DEBT AND GRADUATION FROM AMERICAN UNIVERSITIES*

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Forthcoming in Social Forces

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ABSTRACT

The goal of “college-for-all” in the United States has been pursued in an environment of rising tuition, stagnant grant aid, and already strapped family budgets with the gap filled by college loans. College students are thus facing increasing levels of debt as they seek to develop their human capital and improve their career options. Debt is a useful resource for making needed investments. It is unique as a resource, however, because it must be repaid and can thus also increase vulnerabilities and limit options. We find that lower levels of educational debt do support college completion. However, additional educational debt beyond about $10,000 actually reduces the likelihood of college completion compared to lower levels of debt as the burden of repayment looms. Graduation likelihoods for students from the bottom 75% of the income distribution at public universities are especially influenced by debt – including the negative effects of taking on additional debt beyond $10,000. The article concludes with a consideration of how the macro-level changes in financing societal functions influence the individual-level risks and vulnerabilities of life in a debt-based society.
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The United States has transitioned from being a nation of savers to a nation of borrowers (Carruthers and Ariovich 2010). The household savings rate declined from 10% in 1980 to less than 1% by 2006 (Dynan and Kohn 2007). For many families borrowing has replaced saving – median income families today spend about 18% of their earnings on debt service. While there is debate on whether this transition rests mainly on the growth of consumer society and a culture of profligacy (Schor 1998) or on the use of credit to replace lost income due to stagnant and declining wages (Leicht and Fitzgerald 2006), there is a consensus that rising debt has made Americans increasingly vulnerable to unanticipated events such as unemployment, divorce, and illness (Sullivan, Warren and Westbrook 2000; McCloud and Dwyer 2011). The new debt society thus extends the historic economic insecurity of the less well off to the middle class, more than half of whom today have either no assets or have debts in excess of assets (Wheary, Shapiro, and Draut 2007:2).

The individual financing of higher education is an important chapter in this transition to a debt society. The expansion of higher education access starting in the 1970s was sparked by the “open access” movement and a desire to provide opportunities for advancement to those previously denied such opportunities. The result was a higher education model based on the ideal of “college for all” (Rosenbaum 2001). The expansion of higher education has indeed provided opportunities for previously excluded classes and race/ethnic groups. These successes are well documented in Attewell and Lavin’s (2007) in-depth study of the early 1970s entering cohorts at City College of New York – 75% of whom would eventually attain a college degree. Other historic changes, however, have clouded this picture for more recent cohorts. Steeply rising tuition have coincided with declining government grants. Unlike the GI Bill, which fueled
the education expansion of the 1950s and 1960s, government support today does not cover the full costs of education, and, importantly, much of this support is in the form of loans, not grants. Many students have thus been placed in the potentially precarious situation of taking on high levels of debt while attending college.

Widespread access to college thus generates the problem of how to fund increased enrollments, especially as the new enrollees include many students from families with fewer financial resources. Low tuition combined with substantial grants for those in need was not to be the historic solution. Rather, high tuition, some need-based grants, and significant loans (plus high levels of paid employment for students while still in college) emerged as the primary solutions for how to fund college for all. These “solutions,” however, generate their own sets of problems. Completion rates have significantly lagged behind enrollments, especially for less advantaged students (Bowen, Chingos and McPherson 2009; Buchmann and DiPrete 2006). Patterns of inequality in access to college degrees have thus been maintained rather than remediated (Raftery and Hout 1993). What is new about these enrollment patterns are the added levels and types of vulnerability they create for students who have had to borrow to fund their college education, particularly students from less advantaged backgrounds (Espenshade and Radford 2009).

These problems appear to be particularly acute at public universities, which have been the main venue for the expansion of higher education (Bowen et al. 2009). In public universities, the expansion of enrollment has occurred simultaneously with the defunding of higher education by states resulting in sharply rising tuitions and a massive debt crisis for students. In private colleges, while borrowing is also common for many, institutional support in the form of grants and scholarships is more widely available and a greater share of students have access to
significant parental financial support if and when that support is needed (Espenshade and Radford 2009).

As a first step in looking at the challenges due to high levels of educational debt, we examine the role of educational loans in supporting or undermining college graduation. Graduation is a first crucial step in the attainment of a middle-class lifestyle. The experience of young people as they transition through college can thus provide an important window on the new debt society. Today’s college cohorts face a new social formation of paying for college with debt but they are also purposive actors within that structure, struggling to make the system work for their needs and goals. Their experiences thus represent a unique moment in the intersection of history and biography. The first goal on their agenda is to graduate from college, perhaps with debt, but hopefully without overwhelming debt. Many subsequent stages depend on the success of this endeavor.

The Institutional Context

Today two-thirds of college graduates complete their degree in part through taking on debt and the median education debt of graduating seniors had risen to $15,123 by 2008 (Lewin 2009). The need for increasing numbers of students to borrow money to attend college coincided with a particular historic moment of expanded credit. The deregulation of the banking industry allowed loans to be made without collateral or with poor credit ratings (Smith 2010). At the same time, massive investments in the U.S. financial sector, including investments by foreign governments, hugely expanded the capital available for loans (Krippner 2005). Those previously excluded from credit, including young adults, became prime targets for the expansion of credit and for students, in particular, repayment is delayed to an abstract future in a world yet to be attained.
Student loans were initially government backed and subsidized under the Stafford Student Loan Program but private lenders successfully lobbied for participation starting in the 1990s. The private loans often had less restrictive eligibility requirements but more restrictive repayment requirements and were a highly lucrative investment for lenders (Heller 2008). The intersection of student need and increased availability of bank loans – even if with higher rates and more restrictive repayment requirements – produced an explosion of student debt in the 1990s and 2000s (College Board 2009). Students coming of age during this time are thus much more likely than previous generations to leave college with high, even grinding levels of debt (Lieber 2010). With extensions to the Pell Grant system and reforms (de-privatization) of the student loan program in 2010 (Credit Card Act 2009), future generations of college students may see some lessening of pressures toward high educational debt, though nothing is guaranteed and the problem of steadily rising college tuition remains largely unresolved.

**Theories of Attainment and Debt**

Educational attainment has long been considered in stratification research as a crucial turning point where family background and resources shape later socioeconomic status (Blau and Duncan 1967). Theories of attainment have become somewhat out of date, however, to the extent that borrowed resources can potentially serve a similar role to family resources in attainment, albeit one with a significant downside of future repayment.

Academic models of educational attainment are built around the relationship between resources, such as parental education, and liabilities, such as poor grades or minority status (Raftery and Hout 1993; Ainsworth and Roscigno 2005). Credit is one such resource in that it can allow people access to education – an option that would be unavailable to many without credit. Credit, however, becomes debt and debt is a liability potentially limiting future options
and outcomes through its drain on resources that could be used for other purposes. In this important sense, debt is a double-edged sword, representing both a resource and a liability and is often experienced by debt holders in its full contradictory nature as a carrier of both rewards and limitations (Manning 2000). A consideration of debt becomes increasingly important for understanding stratification in America as more and more people look to debt as a strategy for attaining education, housing, and other life goals (Dwyer 2009). We review research on educational debt as investment in college attainment and then propose an extension of this model that also considers the vulnerabilities raised by debt.

**Debt as Investment**

Just as home ownership has long been seen as a goal worthy of taking on debt, education is also increasingly seen as an investment in the future which warrants indebtedness (Bowen et al. 2009). Expanding debt does appear to have supported expanding enrollments, providing more students the opportunity to attend college, especially those from less privileged backgrounds, and sustaining enrollment during a time of rising tuitions (Baum and McPherson 2008; Heller 2008). In this sense taking on debt is an agentic behavior of an informed investor who desires a brighter future for themselves and their family (Bowen et al. 2009; Dwyer, McCloud, and Hodson 2011). This perspective on educational debt as an investment that supports long-term achievements is the basis for arguments that suggest that the real problem of financing college may well be that too many young people, including working and lower-class students, are unreasonably adverse to taking on debt in order to attend college and advance their life chances (Cunningham and Santiago 2008).

Educational debt can clearly have important investment characteristics for at least some students and this explains why the availability of educational loans has had a positive effect on
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college enrollments (Espenshade and Radford 2009). Many students receive the Stafford educational loans that are subsidized or backed by the federal government, and these loans often have favorable terms, like lower interest rates, and repayment is typically delayed until after graduation. Drentea (2000:447) notes that debt can actually reduce anxiety and may be less stressful than having to experience hardship and self denial. In addition, students who take on debt may be in a better position to complete college than students who work long hours to support their schooling.

There is reasonable consensus that educational loans increase enrollments, but the results are far more mixed for the effects of college loans on persistence and completion (Hossler et al. 2008). Some research shows positive effects of loans on college completion (Bowen et al. 2009; Cofer and Somers 2000). Other studies suggest that debt increases the likelihood of dropping out and often delays college completion, especially for the most disadvantaged students (Ishitani 2006). The most consistent result is that grants appear to be much more effective than loans in encouraging persistence and graduation (Heller 2008; Alon 2007). These mixed results complicate interpretations of educational loans as investments. There are also problems with measurement because of a diversity of approaches to measuring loans (often only a binary indicator of the existence of educational loans is available) and because most studies on the impact of debt on educational attainment are limited to cross-sectional data, often for a sub-set of college students (those in elite private colleges for example), that was collected before the large aggregate increase in educational debt since 2000 (Heller 2008).

We propose that the mixed pattern of debt effects on educational attainment may arise because taking on debt is not only an investment, but also involves risks and vulnerabilities that may – appropriately or not – deter students from taking on additional debt and undermine
completion for at least some. This dual character of debt may explain some of the observed negative effects of loans on college completion.

**Risks and Vulnerabilities of Debt**

We expect that college loans facilitate college graduation for many, but we also expect that high levels of debt can sometimes be a detriment to college completion in at least some circumstances (Christie and Munro 2003). More specifically, we anticipate that the positive effect of educational loans may decay as the debt accrued mounts and reaches higher levels—in other words, we expect that the effect of educational debt on graduation is nonlinear. The mixed results in prior studies may therefore result from an improper specification of the functional form of the debt effect on graduation. Students may take on large amounts of debt early in their college career when the cognitive disconnect between current borrowing and future repayment may be greatest, only to realize later that they have reached the limit of what they can reasonably afford. Increased trepidation about higher debt levels may also reflect more realistic expectations about career opportunities and future earnings that emerge as students progress through their programs and gain career relevant information (Kamenetz 2006).

Studies of debt show that too much debt can undermine physical and mental health (Drentea and Lavrakas 2000). Repayment worries about high loan balances may be especially likely given that educational loans cannot be discharged in a bankruptcy. Further, unsubsidized federal loans accrue interest while the student is in college, which may raise alarms. High loan balances may also be a sign of other problems, such as family disruption, personal problems, or simply bad planning (Christie and Munro 2003). We expect that these factors may further suppress college completion in part through the mechanism of debt levels that make students reluctant to take on more debt in order to continue in college. Students may thus end up leaving
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college with debt but without a degree – a failed investment potentially carried for years until the loans are paid off.

Students with high loan amounts may also be more likely to turn to private borrowers since there are limits on the amount that a student can borrow through the federal programs. Private lending became much more common in the 2000s and the terms are much less favorable than for federal loans with higher interest rates and more aggressive repayment requirements, all of which can significantly increase the costs of completing college (Heller 2008). Thus, a certain amount of debt may help many complete college, but having to take on too much debt may push students toward less desirable borrowing options that may actually undermine attainment.

We formalize this expectation in a two-part hypothesis of a quadratic effect of educational debt on graduation. First, educational loans can support access and persistence in college for many students. Thus, we offer:

_Hypothesis 1a:_ Taking on college loans will facilitate college graduation, up to a point.

Excess debt, however, can be a burden and cause students to drop out of college because of a felt need to limit further debt, suggesting:

_Hypothesis 1b:_ At high levels of debt the effect of additional college loans on college graduation becomes negative.

The limited research on debt effects on graduation has not coalesced into a clear pattern and contains significant contradictory findings supporting both positive and negative images of educational debt. Beyond appropriate functional specification of educational debt, our review of this literature also suggests that the populations studied have been diverse including both public and private universities and students from privileged and more modest backgrounds – institutions and groups across which debt effects may well differ significantly (see for example, Espenshade
and Radford’s [2009] private university focus versus Bowen et al.’s [2009] public university focus). Institution type and class background are central to the process of students taking on a given level of debt and to the consequences of debt for graduation. For these reasons it is important to parse any analysis of debt effects across both institution type and student backgrounds – distinctions to which we now turn.

**Public and Private Colleges**

Public universities have significantly lower tuition than private universities and pursue a core mission of providing opportunities for social mobility for the citizenry of their state. These institutions are the principal venue for realizing the goal of increased access to college as they enroll by far the majority of those pursuing four-year degrees and are widely dispersed (and thereby widely available) throughout the country (Bowen et al. 2009: xvii). Lower tuition in public universities supports these roles and facilitates access to college for those from less privileged backgrounds. At the same time, many students from families with modest means must of necessity borrow significantly to attend even public colleges. These pressures, in combination with large class sizes and limited opportunities for faculty mentoring, have contributed to high dropout rates in public universities that are widely acknowledged as a serious social problem of wasted resources (Bowen et al. 2009). Because public universities combine high debt and low retention rates, we expect this is the setting in which debt is most likely to be both necessary and a significant determinant of college completion.

Private colleges, in contrast, charge higher tuition but also provide smaller classes and more personal mentoring, which may help these institutions spot students in trouble more easily than in the large organizations of public universities (Dale and Krueger 2002). The limited pool of applicants capable of paying full tuition has also pressured these universities to make every
effort to increase retention and completion if they are to maintain adequate enrollment (Duffy and Goldberg 1997). As a result, completion rates are higher in private universities and, although many students take on debt in the process of completing their education, there are many social and academic supports for not dropping out prior to completion.

Important distinctions between public and private colleges, their mandates, and their resources thus suggest:

**Hypothesis 2:** Debt influences on graduation – both positive and negative – are likely to be more pronounced in public universities than in private universities.

**Parental Resources**

Financing college through debt poses significant vulnerabilities for recent cohorts of college students – vulnerabilities that may be especially important for students from non-affluent backgrounds who are less sheltered from these vulnerabilities by family resources. Studies of bankruptcy highlight the distinctive vulnerability of middle-class families to debt problems because they are often eligible to borrow large sums, but are also increasingly financially stressed (Sullivan et al. 2000). Scholars of debt and stratification argue that rising indebtedness is directly linked to rising inequality as lower- and middle-class families have seen their incomes stagnate while affluent families have pulled ahead (Morris and Western 1999; Leicht and Fitzgerald 2006). Lower-class and middle-class families are increasingly dependent on debt in order to achieve social mobility and may often need debt simply to maintain their class position (Neckerman and Torche 2007). This is perhaps nowhere more true than for college attainment – one of the central routes to mobility in American society. The students who depend the most on debt, however, may also be most vulnerable to debt problems. The mixed effects of debt reported in prior research may result in part because of differences in the class composition of
the samples used in these studies, which sometimes focus on privileged students (Alon 2007), and sometimes on less advantaged students (Ishitanit 2006), but rarely on nationally representative samples.

We expect positive effects of debt on graduation for less advantaged students, whose chances of enrollment have been significantly enhanced by the availability of loans (Bowen et al. 2009; Kim 2007). But the negative turn of additional educational loans may occur at lower loan amounts and be more steeply negative for these same students (Christie and Munro 2003). Lower-class origin students may have some access to need-based Pell Grants but these are inadequate to fund college in most cases and, with limited family resources, the funding gap will have to be filled with loans. For middle-class origin students, need-based Pell Grant program will be largely unavailable. This means that loans will be the main resource outside of family support for middle-class students (Heller 2008). And middle-class students who get into too much debt may anticipate similar problems with repayment as lower-class students experience, as strapped middle-class families may not have sufficient resources to help pay off the loans (Christie and Munro 2003).

Negative effects of debt will likely be blunted for more advantaged students. While upper-class background students certainly use educational loans, family resources will make these students less vulnerable to the risks of debt. Alon (2007) finds that debt has little effect on college completion in an analysis of students at elite private colleges (who are disproportionately advantaged). We expect that modeled as a nonlinear effect, educational debt will likely have a positive effect on graduation for upper-class students in our large national sample, since upper-class families are also likely to make use of this resource to facilitate college completion. Any
negative effects of additional debt are likely to occur only at very high loan amounts for advantaged students.

In sum, we expect that students from less advantaged backgrounds will have the most difficulties in managing their debt burdens because of fewer family resources as a safety net. They will thus experience more negative push from debt than students from more well-off backgrounds. Thus, we offer:

_Hypothesis 3:_ Debt influences on graduation – both positive and negative – are likely to be more pronounced for students from less advantaged backgrounds relative to students from more advantaged backgrounds.

**DATA AND METHODS**

We use the National Longitudinal Survey of Youth, 1997 Cohort (NLSY97) to examine the effect indebtedness has on young adults’ college graduation. The first year of data collection was 1996, and the latest year of data available for our analysis is 2007. We use data gathered from all waves as relevant. The NLSY97 is an annually administered survey funded by the Bureau of Labor Statistics. The NLSY97 is an optimal data set for our study because it has rich financial data on a very unique cohort of young adults who became adults after the democratization of credit in the late 1990s. The NLSY97 consists of two subsamples of young adults born between 1980 and 1984; the first sample is a nationally representative cross-sample of 6,748 young adults while the second sample oversamples 2,236 Hispanics, Latinos, and Blacks. At the time of the latest available data, the young adults in our sample range in age from 22 to 28 years old, with the strong majority in the 25 and older range.

We restrict the analytic sample to those 25 and older to provide a large window for completion of college after high school graduation. This restriction is consistent with that of
other studies of college graduation that focus either on 4-year graduation or 6-year graduation rates (see Alon 2007). Our slightly larger (7-year) window recognizes that not all college attendees start college immediately after high school. Our analytic sample thus includes young adults who ever enrolled in a four-year college or university over the period of study and who are not currently attending college, resulting in a sample of 1,898 young adults who have either successfully graduated from college or dropped out. We include both those who started college in 2-year institutions and later transferred to 4-year institutions as well as those starting in 4-year institutions.

The dependent variable for the analysis is a dichotomous measure of college graduation, with respondents coded positively if they report having graduated with a Bachelor’s degree by 2007. Fifty percent of respondents in our sample graduated from college by 2007 (the year of the latest available survey). The focal independent variable in our analysis is educational loans. Our measure of educational debt is the last loans taken while the respondent was enrolled in college. For each term enrolled, respondents are asked: “Other than assistance you received from relatives and friends, how much did you borrow in government-subsidized loans or other types of loans while you attended this school/institution?” Because we hypothesize that the impact of education debt is non-linear, we include a squared term for educational debt. To reduce skew, we top-code educational debt at $20,000 – the 99th percentile.

To measure private college attendance we categorize students as having ever attended a private college or university or having only attended public universities. Students not infrequently transfer between colleges, including between private and public colleges. We have selected what we think is the most conservative definition of public college attendance by focusing on those who have never attended a private college.
We define respondent class standing using parental household income in 1996 (the first year of data collection). We sum the income of the respondents’ mother and father (or mother’s spouse at the time). We divide respondents into two categories based on the position of parental income in the 1996 national income distribution: upper income (advantaged) if in the top quartile and less advantaged if in the bottom three quartiles. The social standing of young adults is best represented by their social origins rather than by their current personal income. We did sensitivity analyses including respondent’s personal income in the models, but it was not significant and did not affect other results and so we omit it from the final models reported. While income is only one component of familial resources, we consider it the best measure for our purposes because it captures the resource that most affects the need for credit for most families (Leicht and Fitzgerald 2006). We tested alternative measures of class, including parents’ educational attainment, with similar results. Parents’ educational attainment has a positive effect on college graduation, but is quite similar in its effects to parental income, and the debt coefficients are also quite similar in supplemental models estimated with only parental education and in models including both education and income.

We include measures of several known influences on graduation as control variables in our analysis. We control for important demographic characteristics, including sex, race/ethnicity, marital status, and parental status while enrolled. We also control for high school Grade Point Average and several features of the college experience, including part-time enrollment and employment more than 20 per week on average during the school year (Bozick 2007). Appendix A provides descriptive statistics for all variables included in the analysis.

We use logistic regression to analyze the relationship between indebtedness and college graduation. All analyses are weighted to adjust for unequal probabilities of selection into the
NLSY97. In the first analysis we look at debt effects on graduation for all respondents and then estimate separate models for public and private university attendance. In a second analysis we estimate models differentiated by parental background focusing on public universities. Institution type and class background are central mechanisms through which students are selected into different experiences with debt and stratifying the analysis on these dimensions is key to understanding this process of selectivity.³

RESULTS
The prevalence and levels of educational debt held by respondents in this nationally representative survey are reported in Table 1. Among our sample of young adults ever enrolled in college, 46.0% have educational loans. Using our measure of last loans taken on, the mean educational debt for those ever enrolled with educational loans is $5,687.⁴ Students from non-affluent backgrounds are slightly more likely to have educational loans (46.5%) than students from more advantaged backgrounds (45.2%). This supports the image of debt being an especially prevalent, although not unique, experience for less advantaged students. Economically advantaged students, however, owe slightly higher amounts on their educational loans, reflecting a greater percentage attending private schools (see Appendix) in combination with higher tuitions at these schools (see Millett, 2003, for similar results).

In Table 2 we evaluate several models of successful college graduation. Model 1 includes a number of standard predictors of graduation and these influence graduation likelihoods in patterns already well documented in the literature (see Alon and Tienda 2005). For example, both Black and Hispanic students have significantly lower graduation rates than White students. Private universities have higher graduation rates and students who work more
than 20 hours a week, attend part-time, or have children are less likely to graduate. Those who are married or cohabiting (but without children) are more likely to graduate. Students from advantaged backgrounds are more likely to graduate than those from less advantaged backgrounds, a finding that has been widely documented in the literature on college graduation (see Espenshade and Radford 2009). Those with better high school GPAs are also more likely to graduate. The consistency of these findings with established patterns helps verify the NLSY97 data as appropriate for evaluating college graduation. The central focus of our study, however, is on the effects of debt on graduation – a less explored topic to which we now turn.

Educational loans have a positive effect on graduation as expected in Hypothesis 1a. The quadratic term for educational loans is negative, however, indicating that the positive effect decays at high levels of educational debt, supporting Hypothesis 1b. These findings provide support for our core hypotheses that educational loans support college graduation, but that there are diminishing returns at higher levels of debt. Importantly, both components of the debt effect are highly significant at the .001 level. Indeed, the ratio of the odds coefficient and its standard error are higher for both the linear and quadratic components of the debt effect than for any other variable in the model, with the sole exception of high school GPA.

The curvilinear educational loan effect is displayed graphically in Figure 1. The positive effect of educational loans on graduation at low levels of debt is evidenced by steeply rising graduation probabilities with rising educational loans. This positive effect provides clear support for those who argue that federal loan programs have been important in supporting the expansion of higher education for millions of students (Baum and McPherson 2008). This positive effect peaks, however, at around $11,835 (the inflection point of the curve) and become negative for
students with college loan balances exceeding that level. Thus, not only does the positive effect of educational loans in supporting graduation diminish at high levels of indebtedness, but taking on additional debt past this level actually reduces graduation likelihoods compared to lower levels of debt. This latter finding gives fuel to those who are concerned about high levels of indebtedness incurred in college and, especially, about students who may withdraw from college without a degree but having acquired significant debt that will need to be repaid (Rosenbaum 2001).

Differences in debt effects on graduation across public and private universities are reported in Models 2 and 3 of Table 2. Debt effects on graduation appear to be entirely localized in public sector universities – both the linear (rising) and quadratic (declining) effects of debt on graduation in private universities are quite diminished relative to their role in public universities and neither is statistically significant. The curvilinear effect of educational debt on graduation in public universities is displayed graphically in Figure 2. The public sector inflection point is earlier in the debt accumulation process at $10,557 and the downturn is sharper at higher levels of debt than for the full sample that includes private universities where debt effects are significantly blunted.

Class differences in debt effects on college graduation are presented in Table 3. These contrasts allow us to evaluate arguments that the negative effects of debt fall most heavily on students from less advantaged backgrounds. We focus especially on students in public universities as the primary locus where debt effects on graduation are evidenced. As with the previous models, the debt effects are evaluated net of controls for known determinants of college
success. The debt effects on graduation show both significant stability and significant
differences across economic backgrounds of students.

[Table 3 and Figure 3 about here]

The educational loan effect for less advantaged students in public universities rises very
steeply at relatively low levels of debt as shown in Figure 3, indicating that graduation
likelihoods for these students are greatly improved by educational loans of modest size. This
portion of the educational loan effect for students from less advantaged origins provides strong
support for the image of educational loans as supporting access to higher education (and eventual
graduation) for students previously excluded from college because of financial limitations. The
large curvature effect for less advantaged students, however, results in a relatively low inflection
point – additional educational loans begin to undercut graduation at an average $9,882 for these
students. The strength of this negative effect once a relatively high level of debt is reached
contributes to the lower graduation rates for less-advantaged students relative to students from
more affluent backgrounds. Significantly, having amassed significant debt, the consequences of
leaving college without a degree are likely to be dire for anyone, but especially for the students
without significant resources from their family of origin.

Students from more affluent backgrounds in public universities, evidence the same rising
then declining effects of debt on graduation as less-advantaged students, but the effects are more
blunted and the inflection point at which educational loans begin to undercut graduation is
significantly higher at $11,855. Recall that our definition of “upper income” is quite broad,
encompassing parents from the top 25% of the income distribution. Many of these students may
have significant need for educational loans. The financial resources of their parents as a fall-
back option allow these students to take advantage of loans to modestly increase their likelihood
of graduation. Thus, upper-income origin students both secure an increase in graduation likelihoods through debt and experience less undercutting of graduation by high levels of debt.

In considering the implications of student debt for graduation rates, it is also important to look past the specific inflection points at which the curves turn negative to consider the fact that across much of the higher ranges of educational debt the curve becomes relatively flat, indicating that additional debt does little to raise probabilities of graduating for a significant range of debt even before it becomes negative. In other words, starting at relatively modest levels of debt, little advantage is gained by taking on additional debt. This finding is inconsistent with those who argue that the problem with college funding is that too many students are “risk adverse” (Cunningham and Santiago 2008). Rather, it suggests that students are being quite considered in their calculations about strategies for completing college and the resources and risks involved.

To understand this process of opting out of college with high levels of debt it will be useful to consider high debtors in more detail. We thus select those with $10,000 or more in debt (N=331) and compare the characteristics of those who dropped out and those who graduated. Those with high levels of educational loan debt who drop out are 1.31 times more likely than high debtors who graduate to be enrolled part-time, 1.75 times more likely to work more than 20 hours per week, and 1.99 times more likely to be parents. The general image that arises from these comparisons is that of a group who is in the process of moving their primary identity from college to some other locus, such as wage-earner or parent. This insight though, to some extent begs the question of why their identity is shifting. Financial difficulties are suggested as a likely cause by noting that dropouts are 2.39 times as likely as graduates to have ever attended a community college (which have dramatically lower tuition rates than four-year institutions) and report “work or finances” as their most common reason for dropping out (37.1%). In aggregate
the comparison of those with high debt who drop out rather than graduate suggests a shifting of identity from college to work or family life as sparked by significant financial difficulties. The shift of identity from school to work has also been widely noted in the process of high school students dropping out of school (Mortimer 2003).

The timing of taking on educational debt is also implicated in the process of dropping out of college. Most of those who dropout do so during the second and third years of college. However, dropping out with high debt (above $10,000) is spread across the entire college span, with greater than 10% of dropouts leaving college and not returning in the first, second, third, fourth, and fifth year and beyond (results available from the authors on request). This pattern suggests multiple pathways to dropping out of college with high debt that cover the entire span of the college career. This pattern also suggests the need for additional longitudinal and qualitative research to understand a process that stratification researchers are only beginning to identify and articulate.

**DISCUSSION**

Debt is a resource that can support investments in educational and status attainment but we find that there are also risks associated with borrowed resources. Educational loans raise the chances of completing college up to a point, but once loans get sufficiently large, additional debt reduces the likelihood of attaining a college degree compared to lower amounts of debt. These findings are particularly troublesome for those young adults leaving college without a degree, but with significant debt, who may have limited possibilities for the types of jobs and paychecks that will support repayment.

Debt effects on graduation – both positive and negative – are only evidenced in public universities. Students in private universities appear to be relatively immune to these effects. We
have argued that this immunity reflects the greater advising resources available to these students relative to students in large public universities who must navigate larger classes and bureaucracies. We have also discussed the potential selection processes that lead students into these very different institutional environments. Further research would help us identify the mechanisms that limit debt effects in private schools, which may in turn help identify changes public universities could make to aid in retention.

Within public universities the effects of debt on college completion are stratified by class. Students across all classes utilize debt as an investment in status attainment and class mobility. And, indeed, the positive effects of educational debt are shared across levels of social advantage, supporting the investment use of educational debt. In contrast, the negative effects of taking on additional debt after a certain ceiling is reached are borne most heavily by less advantaged students. The negative quadratic term of educational loans is large and significant for less advantaged students, while more advantaged students are less negatively impacted by high levels of debt. This is consistent with our expectations that those with fewer family resources will find higher loan amounts more difficult to manage and more daunting, reducing the likelihood of completing college as the financial burden mounts. Clearly, investing with borrowed resources has risks, and these risks are greatest for the least advantaged. While stratification theories led us to expect strong class differences in the risks of investing with debt, there is a certain irony that those who were expected to benefit most from expanded college access are also most vulnerable to the risks of carrying too much debt (Paterson and Iannelli 2007).

**Unresolved Questions about Future Effects of Educational Debt.** Our findings suggest many additional questions that warrant further research for those interested in education, debt, and life transitions more generally. As today’s young people carry debt forward into adulthood, will we
continue to see dual positive and negative effects of debt, as some leverage borrowed resources into social mobility, while others falter under the burden of repayment? Under what conditions does credit support mobility through educational attainment and broadened access to occupational and economic success, and when does it support the reproduction of class structures as the most privileged use debt to increase their advantage, while the least advantaged become saddled with debt that limits their prospects for mobility? What happens to youth who drop out of college with debt but with no degree? Young people who envisioned positive consequences of completing college, even if with debt, may suffer long-term liabilities if their debt levels are high. Indebtedness may lessen feelings of personal control that are generally associated with educational attainment (Schieman and Plickert 2008). An existing debt burden may reduce the likelihood that students will pursue advanced degrees after college or take on lower-paying social service jobs that may match their values and interests (Espenshade and Radford 2009; Millett 2003). Debt may also delay family formation and home ownership, or may reduce capacities to invest in children (Field 2009). Future bumps in the road such as job loss, illness, or divorce may be more difficult to cushion with debt if one is already maxed out (Sullivan et al. 2000: 243, 252). Our analysis suggests that any negative consequences will likely fall most heavily on those already limited by lower socioeconomic status. Debt could even influence the political orientation of the current generation in ways that are difficult to predict (Mannheim 1952). (See for instance Elder’s [1974] research on the political and social impact of the Great Depression on Americas coming of age at that time.) Stratification research and theory need to catch up to the new reality of widespread debt and its implications that are already being faced head on by young Americans as they pursue the transition to adulthood (see Bernhardt et al. 2001).
CONCLUSIONS

We have uncovered striking evidence of the role of debt in educational attainment for the cohort of youth transitioning to adulthood during a period of readily available credit and high college tuitions. The graduation likelihoods of students from modest economic backgrounds attending public universities are significantly contingent on the debt loads that they carry. Access to at least some debt increases the graduation probabilities of these students. However, starting at around $10,000 debt effects on graduation level out and do not increase further, in spite of increasing debt. Beyond $10,000 increasing debt actually undercuts graduation probabilities for these students. The pattern of first positive, then flattening, then negative effects of taking on additional debt indicates mixed support for the ability of debt financed education to facilitate the goals of outreach and inclusion underlying the model of college for all. Students in private colleges and economically advantaged students in public universities are less influenced in their graduation likelihoods by debt, in spite of taking on significant debt.

The experience of significant indebtedness among young adults today is new, and will continue to be an unfolding process as this cohort proceeds across their life course. We have only begun to understand the role of borrowed resources in stratification processes in the 21st century. It is absolutely essential that we understand the consequences of this debt for both individuals and for society. Educational attainments are an important component of these consequences. Large numbers of young people acquiring debt as an investment in adult earnings is a grand social experiment with an unknown outcome. Perhaps, like the GI bill, this debt will underwrite a surge of productivity and consumption that will spur growth in Americans’ incomes. But there are clear pitfalls. The vast increase in college enrollments in recent generations is a significant American achievement, but lagging completion rates demonstrate we
do not yet have the policies in place to fully support “college for all” (Bowen et al. 2009; Rosenbaum 2001). Historically expanding enrollments have been individually financed rather than paid for by public subsidy and rising college costs have added to the financial burden. It may be that some students do not take on debt when they should – or do not take on enough debt – to take full advantage of the investment possibilities of borrowed resources. But many others judge they have taken on too much debt and terminate their college experience as a result.

It may be time for a national conversation about the value of a highly educated citizenry in a global economy. Expanding enrollments are a public good that should perhaps be subsidized to a greater degree than in recent years, especially with grant aid to less advantaged students. The current trend, however, is declining state subsidies and increasing private debt. If the burden of increasing college enrollments must fall to individual students, then we may need far more financial education and support as students with unequal resources and networks of social support make decisions and navigate a complex financial aid system (Chang 2005; Bowen et al. 2009; Grodsky and Jones 2007). Recent changes to loan policies are a step in this direction, reducing the involvement of private lenders and making the terms of repayment more flexible for students, but this addresses only some of the problems (Baker and Herszenhorn 2010; Credit Card Act 2009). As educators, we see these questions not just as the distant affairs of policy-makers and politicians, but as concerns for all of us working within the system of higher education. There is surely more that we can do to support students, to ensure that they have access to affordable education, and to limit the liabilities of leaving college with significant debt.
ENDNOTES

1 There are limitations to using self-reported financial data, but the structure of the NLSY97 questions works to mitigate these limits. Most importantly, other sources of support (grants, family loans, and the like) are each asked separately, reducing the likelihood that students will conflate different financial sources in their answers.

2 We also evaluated a model differentiating upper, middle and lower-income origin students and found statistically identical debt effects for middle and lower-income origin students, supporting the decision to operationalize these students as one category that we characterize as “less advantaged.” This two-income-class operationalization is also consistent with the historic reality of rising inequality and the defunding of public college education, which has placed significant financial burdens on both middle and lower-income origin students.

3 We also estimated supplemental models to test for the possibility of reverse causality. We have argued that debt affects graduation probabilities, but it could also be that people who graduate and enroll in more years of college accrue more debt. We thus added controls for total months enrolled and in a separate analysis used educational debt per year enrolled as the debt measures. Results from these analyses were highly similar to the results presented here.

4 The NLSY-97 loan figures for enrolled students are consistent with those of the National Center for Educational Statistics (NCES) for the entering class of 2007 (our last year of data), which reports 35.8% of student receiving aid in their first year in the average amount of $7,100 (NCES 2010: Tables 3.1-A and 3.1-B) and with trend figures reported by the NCES between 1995 and 2004 (NCES 2008) that show increasing prevalence and amount of borrowing across time.

5 Consistent with the non-significance of debt effects on graduation in private universities, neither advantaged nor less advantaged students in private universities evidence significant effects of educational debt on graduation.
REFERENCES


College Board. 2007. National Postsecondary Student Aid Study (NPSAS). nces.ed.gov/surveys/npsas.


Table 1: Educational Debt by Social Class and Institution Type for Respondents Ever Enrolled in a Four-Year Institution

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Lower and Middle Income</th>
<th>Upper Income</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent holding debt</td>
<td>46.0%</td>
<td>46.5%</td>
<td>45.2%</td>
<td>40.2%</td>
<td>61.8%</td>
</tr>
<tr>
<td>Mean debt</td>
<td>$2615</td>
<td>$2622</td>
<td>$2604</td>
<td>$2014</td>
<td>$4271</td>
</tr>
<tr>
<td>Mean for debt-holders</td>
<td>$5687</td>
<td>$5640</td>
<td>$5756</td>
<td>$5005</td>
<td>$6913</td>
</tr>
<tr>
<td>N</td>
<td>1898</td>
<td>1214</td>
<td>684</td>
<td>1405</td>
<td>493</td>
</tr>
</tbody>
</table>

Notes: All results are weighted. Comparison tests are significant at p<.05 for all debt variables. Chi-squared tests were used for the percentage variables and ANOVAs for mean comparisons. Debt levels measure last annual educational loans taken on while enrolled.
Table 2: Logistic Regression of College Graduation for All Respondents Ever Enrolled in a Four-Year University, All and by Institution Type

<table>
<thead>
<tr>
<th></th>
<th>Model 1 All</th>
<th>Model 2 Public</th>
<th>Model 3 Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratios</td>
<td>Odds ratios</td>
<td>Odds ratios</td>
</tr>
<tr>
<td></td>
<td>(s.e.)</td>
<td>(s.e.)</td>
<td>(s.e.)</td>
</tr>
<tr>
<td>Debt holding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational debt</td>
<td>1.220***</td>
<td>1.323***</td>
<td>1.039</td>
</tr>
<tr>
<td></td>
<td>(.050)</td>
<td>(.068)</td>
<td>(.071)</td>
</tr>
<tr>
<td>Educational debt squared</td>
<td>.992***</td>
<td>.987***</td>
<td>.100</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.003)</td>
<td>(.004)</td>
</tr>
<tr>
<td>Class and institution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper class (less advantaged omitted)</td>
<td>1.825***</td>
<td>1.876***</td>
<td>1.692**</td>
</tr>
<tr>
<td></td>
<td>(.235)</td>
<td>(.284)</td>
<td>(.429)</td>
</tr>
<tr>
<td>Attended private university</td>
<td>2.141***</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td>(.313)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.699***</td>
<td>.679**</td>
<td>.748</td>
</tr>
<tr>
<td></td>
<td>(.089)</td>
<td>(.103)</td>
<td>(.180)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Race (non-Black, non-Hispanic omitted)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.709**</td>
<td>.759</td>
<td>.621</td>
</tr>
<tr>
<td></td>
<td>(.124)</td>
<td>(.153)</td>
<td>(.216)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.590***</td>
<td>.545***</td>
<td>.828</td>
</tr>
<tr>
<td></td>
<td>(.107)</td>
<td>(.119)</td>
<td>(.302)</td>
</tr>
<tr>
<td>Worked more than 20 hours per week while enrolled</td>
<td>.787*</td>
<td>.746**</td>
<td>.971</td>
</tr>
<tr>
<td></td>
<td>(.099)</td>
<td>(.111)</td>
<td>(.244)</td>
</tr>
<tr>
<td>Ever enrolled part-time during a non-summer term</td>
<td>.374***</td>
<td>.384***</td>
<td>.352***</td>
</tr>
<tr>
<td></td>
<td>(.057)</td>
<td>(.068)</td>
<td>(.113)</td>
</tr>
<tr>
<td>Had children while enrolled</td>
<td>.270***</td>
<td>.223***</td>
<td>.424***</td>
</tr>
<tr>
<td></td>
<td>(.042)</td>
<td>(.043)</td>
<td>(.122)</td>
</tr>
<tr>
<td>Married or cohabited while enrolled</td>
<td>.847</td>
<td>.919</td>
<td>.685</td>
</tr>
<tr>
<td></td>
<td>(.114)</td>
<td>(.145)</td>
<td>(.182)</td>
</tr>
<tr>
<td>High school GPA</td>
<td>1.022***</td>
<td>1.023***</td>
<td>1.020***</td>
</tr>
<tr>
<td></td>
<td>(.002)</td>
<td>(.002)</td>
<td>(.003)</td>
</tr>
<tr>
<td>Intercept</td>
<td>.002***</td>
<td>.001***</td>
<td>.007***</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.001)</td>
<td>(.007)</td>
</tr>
<tr>
<td>Model N</td>
<td>1898</td>
<td>1405</td>
<td>493</td>
</tr>
</tbody>
</table>

Notes: Standard errors in parentheses.
*p<.05, **p<.01, ***p<.001 (two-tailed).
Table 3: Logistic Regression of College Graduation for Respondents Ever Enrolled in a Public Four-Year University by Social Class Origin

<table>
<thead>
<tr>
<th></th>
<th>Model 1 Lower and middle class</th>
<th></th>
<th>Model 2 Upper class</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds ratios (s.e.)</td>
<td></td>
<td>Odds ratios (s.e.)</td>
<td></td>
</tr>
<tr>
<td>Debt holding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education debt</td>
<td>1.396*** (.093)</td>
<td></td>
<td>1.237*** (.102)</td>
<td></td>
</tr>
<tr>
<td>Education debt squared</td>
<td>.983*** (.004)</td>
<td></td>
<td>.991** (.004)</td>
<td></td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.558*** (.112)</td>
<td></td>
<td>.861 (.205)</td>
<td></td>
</tr>
<tr>
<td>Race (non-Black, non-Hispanic omitted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>.694 (.171)</td>
<td></td>
<td>.950 (.345)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>.478*** (.126)</td>
<td></td>
<td>.842 (.365)</td>
<td></td>
</tr>
<tr>
<td>Worked more than 20 hours per week while enrolled</td>
<td>.616** (.124)</td>
<td></td>
<td>.971 (.227)</td>
<td></td>
</tr>
<tr>
<td>Ever enrolled part-time during a non-summer term</td>
<td>.380*** (.092)</td>
<td></td>
<td>.381*** (.102)</td>
<td></td>
</tr>
<tr>
<td>Had children while enrolled</td>
<td>.209*** (.052)</td>
<td></td>
<td>.248*** (.077)</td>
<td></td>
</tr>
<tr>
<td>Married or cohabited while enrolled</td>
<td>1.049 (.219)</td>
<td></td>
<td>.759 (.186)</td>
<td></td>
</tr>
<tr>
<td>High school GPA</td>
<td>1.022*** (.003)</td>
<td></td>
<td>1.025*** (.003)</td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>.002*** (.001)</td>
<td></td>
<td>.001*** (.001)</td>
<td></td>
</tr>
<tr>
<td>Model N</td>
<td>905</td>
<td></td>
<td>500</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Standard errors in parentheses.
*p<.05, **p<.01, ***p<.001 (two-tailed).
Figure 1. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in College by Educational Debt

Note: Educational debt top-coded at $20,000. Confidence intervals in grey.
Figure 2. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in College by Educational Debt, by Institution

Note: Educational debt top-coded at $20,000. Confidence intervals in grey.
Figure 3. Estimated Probabilities and Confidence Intervals of Graduation for Respondents Ever Enrolled in a Public College by Educational Debt, by Class

Note: Educational debt top-coded at $20,000. Confidence intervals in grey.
## Appendix A: Descriptive Statistics for Variables in Analysis

<table>
<thead>
<tr>
<th>Mean or Percent (Standard Deviation)</th>
<th>All</th>
<th>Lower and Middle Income</th>
<th>Upper Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>College graduate by 2007</td>
<td>49.5%</td>
<td>41.6%</td>
<td>60.7%</td>
</tr>
<tr>
<td>Education debt</td>
<td>$2615 ($4775)</td>
<td>$2622 ($4733)</td>
<td>$2604 ($4835)</td>
</tr>
<tr>
<td>Education debt squared</td>
<td>$29,633 ($84,539)</td>
<td>$29,272 ($82,538)</td>
<td>$30,143 ($86,956)</td>
</tr>
<tr>
<td>Lower and middle income parents</td>
<td>76.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper income parents</td>
<td>23.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47.0%</td>
<td>45.4%</td>
<td>49.1%</td>
</tr>
<tr>
<td>Black</td>
<td>11.8%</td>
<td>15.7%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>10.0%</td>
<td>14.1%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Ever attended private university</td>
<td>26.6%</td>
<td>26.1%</td>
<td>27.4%</td>
</tr>
<tr>
<td>Worked &gt; 20 hours per week while enrolled</td>
<td>17.3%</td>
<td>16.0%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Ever enrolled part-time (except summer)</td>
<td>23.1%</td>
<td>24.6%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Had children while enrolled</td>
<td>14.1%</td>
<td>16.9%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Married or cohabited while enrolled</td>
<td>34.4%</td>
<td>30.0%</td>
<td>35.1%</td>
</tr>
<tr>
<td>High school GPA</td>
<td>3.14 (44.5)</td>
<td>3.11 (44.7)</td>
<td>3.18 (43.9)</td>
</tr>
</tbody>
</table>

Sample includes respondents who ever enrolled in a four-year institution but are not currently enrolled and who are aged 25 or older.
Notes: Reported means and percentages are weighted.