Research Article

Do student loans delay marriage?
Debt repayment and family formation in young adulthood

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Abstract

BACKGROUND
With increasing levels of student loan debt, the path to economic stability may be less smooth than it was for earlier generations of college graduates. This paper explores this emerging trend by assessing whether or not student loan debt influences family formation.

OBJECTIVE
The objective of this study is to examine whether student loan debt delays marriage in young adulthood, whether or not the relationship between student loan debt and marriage differs for women and for men, and if this relationship attenuates during the years immediately after college graduation.

METHODS
We estimate a series of discrete-time hazard regression models predicting the odds of first marriage as a function of time-varying student loan debt balance, using a nationally representative sample of bachelor's degree recipients from the 1993 Baccalaureate and Beyond Longitudinal Study (N = 9,410).

RESULTS
We find that the dynamics of loan repayment are related to marriage timing for women, but not for men. Specifically, an increase of $1,000 in student loan debt is associated with a reduction in the odds of first marriage by 2 percent a month among female bachelor degree recipients during the first four years after college graduation. This relationship attenuates over time.

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CONCLUSION

Our study lends support to the proposition that the financial weight of monthly loan repayments impedes family formation in the years immediately following college graduation – however, only for women. This finding questions traditional models of gender specialization in family formation that emphasize the economic resources of men.

1. Introduction

A 2012 headline in the *Wall Street Journal* "To Pay Off Loans, Grads Put Off Marriage, Children" cautioned about a growing hindrance to the economic stability of young adults in the United States (Shellenbarger 2012). The accompanying article forecast a generational financial epidemic, whereby the weight of student loan debt will force young adults to put off getting married, having children, and buying homes. A similar report by *CNN News* in 2006 warned, "Forget about getting married and buying a home, this generation is thinking about next month's [student loan] payment" (Zappone 2006). These attention-grabbing reports are not without merit: In 2010, nearly two-thirds of college graduates left school with student loan debt, up from less than 50 percent of college graduates in 1993 (Project on Student Debt 2008, 2011). Further, during this time loan debt levels for college graduates more than doubled, from $9,250 to $25,250 (Project on Student Debt 2008, 2011).

While student loan debt is often considered "the best kind of debt to have" in that it typically has low interest rates, and represents an investment in one's own human capital, the magnitude of the total amount owed and the monthly payments may be overwhelming for young adults entering the workforce for the first time, for whom earnings are typically at their lowest (Polachek 2008). This may be particularly salient for contemporary youth, finishing college and entering the job market in the midst of a stagnant economy. Therefore, as the aforementioned journalistic accounts suggest, student loan debt may forestall the decision to marry, which involves substantial family formation costs (i.e., wedding, childbearing, home purchase) and resource redistribution (i.e., joint bank accounts, joint tax filing, joint budget). To date, however, there is little empirical evidence to support this proposition.

In the present study, we analyze a nationally representative sample of college graduates to examine the relationship between student loan debt and marriage in young adulthood, whether or not the relationship differs for women and for men, and if this relationship attenuates over time. We find that, among female bachelor degree recipients, an increase of $1,000 in student loan debt is associated with a reduction in

the odds of first marriage by 2 percent a month during the first four years after graduation. This relationship does not hold for men. Our findings shed light on how the dynamics of loan repayment in young adulthood depart from traditional economic perspectives on the relationship between economic resources and family formation.

2. Background

2.1 The cost of college attendance

For young adults in the United States, the payoff to higher levels of education, particularly the receipt of a bachelor's degree, is evident in greater job stability, better health, and most immediately relevant, income (Day and Newburger 2002; Mirowsky and Ross 2003). For example, in 1991, women holding a bachelor's degree earned approximately $13,000 more a year than women with only a high school diploma (U.S. Census Bureau 2011). By 2010, this difference had grown to approximately $23,000 (U.S. Census Bureau 2011). This compensation advantage is not without a cost, however, as the price of college attendance has risen steeply. Between 1991-1992 and 2011-2012, tuition and fees (in constant dollars) at public four-year schools more than doubled (College Board 2011).

For many, the high sticker price of education leads prospective students to rely on loans. As mentioned earlier, nearly two-thirds of college graduates now graduate with loan repayment in their future (Project on Student Debt 2011). Saddled with debt, the path to economic stability may be less smooth than it was for earlier generations of college graduates. With loan repayment becoming a modal facet of post-baccalaureate life, the demographic consequences are only now beginning to receive attention among social scientists. This paper explores this emerging trend by assessing whether student loan debt influences family formation.

2.2 Student loan debt and the decision to marry

Upon graduating from college and in the years immediately after, young adults are in the earliest stages of their occupational careers. It is during this time that young adults start to receive their first paychecks from jobs that are tied directly to their postsecondary training, while managing the new financial obligations that accompany this transitional stage in the life course, including rent/housing costs, utilities, transportation, and moving costs. It is also during this time that the loan repayment process begins. While paychecks and bills, to varying degrees, are not unfamiliar to

college graduates, the student loan repayment process represents a new and oftentimes substantial "shock" to their cash flow. Despite the fact that student loan debt will total less than one percent of their cumulative lifetime earnings (Rothstein and Rouse 2011), it has been shown to act as an important "post-graduation liquidity constraint", that bears heavily on the immediate life choices of graduates. For example, those with greater levels of debt are more likely to choose higher-paying jobs (Rothstein and Rouse 2011), less likely to apply to graduate school (Millet 2003), and less likely to purchase a home (Andrew 2010).[3] In other words, the constraints on daily cash flow imposed by loan payments are likely to be more salient to young adults navigating the transition from college into the labor force than the long-term anticipated returns for their bachelor's degrees. With empirical evidence that student loan debt affects employment, education, and consumption choices, we expect it to also affect decisions to marry.

In connecting economic resources to marriage, we work from the assumption that there are a series of fixed costs associated with marriage. These include the cost of the wedding, the purchase of a home, household equipment, and childbearing. We adopt the assumption rooted in population economics (Becker 1973, 1974) and echoed in sociology (Clarkberg 1999; Smock, Manning, and Porter 2005) that couples evaluate their current economic resources in relation to these fixed costs, and will be more likely to enter into marriage when they feel that their current resources are sufficient to support these fixed costs. In applying student loan debt to this calculus, the immediate liquidity constraints imposed by loan repayment should affect the decision to marry, as it lowers young adults' ability to attain the minimum income threshold needed to shoulder the costs of the wedding, home purchase, and children. This hypothesized relationship undergirds the speculation in the media that large amounts of student loan debt are forcing young adults to delay critical markers of adulthood, most notably marriage.

To date, there is very little empirical research that rigorously tests this hypothesis using national level data with multivariate methods. The only study of which we are aware is Gicheva's (2011) unpublished analysis of the Survey of Consumer Finances 1995-2007 in which she finds that adults with higher levels of student loan debt are less likely to be married. Though her study lends tentative support to the hypothesis that loan debt serves to delay marriage, it has two important limitations. First, her study uses a static measure of the total loan balance, which may not accurately measure the true magnitude of debt that varies over time with monthly payments and for some, post-baccalaureate school enrollment. Second, her study looks at marital *status* and not the *timing* of marriage, and thus, the temporal ordering between debt and entry into

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[3] Other research finds student loan debt has little bearing on home ownership and fertility (Chiteji 2007).

marriage as well as the dynamic nature of loan debt payments in relation to the onset of marriage are effectively obscured. Our study overcomes these limitations.

2.3 Potential differences by gender

After first assessing whether student loan debt is associated with a delay in getting married for young adults overall, we then explore whether this relationship varies by gender. With little research directly connecting college costs and demographic behaviors, we instead draw upon a well-established body of literature in sociology and economics that examines the relationship between economic resources and marital timing, as an analytic framework. Note that this body of literature is large, and so we only highlight those studies most central to our empirical aims. Many of the studies used to support these theories provide mixed and sometimes contradictory findings – particularly with respect to women. Therefore we use these theories as a *general guide* to frame our empirical analysis.

Within sociology, theories about the decision to marry trace back to Talcott Parsons' (1949) ideas about differentiated gender roles within marriage (i.e. women as the homemaker and men as the breadwinner), which he contended were a functional necessity for the stability of marriage. Economic theories of marriage, expanding Parsons' work, are grounded in Becker's (1973, 1974) classic ideas about exchange and utility maximization. This gender specialization model, which privileges the premium attached to men's skills, posits that there is an exchange of men's economic provisions for women's domestic skills. With these gendered exchanges driving marital decisions, men with greater economic resources should be more likely to marry because they are better able to fulfill their obligation to provide for their family. Conversely, women with greater economic resources have a limited need to exchange domestic skills for financial support, and therefore should be less likely to marry.

Contemporary interpretations of this model contend that men with higher incomes are "good catches" in the dating market and therefore more likely to marry, while women with higher incomes are less reliant on the financial support of their husbands and thus less likely to marry (Burgess, Propper, and Aassve 2003; Oppenheimer 1988). An array of studies finds support for these predictions (see for example Burgess, Propper, and Aassve 2003; Lloyd and South 1996; Oppenheimer, Kalmijn, and Lim 1997; Teachman, Polonko, and Leigh 1987; Xie et al. 2003). In conceiving of student loan debt as a liquidity constraint in an exchange relationship that attaches greater economic value to men, this model would anticipate that higher levels of debt would slow the decision to marry among young men but accelerate the decision to marry for young women.

With massive changes in gender roles and opportunity over the past two decades, including increasing rates of female labor force participation, female bachelor's degree receipt (which now surpasses rates for males), and shrinking wage differentials between genders, women are now considerably less dependent on men for financial stability (Blau, Brinton, and Grusky 2006). Research on recent cohorts have found that better economic resources now appear to matter for *both* men's and women's increased likelihood of marriage (White and Rogers 2000). This "cross-over" was depicted in Sweeney's (2002) analysis of two cohorts, one entering the marriage market in the 1960's and 1970's, and the other entering the marriage market in the 1980's and early 1990's. She found that in the earlier cohort, earnings were positively associated with marriage for men and unrelated to marriage for women, but for the later cohort, earnings were positively associated for both men and women. Given declines in male earnings across cohorts, women with economic resources may now be more attractive partners in the marriage market (Oppenheimer, Kalmijn, and Lim 1997). In other words, the "good catch" model that traditionally applied only to men now appears to apply to both genders (see for example Clarkberg 1999; Jalovaara 2012; Lichter et al. 1992; McLaughlin, Lichter, and Johnston 1993). With more similar footing in both the marriage and labor market, men and women's debt burdens may equally forestall the decision to marry.

Lastly, there is good reason to believe that student loan debt may matter *more for women* than for men when considering life course transitions among the college-educated. As women have made greater strides in the labor force, there has been a growing pressure for them to "have it all": successful career, stable marriage, and healthy children. College-educated women increasingly are employed in professional and managerial occupations (Percheski 2008) and increasingly having children (Livingston and Cohn 2013). With high expectations for work, romantic, and family life, the fixed costs of marriage may now be perceived to be higher among college-educated women, and consequently, the liquidity constraints imposed by student loan debt may be a greater deterrent to marriage for women than for men. There is mounting evidence from studies of low-income women that feeling economically stable is a necessary pre-requisite for marriage (Gibson-Davis, Edin, and McLanahan 2005; Joshi, Quane, and Cherlin 2009). This "economic stability" perspective anticipates that higher levels of debt will be most salient in young women's decisions to marry. Gicheva's (2011) study finds that student loan debt is more negatively associated with the probability of marriage for women than for men, lending tentative support to this proposition.

2.4 Potential differences over time

Young adulthood represents a pivotal time of the life course when social and occupational contexts, as well as romantic and economic opportunities are changing rapidly. Therefore, we do not anticipate the relationship between loan debt and marriage timing to be static. Upon finishing college, the weight of student loan debt, particularly for those who heavily relied on loans to finance their education, may preclude a serious consideration of marriage until they are able "to get on their feet." Since earnings are lowest at the start of one's career (Polachek 2008), loan repayment as a proportion of total earnings is at its peak during the years immediately after college graduation. As time goes on, young adults adjust to their post-college financial situation, and eventually start to get promotions, earn raises, and obtain other assets. Consequently, loan repayment as a proportion of total economic resources declines over time, and monthly loan statements gradually show a lower overall balance – which likely attenuates the initial sticker shock associated with the earliest loan payments. It should be the case, then, that any effect student loan debt has on marriage formation should be strongest immediately following graduation, and should dissipate over time.

3. Research questions and analytic direction

With little known about the demographic consequences of college financing, the present study aims to provide basic information on this increasingly prevalent aspect of young adulthood. Specifically, this study will address the following three research questions:

Research question 1:   Is there a relationship between student loan debt and marriage timing?
Research question 2:   Does the relationship between student loan debt and marriage timing vary by gender?
Research question 3:   Does the relationship between student loan debt and marriage timing attenuate as youth move into adulthood?

To answer our three research questions, we analyze data for a nationally representative sample of bachelor's degree recipients in 1993 that contains complete loan disbursement and repayment histories, as well as dates of first marriage. Only a handful of data sets contain both sets of variables, and thus our study provides a unique opportunity to test the relationship between loan debt and the timing of key life course events in young adulthood. The postsecondary landscape has changed in the 20 years since sample members in our study finished college, with the most relevant factor being

that contemporary youth are leaving college with considerably higher levels of debt than their counterparts in 1993. However, other economic and demographic trends that shape young adulthood for college graduates mirror the current situation. In terms of the economy, the class of 1993 finished college facing relatively high unemployment (approximately 7 percent) stemming from a recession that predated their graduation by two years. In terms of demography, while the average age at first marriage has increased over the past few decades (Cherlin 2010), there has been little change in the average age at first marriage among those holding a bachelor's degree: In 1990 the average age at first marriage among those with a college education was 27; and in 2008 it was 28 (Fry 2010). Therefore, while our data on college graduates in the early 1990's cannot directly address the issues as they pertain to the particulars of today, they do provide a reasonable foundation for evaluating the proposition that loan debt influences marital timing.

To answer our three research questions, we estimate a series of discrete-time hazard regression models predicting the odds of first marriage as a function of student loan debt. We estimate these models for the full sample, as well as for females and males separately. Our focus is solely on marriage, as other related dimensions of romantic relationships (e.g. dating, cohabitation, resource sharing), are not available in our data. We conclude our analysis by testing whether or not the relationship between loan debt and marriage attenuates as youth move further into adulthood. To isolate the effect of student loan debt in these models, we will include controls for three sets of factors that are known to influence family formation and student loan repayment in young adulthood: socio-demographic characteristics, career and schooling orientations, and earnings potential. Below, we briefly discuss our rationale for including these three sets of control variables.

Marriage rates vary considerably by sociodemographic characteristics. We therefore include controls for age, race/ethnicity, and parental education. With respect to race/ethnicity, Whites marry at the highest rates, Non-Hispanic Blacks at the lowest rates, and Hispanics in between (Oropesa and Landale 2004). Parental education is negatively associated with marriage, such that those with more highly educated parents have a lower probability of getting married, though this effect has weakened over time (Goldscheider and Waite 1986; South 2001).

One of the more dramatic changes in the life course over the past few decades has been the prolongation of the transition to adulthood, such that youths are spending more time in school and establishing themselves in their careers, which in turn lead to marriage and childbearing at later ages (Rumbaut et al. 2004). Therefore, we control for three measures that gauge orientations toward schooling and careers that may impede marriage in the years immediately after college: grade point average, type of postsecondary institutions attended, and expectations for post-baccalaureate education.

College graduates with high grade point averages and who attended four-year schools are better positioned for either graduate school and/or "high power" jobs, and therefore may be more likely to postpone family formation than their peers, who graduated with lower grade point averages and/or had at some point attended a two-year school. Similarly, those who expect to attend a graduate or professional school may be less likely to marry immediately after completing a bachelor's degree than those who do not foresee additional education in their future.

One limitation of the data we use in this analysis is that although it includes a measure of job earnings in the year immediately after graduation, it lacks time-varying information on earnings growth (or decline) in the years that follow. In theory, student loan debt should influence family formation decisions, inasmuch as it impinges upon an individual's resource flow. For example, a person earning $35,000 a year should feel the effect of a $400 monthly student loan bill more than a person earning $45,000 a year with the same monthly repayment amount. In other words, student loan debt is a burden only *relative* to the person's current earnings, which fluctuates over time.

Our lack of a time-varying income measure is less problematic for two reasons. First, we control for initial earnings, which captures economic resources available to young adults during the crucial first year out of college, when undergraduate loan debt is at its highest. As wage growth is minimal in the initial years after college graduation (Roksa and Levey 2010), the inclusion of baseline income captures a sizeable portion of the variance associated with income changes over the four years post-college that we observe our sample members. Second, recent research has demonstrated that the strongest predictors of early wage growth for college graduates are field of study and school sector (Thomas and Zhang 2005). For example, on average, students who major in business, math, and engineering earn more than their peers who major in the social sciences and the humanities (Fitzgerald 2000), and graduates of private schools earn more than their public school peers (Brewer, Eide, and Ehrenberg 1999). To further eliminate any bias due to our omission of time-varying income, we control for field of study and school sector as additional measures of earnings potential. Finally, although income is available at one point in time, we include another important proxy for economic resources, a time-varying measure of employment status.

4. Method

4.1 Data

To explore the dynamics of student loan debt repayment and family formation in young adulthood, we analyze data from the 1993 Baccalaureate and Beyond Longitudinal Study (B&B:93). Collected by RTI International for the National Center for Education Statistics (NCES), this study tracks the work, post-baccalaureate education, and family life experiences of a cohort of young adults in the years following the receipt of a bachelor's degree. The B&B:93 uses the 1993 iteration of the National Postsecondary Student Aid Study (NPSAS), a nationally representative cross-sectional study of college students as its sampling frame. In accordance with NCES standards, exact sample sizes from restricted-use data files cannot be published, and therefore, the sample sizes in this article are rounded. Of the nearly 53,000 students who participated in the 1993 NPSAS survey, 12,730 were identified as bachelor's degree recipients during the 1992-1993 academic school year. These sample members comprise the B&B:93 base-year cohort.

As part of the NPSAS data collection, students were interviewed about their college experiences and the ways in which they were financing their education. Additionally, financial aid records were collected from their institutions, including their Student Aid Report, their Financial Aid Need Analysis Form, and their Comprehensive Financial Aid Report. These data from NPSAS for the 1992-1993 graduates serve as base-year information for the B&B:93 cohort, who were followed-up in 1993-1994, approximately one year after they graduated from college and then again in 1997, approximately four years after they graduated from college.

For the analyses presented here, we included only sample members who were single and never married when they graduated from college and who had complete information on student loan debt and the date of first marriage between the 1993 and 1997 interviews.[4] Approximately 9,920 sample members met these criteria (77.9 percent of the original base-year cohort). As the focus of our study is the life course opportunities and challenges unique to young adulthood, we excluded 470 sample members (4.7 percent of our selected analytic sample) who were older than 27 at the time of bachelor's degree receipt and therefore older than 30 – an arbitrary, but often used cut-point for young adulthood – at the time of the 1997 interview when date of first marriage information was collected.[5] Additionally, we excluded 40 cases that

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[4] Excluding those who were married prior to graduation is necessary, as it is not possible to temporally identify their marriage timing in relation to the onset of their loan histories.

[5] As noted, the average age of first marriage for college graduates in 1990 was 27 (Fry 2010). In setting up our analysis, we aimed to balance our focus on young adulthood with allowing enough time to observe first

lacked information on gender, a key variable used in the analysis (0.4 percent of our selected analytic sample). The final analytic sample includes 9,410 bachelor's degree recipients. All point estimates are weighted to compensate for unequal probability of selection into the B&B:93 sample, as well as to adjust for nonresponse bias and the inclusion criteria we imposed on the data.

The B&B:93 sample is drawn using a stratified cluster design, in which postsecondary institutions were initially selected within geographic strata, organized by zip code and state, and then stratified by control (i.e., public, private) and degree offering (two-year school, four-year school). We use survey (*svy*) commands in STATA, which use Taylor-series linearization methods to produce correct standard errors for samples that were drawn using a stratified cluster design (StatCorp 2005).

4.2 Measures

Marriage Formation. The dependent variable is the timing of first marriage after earning a bachelor's degree, based on the month in which the sample member reported first getting married. The unit of analysis is person-months. Exposure to the risk of marriage begins the month the sample member earned a bachelor's degree (which is May 1993 for most graduates), and extends through spring/summer of 1997 (approximately four years, or 48 months after degree completion). The exact period of exposure varies slightly for each sample member as the 1997 interviews took place between April and July. The dependent variable is coded 0 for all months in which the sample member is single and 1 for the month in which s/he marries. Individuals are removed from the risk set once they marry and no longer contribute person-months to the analysis. Those who remained single by the 1997 interview are right-censored. Table 1 shows the distribution of marriage formation and student loan debt – our key analytic variables – for the full sample, and separately for women and for men. None of the variables differ significantly by gender. During the risk period, 31.7 percent of the analytic sample married for the first time.

marriages in our analytical sample. We tested a variety of upper age boundaries (from 28 to 34); the magnitude and significance of our findings is consistent.

Table 1:   Marriage formation and student loan debt by gender

	Full Sample (*n* = 9,410)	Females (*n* = 5,140)	Males (*n* = 4,270)
Percentage married within 48 months of graduation	31.7%	33.2%	30.1%
Percentage with student loan debt	45.7%	45.1%	46.4%
Mean total student loan debt (among those with debt)	$10,538	$10,304	$10,794

Note: All estimates are weighted.

Student Loan Debt. The main predictor variable in this analysis is a time-varying measure of student loan debt, which is derived from the sample member's total loan debt at the time of graduation, their monthly payment amounts, and if applicable, periods of deferment, default, and forbearance. As scholarships and grants do not require repayment, neither are figured into this measure. The total amount of student aid obtained from federal, state, or institutional loans serves as the baseline total student loan debt facing the sample member at the time of graduation. Information from the National Student Loan Data System abstracted as part of the 1997 data collection was used to identify monthly payment amounts and when applicable, loan payoff dates. In our analytic sample, 45.7 percent graduated from college with student loan debt, and among those who did, the average burden was $10,538.

From these sources, student loan debt is constructed as a time-varying measure of the remaining balance – including both the principal balance and interest – across the 48 months following the completion of a bachelor's degree and identifies the gradually diminishing amount of student loan debt left to pay each month. All monthly payments begin six months after bachelor's degree receipt, the standard grace period extended to graduates before repayment is required to begin. For example, if a sample member graduated in May 1993, owed $9,000, and had a monthly payment amount of $100, each of their person-months would be coded $9,000 from June 1993 to November 1993, and then $8,900 in December 1993, $8,800 in January 1994, $8,700 in February 1994, and so on. All values of this time-varying measure were divided by 1,000 so that the coefficients from the multivariate models can be interpreted as the effect of an increase or decrease of $1,000 in loan debt. Those with no loan debt are coded $0 across all 48 months.

There are three instances that can alter the diminishing level of loan debt owed: deferment, default, and forbearance. Deferment refers to the postponement of loan payment due to graduate school enrollment, economic hardship/unemployment,

disability, or public service (i.e., Peace Corps, military). 19.2 percent of those in the analytic sample who had loan debt deferred their loan payments. When loans are deferred, they do not accrue interest. Therefore, for sample members who defer their loans, their time-varying loan debt remains unchanged during their period of deferment. If sample members continued on to graduate school and accrued further student loan debt, this additional debt amount was added to the outstanding total on the first month following graduate school exit and was granted a six-month grace period.

Those who are unable to continue paying back their loans and stop doing so are in default, which carries with it severe sanctions. This can be avoided by receiving forbearance, which is a postponement granted by the owner of the loan. Unlike deferment, when loans are in default or forbearance, they accrue interest, thus gradually increasing the total amount owed. Using information from the College Board on historical student loan interest rate averages, we recalibrated the monthly values for those who were in default or forbearance to reflect the increase due to interest accrual. Among those with student loan debt in the analytic sample, 2.4 percent went into default and 3.3 percent were granted forbearance.

Control Variables. In all multivariate analyses, we control for factors that are known to influence family formation and student loan repayment in young adulthood: sociodemographic characteristics, career and schooling orientations, earnings potential, enrollment-employment status, and state fixed-effects. Table 2 shows the distributions of all control variables included in the analysis (except for state-fixed effects, which would violate the terms of NCES' restricted use data policy).

Socio-demographic characteristics include age, race/ethnicity, and parental education. Age is a continuous measure indicating the age of the sample member at the time they completed their bachelor's degree. Race/ethnicity of the sample member is measured by a series of binary indicators: Asian, Black, Hispanic, White, and Other. White sample members serve as the reference category in all multivariate analyses. Parent's education indicates the highest level of education of either of the sample member's parents as reported on their financial aid records and is measured by a series of binary indicators: High school or less, some college, bachelor's degree, and graduate degree.[6] Sample members whose highest level of parent's education is high school or less serve as the reference category in all multivariate analyses.

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[6] If the mother and father in two-parent families had different levels of education, we used the highest recorded level of either parent.

Table 2: **Means and percentages of sample characteristics, full sample and by sex**

	Full Sample (n = 9,410)	Females (n = 5,140)	Males (n = 4,270)
Age at college graduation	22.4	22.2	22.6
Race/Ethnicity			
Asian	5.0%	4.3%	5.7%
Black	6.1%	8.0%	4.0%
Hispanic	4.5%	4.8%	4.3%
White	83.6%	82.1%	85.3%
Other	0.8%	0.8%	0.7%
Parent's education			
High school or less	35.5%	35.0%	36.1%
Some college	21.7%	22.1%	21.2%
Bachelor's degree	17.2%	16.9%	17.6%
Graduate degree	25.6%	26.0%	25.1%
Final college GPA	3.05	3.10	2.98
Postsecondary attendance			
Four-year school only	78.2%	78.5%	78.0%
Two- and four-year schools	21.8%	21.5%	22.0%
Expects postbaccalaureate degree			
Yes	19.7%	18.5%	21.1%
No	80.3%	81.5%	78.9%
Annual earnings in 1994	$20,527	$19,718	$21,436
Field of study			
Business/Management	18.1%	14.8%	21.8%
Education	11.9%	17.1%	6.1%
Engineering	19.0%	12.4%	26.4%
Health professions	5.8%	6.8%	4.6%
Social sciences	16.1%	17.1%	15.0%
Humanities	12.4%	13.2%	11.5%
Other	16.7%	18.4%	14.7%
Postsecondary institution sector			
Private	34.8%	36.9%	32.5%
Public	65.2%	63.1%	67.5%

Measures of career and schooling orientations include grade point average, type of postsecondary institution attended, and expectations for post-baccalaureate education. Grade point average is a continuous measure taken from the sample member's transcript and indicates their final cumulative grades in all subjects on a four-point scale. Type of postsecondary institution attended is measured by a binary indicator coded '1' if the sample member attended both two-year and four-year institutions en route to earning a bachelor's degree, and '0' if they had only attended a four-year institution. Expectations for post-baccalaureate education are based on a question that asked sample members whether or not they expected to earn a graduate degree. Sample members are coded '1' if they reported expecting to earn a graduate degree and '0' if they did not.

Measures of earning potential include earnings during the first year out of college, field of study, and school sector. Earnings during the first year out of college are a self-reported continuous measure indicating total income earned in 1994.[7] Field of study is measured by a series of binary indicators that identify the sample members' major at the time of bachelor's degree receipt: Business/Management, Education, Engineering, Health, Social Sciences, Humanities, and Other.[8] Sample members who earned a Business/Management degree serve as the reference category in all multivariate analyses. School sector is measured by a binary variable coded '1' if the sample earned their bachelor's degree from a private postsecondary institution, and '0' if they earned their bachelor's degree from a public postsecondary institution.

To capture the effects of debt apart from periods of deferment, default, and forbearance, which are often accompanied by graduate school enrollment (for those who defer) and unemployment (for those who default or enter forbearance), we include a time-varying measure of enrollment-employment status. For each person-month, the sample member is classified as enrolled, employed, both enrolled and employed, and neither enrolled nor employed. We also include time-invariant dummy variables for the sample members' state of residence at the time of bachelor's degree receipt. These state "fixed effects" remove the potentially confounding effects of state characteristics such as their financial aid, welfare, and labor policies that may influence both financial aid awards as well as family formation decisions.[9]

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[7] As most sample members were still enrolled for the first part of 1994, earnings were adjusted to reflect a full 12-month salary.

[8] Other majors account for 16.7 percent of the analytic sample. Due to NCES' coding of this variable, it is not possible to further parse out this variable.

[9] State of residence at the time of bachelor's receipt cannot capture the state context for students who migrate out-of-state after graduation. However, the majority of students remain in the same state as their postsecondary institution one year (85 percent) and at four years (73 percent) after college graduation (Kodrzycki 2001). Our main findings remain unaffected, whether state fixed effects are included or omitted from our multivariate models.

In our multivariate analyses, we report the parameter estimates for all the control variables. However, because there is already a large volume of literature that examines their relationship with family formation, and because they are not central to the research questions we pose, we do not discuss their associated coefficients.

5. Findings

Research question 1:   *Is there a relationship between student loan debt and marriage timing?*

To answer this question, we first constructed life-table survival curves documenting changes in marriage timing for sample members with varying levels of debt upon graduation. Each survival curve indicates the percentage remaining unmarried for each month during the risk period. Figure 1 shows predicted survival curves for those with no debt, for those with a loan balance of $4,500 at graduation (the 25th percentile of the debt distribution), for those with a loan balance of $9,000 at graduation (the 50th percentile or median of the debt distribution), and for those with a loan balance of $14,000 at graduation (the 75th percentile of the debt distribution). As first marriage is a non-repeatable event, all four of the curves decrease monotonically. The patterning of these survival curves indicates a negative relationship between initial loan debt and the decision to marry: Those with higher levels of debt are less likely to enter into marriage than their peers with no or low levels of debt. All four curves remain near 1 during the first 12 months after graduation, indicating that marriage is rare for all college graduates in the year immediately following degree receipt. After the 12-month mark, however, there begins a divergence. At this time, the rates of entry into first marriage begins to accelerate for graduates with no or initial low levels of debt, but is slower for graduates with initial higher levels of debt. By four years out of college, there are substantial differences across the groups. Among those who finished their undergraduate degrees with $4,500 of student loan debt, approximately 30 percent had married, compared with only 11 percent of their peers who finished their undergraduate degrees with $14,000 of student loan debt.

Figure 1:   **Predicted Survival Curves**
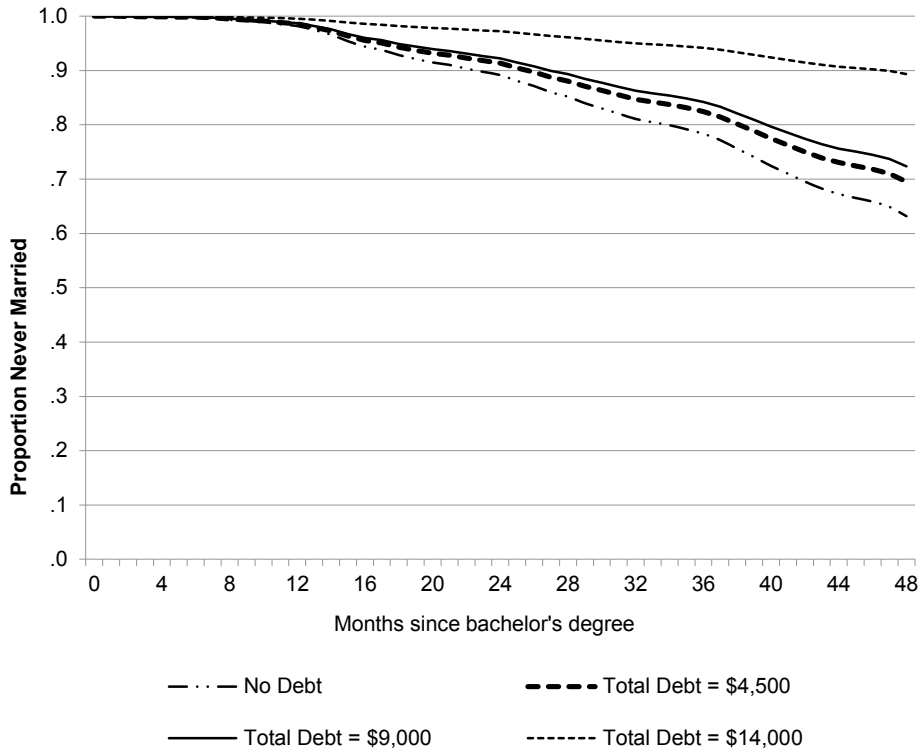
At first glance, these aggregate trends provide tentative support for the proposition that loan debt impedes the decision to marry. However, these estimates only crudely capture the dynamics of loan debt, which change over time for almost all young adults. For 19.2 percent of sample members, their payments were deferred, and in cases where they went to graduate school, their total loan debt often increased between the end of college and four years out. Additionally, 5.7 percent of the sample had defaulted on their loans or went into forbearance, which steadily increases the total amount owed via interest accruement. The rest of the sample saw their debt totals decrease with each passing payment. Further, in addition to the dynamics of loan repayment, the dynamics of the young adulthood change in the years after college: some college graduates enter the workforce, some struggle to find a steady job, and some return to school – all of

which have been shown to influence the decision to marry. These dynamics are not captured in this figure.

To account for these dynamic conditions and other potential confounds, we estimated a series of discrete-time hazard regression models predicting the odds of first marriage. Although time to first marriage is continuous, we use a discrete time hazard model because the data are grouped into discrete intervals (e.g., months). The hazard of the event from time t to time $t + 1$ is assumed to be constant while the hazard may vary across intervals. For a given covariate, the change in the baseline hazard is given by exp (β). The exponentiated parameters, exp (β), or odds ratios are presented in Table 3. Odds ratios greater than 1 signify an improvement in the odds of first marriage within a given month, while odds ratios less than 1 signify a reduction in the odds of first marriage within a given month. Model 1 includes the time-varying measure of student loan debt, the time since bachelor's degree receipt (in months), and all control variables. Model 2 includes all the variables in Model 1 and adds the multiplicative interaction term: Total loan debt remaining × Month's since bachelor's degree. These two models are presented for the full sample as well as disaggregated by gender.

In Model 1 for the full sample, the odds ratio associated with total student loan debt remaining is 0.99 and is significant at $p < .05$ – indicating that an increase of $1,000 in student loan debt reduces the odds of first marriage by 1 percent. This corroborates the patterning of the survival curves in Figure 1 and lends further support to the proposition that loan debt delays family formation: even when conditioning on socio-demographic characteristics, career and schooling orientations, earnings potential, enrollment-employment status, and state fixed-effects, higher levels of student loan debt are associated with reduced odds of entering into marriage in the young adult years.

Research question 2:   *Does the relationship between student loan debt and*
                          marriage timing vary by gender?

To test whether or not the relationship between student loan debt and marriage timing varies by gender, we estimated the models separately for women and for men. Before stratifying the model by gender, we tested whether the effect of loan debt differed by gender by including a multiplicative interaction term into the model: Male × Total Loan Debt Remaining. The estimated β is 0.008 and significant at $p < .01$, indicating that the effect of loan debt differs for men and for women. Additionally, a Chow test indicated the estimated determinants of marital timing in our analytic sample are significantly different for men and for women ($F = 2.25$, $p < .05$), and thus the separate models stratified by gender shown in Table 3 are justified. In Model 1 for women, the odds ratio is 0.98 and significant at $p < .01$ – indicating that an increase of $1,000 in student loan debt reduces the odds of first marriage by 2 percent. To get a more meaningful

sense of this relationship, consider two female college graduates who are equal in all of the covariates in the model, one at the 25th percentile of the total student loan debt distribution ($4,500) and the other at the 75th percentile of the total student loan debt distribution ($14,000). Based on the difference in total debt amounts ($14,000 - $4,500 = $9,500), the former is 19 percent more likely to get married in a given month than the latter. This rather large effect for women is not detected for men: the corresponding odds ratio in our sample of males is 1.00 and non-significant. This suggests that loan debt may serve to delay marriage for females but not for males.

Research question 3:   *Does the relationship between student loan debt and marriage timing attenuate as youth move into adulthood?*

Lastly, we explored whether or not the relationship between loan debt and marriage was contingent upon time, with the expectation that any relationship should attenuate with each passing month post graduation. To test this proposition, we evaluated the multiplicative interaction term – Months Since Bachelor's Degree × Total Loan Debt Remaining – for the full sample as well as for women and men separately. These are shown in Model 2.

If the negative effect of student debt fades as youth progress into adulthood, we would expect the odds ratio for the interaction term to be significant and greater than 1. In all three models, $\exp(\beta) = 1.01$ for the interaction term and is significant, indicating that, as predicted, the relationship between student loan debt and the decision to marry is contingent on time. The negative relationship is strongest immediately after graduating from college, and becomes less pronounced with each passing month. This is the case for the full sample, as well as for women and men separately. Taken together, these findings highlight a dynamic process whereby the weight of student loan debt changes over time along with the probability of first marriage – the implications of which is a topic to which we now turn.

Table 3: **Odds ratios from discrete time hazard regression models of months to first marriage**

	Full Sample (*n* = 9,410)		Females (*n* = 5,140)		Males (*n* = 4,270)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Key Predictor Variables						
Total loan debt remaining (in thousands)	0.99*	0.96**	0.98**	0.95**	1.00	0.96*
Months since bachelor's degree	1.03**	1.03**	1.03**	1.03**	1.04**	1.03**
Total loan debt remaining (in thousands) *x* Months since bachelor's degree	--	1.01*	--	1.01*	--	1.01**
Control Variables						
Sex						
Female	0.89	0.88	--	--	--	--
Male (reference)	1.00	1.00	--	--	--	--
Age at college graduation	1.00	1.01	0.98	0.98	1.05	1.05
Race/Ethnicity						
Asian	0.54**	0.54**	0.73	0.73	0.34**	0.35**
Black	0.60**	0.60**	0.51**	0.51**	0.74	0.74
Hispanic	0.96	0.95	0.92	0.92	1.08	1.07
White (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Other	0.89	0.89	0.80	0.80	1.24	1.24
Parent's education						
High school or less (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Some college	0.88	0.88	0.91	0.91	0.85	0.86
Bachelor's degree	0.87	0.87	0.86	0.86	0.84	0.84
Graduate degree	0.89	0.89	0.89	0.89	0.88	0.87
Final college GPA	1.12	1.12	1.16	1.16	1.04	1.03
Postsecondary attendance						
Four-year school only (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Two- and four-year schools	1.04	1.04	0.97	0.97	1.09	1.09
Expects postbaccalaureate degree						
Yes	1.02	1.02	1.03	1.03	0.94	0.95
No (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Monthly enrollment-employment status						
School only (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Work only	1.46**	1.48**	1.59**	1.59**	1.43	1.43
Both school and work	1.13	1.14	1.14	1.14	1.24	1.24
Idle	1.36	1.36	1.92**	1.92**	0.96	0.94
Annual earnings in 1994	1.01*	1.01*	1.01**	1.01**	1.00	1.00
Field of study						
Business/Management (reference)	1.00	1.00	1.00	1.00	1.00	1.00
Education	1.43**	1.43**	1.41*	1.41*	1.14	1.14
Engineering	1.01	1.01	1.04	1.04	1.02	1.01
Health	1.36*	1.37*	1.49*	1.49*	0.97	0.97
Social sciences	1.02	1.02	0.93	0.93	1.05	1.05
Humanities	0.94	0.94	0.76	0.78	1.04	1.03
Other	0.90	0.90	0.84	0.84	0.92	0.91
Postsecondary institution sector						
Private	0.83*	0.84*	0.81*	0.80*	0.81	0.83
Public (reference)	1.00	1.00	1.00	1.00	1.00	1.00

Note: All models control for state fixed-effects. All estimates are weighted.

* $p < .05$; ** $p < .01$

6. Conclusion

In accord with past research, which finds that economic strain impedes the decision to marry (Clarkberg 1999; Oppenheimer, Kalmijn, and Lim 1997; Teachman, Polonko, and Leigh 1987; Xie et al. 2003), we find that student loan debt acts in a similar way. Specifically, our analysis shows that an increase of $1,000 in student loan debt is associated with a reduction in the odds of first marriage by 1 percent among college graduates. Our findings align with other studies in the nascent body of research on the implications of debt which finds that student loan repayments act as a short-term liquidity constraint that limits choices in young adulthood, including career choices (Rothstein and Rouse 2011), graduate school enrollment (Millet 2003), and home purchases (Andrew 2010).

      While this relationship is evident for the sample as a whole, once having disaggregated the sample by gender and applying a rigorous set of control variables, the negative relationship between remaining debt and the odds of first marriage held for women only. To get a sense of the magnitude of the relationship, consider two average female college graduates: one at the 25th percentile of the total student loan debt distribution ($4,500) and the other at the 75th percentile of the total student loan debt distribution ($14,000). The former is 19 percent more likely to get married in a given month than the latter. This finding lends support to the proposition that the fixed costs of marriage are more relevant to family formation decisions of young women, and that liquidity constraints such as student loan repayments, may limit their ability to meet their expectations for long-term romantic relationships. This complements research on low-income women that finds personal economic stability is necessary before considering marriage (Gibson-Davis, Edin, and McLanahan 2005; Joshi, Quane, and Cherlin 2009).

      Our findings diverge from traditional models of gender specialization, which emphasize the economic resources of men. Any strain on resources brought on by student loan debt does not appear to thwart men's plans to marry in the years immediately after college. Recall that research on more recent cohorts finds that with declining earnings among men, and greater in-roads into the labor force by women, economic resources now matter in the marriage market for both men and for women (Sweeney 2002). While we find evidence that liquidity constraints matter in the marriage market for college-educated women, our findings suggest different dynamics are at play for college-educated men. While deciphering exactly why this is the case is beyond the scope of this project, it could be that men expect more financial returns from their jobs and/or a quicker "move up the company ladder" than do women – expectations that accord with long-seated employment trends reflecting gender inequality in the labor market. It could also be due to the fact that there are fewer

college-educated men in the population, and so their demand in the marriage market may trump their earnings/debt as signals of marriageable mates.

Though as a whole these findings highlight the life course consequences of relying on financial aid to shoulder the cost of college, they are most evident in the years immediately following college graduation. With each passing year, the negative effect of loan repayment attenuates. As adulthood progresses and one's loan balance shrinks, the salience of loan repayments in family formation decisions diminishes. However, it is not yet known whether and how the dynamics of loan debt affect resource allocation, economic stability, and the risk of divorce *once married*. With more recent cohorts undertaking substantial student loan debt to pay for their education and then entering relationships with more financial risk, this would be a particularly timely avenue for future research.

Despite the robustness of our results, we are limited in that we are unable to measure other partnership forms – namely cohabitation – with our data. Limited economic resources are a key reason why couples decide to cohabit instead of marry (Smock, Manning, and Porter 2005), and so it could well be the case that financial strain induced by student loan debt may lead to cohabitation as a short-term alternative to marriage. Also, we are unable to measure the economic resources and loan debt of the potential spouses of our sample members, which may matter as much or even more when making future decisions. Most data sets that focus on family dynamics only crudely measure educational financing (if at all); and conversely, most data sets that focus on educational attainment, such as the B&B:93, only crudely measure family processes. As a first foray into this topic, we opted to use a data set that contained high quality measures of student loan repayment, with the hope that other researchers will build off our findings and explore other data sources to more fully understand the relationships detected here.

Another limitation is that our analysis is based on observational data. As such, college students were not randomly assigned to financial aid packages or to varying levels of debt burden, limiting our ability to establish a causal link between student loan debt and marital timing in young adulthood. The analysis controlled for an array of observed socioeconomic and academic characteristics that have well-established relationships with various dimensions of socioeconomic stratification that shape the life course. While the relationship between student loan debt and marital timing was robust when these controls were applied, unmeasured characteristics (e.g. family wealth, orientations toward the future) may still jointly influence selection into loan debt and into marriage, and hence our findings may be upwardly biased.

A final limitation is the age of the data. Despite the many strengths of the B&B:93 – nationally representative large sample, complete administrative records on loan burden and repayment, date of first marriage – the study tracks the post-baccalaureate

experiences of students graduating from college in the 1990's. Today, more students leave college with debt and with higher levels of debt. While the B&B:93 cohort also faced diminished employment prospects stemming from a recession, the current economic downturn has been more prolonged. As such, our study cannot directly test current claims that "To Pay Off Loans, Grads Put Off Marriage" as boldly stated in the *Wall Street Journal*. It could well be the case that with increasing debt burdens and limited job opportunities, the effect of loan repayment is more pronounced than it was in the 1990's.

Additionally, our sample includes only college graduates; those who exited without a degree may struggle more in the labor market and hence, be more sensitive to liquidity constraints. Thus, our findings likely reflect a lower bound or "underestimate" of the current effect of debt burden for all college students. At present, the B&B data is the only nationally representative longitudinal study that contains complete student loan debt histories and despite its noted limitations, it is the only data source that can produce the analyses presented here. More research will be needed to ascertain whether the patterns detected in our study hold true for the most recent cohorts of college students – both those who graduate with a bachelor's degree and those who do not.

In closing, the news reports cited in the beginning of this paper that indict student loan debt as a mechanism altering the contours of young adulthood, at least with respect to marriage, are not without merit. Young adults shouldering loan debt face a host of financial hurdles upon graduation, which for most includes securing a job and establishing financial and residential independence from their parents. Once the six-month grace period wears off and loan repayments begin, the direct costs of their education begin to factor into their decision-making. This financially fragile time, at least in the short term, precludes marriage for young women. Demographic research has long shown that college graduates delay family formation; here we see that college financing is another dimension of this process – a dimension that may become more salient as more young women attend college and subsequently reach their 30's with more loan debt than their counterparts in previous generations.

References

Andrew, M. (2010). The changing route to owner occupation: The impact of student debt. *Housing Studies* 25(1): 39–62. doi:10.1080/02673030903361656.

Becker, G.S. (1973). A theory of marriage: Part I. *Journal of Political Economy* 81(4): 813–846. doi:10.1086/260084.

Becker, G.S. (1974). A theory of marriage: Part II. *Journal of Political Economy* 82(2): S11–S26. doi:10.1086/260287.

Blau, F.D., Brinton, M.C., and Grusky, D.B. (2006). *The declining significance of gender?* New York: Russell Sage.

Brewer, D.J., Eide, E.R., and Ehrenberg, R.G. (1999). Does it pay to attend an elite private college? Cross cohort evidence on the effects of college quality on earnings. *Journal of Human Resources* 34(1): 104–123. doi:10.2307/146304.

Burgess, S., Propper, C., and Aassve, A. (2003). The role of income in marriage and divorce transitions among young Americans. *Journal of Population Economics* 16(3): 455–475. doi:10.1007/s00148-003-0124-7.

Cherlin, A. (2010). Demographic trends in the United States: A review of research in the 2000's. *Journal of Marriage and Family* 72(3): 403–419. doi:10.1111/j.1741-3737.2010.00710.x.

Chiteji, N.S. (2007). To have to hold: An analysis of young adult debt. In: Danziger, S. and Rouse, C.E. (eds.). *The price of independence: The economics of early adulthood*. New York: Russell Sage: 231-258.

Clarkberg, M. (1999). The price of partnering: The role of economic well-being in young adults' first union experiences. *Social Forces* 77(3): 945–968. doi:10.1093/sf/77.3.945.

College Board (2011). *Trends in college pricing*. Washington, DC: College Board.

Day, J.C., and Newburger, E.C. (2002). *The big payoff: Educational attainment and synthetic estimates of work-life earnings*. Washington, DC: U.S. Census Bureau.

Fitzgerald, R.A. (2000). *College quality and the earnings of recent college graduates*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Fry, R. (2010). The reversal of the college marriage gap. Washington, D.C.: Pew Research Center Social and Demographic Trends Report.

Gibson-Davis, C.M., Edin, K., and McLanahan, S. (2005). High hopes but even higher expectations: The retreat from marriage among low-income couples. *Journal of Marriage and Family* 67(5): 1301–1312. doi:10.1111/j.1741-3737. 2005.00218. x.

Gicheva, D. (2011).In debt and alone? Examining the causal link between student loans and marriage. University of North Carolina: Department of Economics Working Paper.

Goldscheider, F. and Waite, L.J. (1986). Sex differences in the entry to marriage. *American Journal of Sociology* 92(1): 91–109. doi:10.1086/228464.

Jalovaara, M. (2012). Socioeconomic resources and first union formation in Finland, cohorts born 1969-81. *Population Studies* 66(1): 69-85. doi:10.1080/00324728.2011.641720.

Joshi, P., Quane, J.M., and Cherlin, A.J. (2009). Contemporary work and family issues affecting marriage and cohabitation among low-income single mothers. *Family Relations* 58(5): 647–661. doi:10.1111/j.1741-3729.2009.00581.x.

Kodrzycki, Y. (2001). Migration of recent college graduates: Evidence from the National Longitudinal Survey of Youth. *New England Economic Review* January/February: 13–34.

Lichter, D.T., McLaughlin, D.K., Kephart, G., and Landry, D. (1992). Race and the retreat from marriage: A shortage of marriageable men? *American Sociological Review* 57(6): 781–799. doi:10.2307/2096123

Livngston, G. and Cohn, D. (2013). Long-term trend accelerates during recession: Record shares of new mothers are college-educated. Washington, DC: Pew Research Center.

Lloyd K.M., and South, S.J. (1996). Contextual influences on young men's transitions to first marriages. *Social Forces* 74(3): 1097–1119. doi:10.1093/sf/74.3.1097.

McLaughlin, D.K., Lichter, D.T., and Johnston, G.M. (1993). Some women marry young: Transitions to first marriage in metropolitan and nonmetropolitan areas. *Journal of Marriage and the Family* 55(4): 629–641. doi:10.2307/352765.

Millet, C. (2003). How undergraduate loan debt affects application and enrollment in graduate or first professional school. *Journal of Higher Education* 74(4): 386–427. doi:10.1353/jhe.2003.0030.

Mirowsky, J.E., and Ross, C.E. (2003). *Education, social status, and health*. New Brunswick, NJ: Aldine Transaction.

Oppenheimer V.K. (1988). A theory of marriage timing. *American Journal of Sociology* 94(3): 563–591. doi:10.1086/229030.

Oppenheimer, V.K., Kalmijn, M., and Lim, N. (1997). Men's career development and marriage timing during a period of rising inequality. *Demography* 34(3): 311–330. doi:10.2307/3038286.

Oropesa, R.S. and Landale, N.S. (2004). The future of marriage and Hispanics. *Journal of Marriage and Family* 66(4): 901–920. doi:10.1111/j.0022-2445. 2004.00061. x.

Parsons, T. (1949).The social structure of the family. In: Anshen, R. (ed.). *The family: Its function and destiny*. New York: Harper & Brothers: 173–201.

Percheski, C. (2008). Opting out? Cohort differences in professional women's employment rates from 1960 to 2005. *American Sociological Review* 73(3): 497–517. doi:10.1177/000312240807300307.

Polachek, S.W. (2008). Earnings over the life cycle: The mincer earnings function and its applications. *Foundations and Trends in Microeconomics* 4(3): 165–172. doi:10.1561/0700000018.

Project on Student Debt (2008). National Center for Education Statistics (NCES), National Postsecondary Student Aid Study (NPSAS), 1993 and 2004 undergraduates, Data Analysis System (DAS).

Project on Student Debt (2011). *Student debt and the class of 2010*. Oakland, CA: The Institute for College Access and Success.

Roksa, J. and Levey, T. (2010). What can you do with that degree? College major and occupational status of college graduates over time. *Social Forces* 89(2): 389–416. doi:10.1353/sof.2010.0085.

Rothstein, J. and Rouse, C.E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics* 95(1–2): 149–163. doi:10.1016/j.jpubeco.2010.09.015.

Rumbaut, R.G., Furstenberg, F.F., Kennedy, S., McLoyd, V.C., and Settersten, R.A. (2004). Growing up is harder to do. *Contexts* 3(3): 33–41. doi:10.1525/ ctx.2004. 3.3.33.

Shellenbarger, S. (2012). To pay off loans, grads put off marriage, children. *Wall Street Journal:* April 17.

Smock, P. Manning, W., and Porter, M. (2005). "Everything's there except money": How money shapes decisions to marry among cohabitors." *Journal of Marriage and Family* 67(3): 680–696. doi:10.1111/j.1741-3737.2005.00162.x.

South, S. (2001). The variable effects of family background on the timing of first marriage: United States, 1969–1993. *Social Science Research* 30(4): 606–626. doi:10.1006/ssre.2001.0714.

StatCorp (2005). *Stata statistical software: Release 9.0 user's guide*. College Station, TX: Stata Corporation.

Sweeney, M.M. (2002). Two decades of family change: The shifting economic foundations of marriage. *American Sociological Review* 67(1): 132–147. doi:10.2307/3088937.

Teachman, J.D., Polonko, K.A., and Leigh, G.K. (1987). Marital timing: Race and sex comparisons. *Social Forces* 66(1): 239–268. doi:10.1093/sf/66.1.239.

Thomas, S.L. and Zhang, L. (2005). Post-baccalaureate wage growth within 4 years of graduation: The effects of college quality and college major. *Research in Higher Education* 46(4): 437–459. doi:10.1007/s11162-005-2969-y.

U.S. Census Bureau (2011). Current Population Survey, Annual social and economic supplement, selected years: 1991-2010 [electronic resource]. https://www.census.gov/hhes/www/poverty/publications/pubs-cps.html

White, L. and Rogers, S.J. (2000). The economic context of relationship outcomes: A decade in review. *Journal of Marriage and the Family* 62(4): 1035–1051. doi:10.1111/j.1741-3737.2000.01035.x.

Xie, Y., Raymo, J.M., Goyette, K., and Thornton, A. (2003). Economic potential and entry into marriage and cohabitation. *Demography* 40(2): 351–367. doi:10.1353/dem.2003.0019.

Zappone, C. (2006). Student loans – A life sentence. *CNN Money* May 2.