Based on households with education debt. All amounts are in 2010 dollars.

Appendix Table 4. Payment-to-Income Ratios

Year	Payment to Income						Monthly Payment	Monthly Income
	Mean	P10	P25	P50	P75	P90		
1992	15%	1%	2%	4%	10%	20%	\$431	\$4,367
1995	11%	1%	2%	3%	7%	15%	\$226	\$4,433
1998	11%	1%	2%	4%	10%	22%	\$296	\$4,694
2001	6%	1%	2%	4%	7%	13%	\$266	\$6,323
2004	6%	1%	2%	3%	6%	11%	\$194	\$5,247
2007	5%	1%	2%	4%	6%	10%	\$218	\$5,789
2010	7%	1%	2%	4%	7%	15%	\$234	\$5,424

Notes: Includes households age 20-40 with education debt, wage income of at least \$1,000, and that were making positive monthly payments.

Appendix Table 5. Payment-to-Income Ratios, by Educational Attainment

Year	Mean Payment-to-Income			Median Payment-to-Income		
	SC	BA	Grad	SC	BA	Grad
1992	18%	9%	26%	3%	3%	4%
1995	8%	11%	10%	3%	3%	3%
1998	18%	9%	9%	5%	4%	4%
2001	6%	6%	5%	4%	4%	5%
2004	5%	5%	8%	3%	3%	4%
2007	6%	5%	6%	4%	4%	3%
2010	9%	7%	6%	4%	4%	4%

Notes: Includes households age 20-40 with education debt, wage income of at least \$1,000, and that were making positive monthly payments. SC refers to households with some college but no bachelor's degree.



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