DISSERTATION

THREE ESSAYS ON CONNECTIONS BETWEEN PERSONAL LIFE AND ECONOMIC OUTCOMES

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ABSTRACT

THREE ESSAYS ON CONNECTIONS BETWEEN PERSONAL LIFE AND ECONOMIC OUTCOMES

The theme of this collection is the intersection of individuals' personal lives and economic lives. Personal traits may be influenced by gender, life events, and socioeconomic class. Personal traits can affect productivity and therefore are important in determining what happens in the labor market. In other words, what happens at work and what happens at home are not entirely separate.

The first essay explores how sexual orientation and sexual experiences are related to individual income. Previous literature indicates that gay, lesbian, and bisexual (LGB) individuals experience an income differential when compared with heterosexuals. Recent data indicate that self-identification as an LGB individual and/or same-sex sexual behavior are still correlated with a lower income, however, not all of the results are statistically significant. In addition, there is a statistically significant negative income differential of 32% for men who report having had a same sex partner at some point, but identify as straight/heterosexual.

The second essay analyzes parental divorce and how this may affect children later in life. Previous literature indicates that a multitude of issues exist for children whose parents divorced. The impact of parental divorce on children's income later in life is tested. Results from the Panel Study of Income Dynamics (PSID) indicate that negative income effects from parental divorce persist for young men, however, young women and older age groups do not experience negative impacts on income.

The third essay investigates a relationship between student loan debt and probability of marriage. Using the Baccalaureate and Beyond Survey 2008-2012, and with gender differences in mind, the impact of student loan repayment burden on the probability of marriage occurring in the four years following graduation is tested. Results indicate that increased payment-to-income ratio on student loan debt is negatively related to the probability of getting married for women who indicate a delay in marriage due to education debt.

TABLE OF CONTENTS

CHAPTER 1: SEXUAL ORIENTATION, SEXUAL HISTORY, AND INEQUALITY IN THE UNITED STATES

SUMMARY

Much of the literature on sexual orientation discrimination reports earnings differentials for gay, lesbian, and bisexual individuals when compared with heterosexuals. The General Social Survey (GSS) has been used previously due to its extensive coverage of demographic variables and sexual behavior in the U.S. This paper uses updated GSS data to investigate whether the income differentials found in earlier work have persisted and how estimates based on categorizing respondents according to the reported sex of their sex partners compare to estimates based on the respondents' self-reported sexual orientation. Results for the years 2008-2014 indicate that self-identification as a lesbian, gay, or bisexual (LGB) individual and/or same-sex sexual behavior are correlated with a lower income, however, not all of the results are statistically significant. In addition, there is a statistically significant negative income differential of 32% for men who report having had a same sex partner at some point, but identify as straight/heterosexual.

Motivation

The enactment of laws giving equal rights regardless of sexual orientation has been the subject of much debate over the last decade. For the most part, states have had the power to decide whether to include sexual orientation as a basis on which employers may not discriminate. In twenty-nine out of the fifty states in the U.S., there are no protections against discrimination for lesbian, gay, or bisexual (LGB) individuals (American Civil Liberties Union).

It may be argued that anti-discrimination laws are costly and unnecessary, based on economic models of discrimination which predict the eradication of discrimination altogether due to market competition. However in reality market forces have not eradicated discrimination, and greater degrees of competition have not been shown to decrease the degree of discrimination (Coleman 2004, Agesa & Hamilton 2004). If it can be shown that labor market discrimination continues to exist, this supports a need for public policy intervention. Previous studies have tested for evidence of discrimination against LGB individuals in the labor market by investigating wages and employment decisions.

Aside from anecdotal evidence of job separation based on sexual orientation, there is an abundance of statistical evidence of income differentials for LGB individuals based on a growing body of literature. Although sexual orientation can be difficult to define, and many economic surveys do not include it as a variable, researchers have been able to show that gay and bisexual male workers earn less than heterosexual male workers, while lesbian and bisexual female workers earn more than heterosexual female workers (Klawitter 2015, Black et al 2003).[1] M.V. Lee Badgett (1995) was the first author to apply econometric techniques to LGB discrimination. Badgett (1995) utilizes General Social Survey data from 1989-91, and finds that gay and bisexual males earn 11-27% lower wages than heterosexual male workers. However, no statistically significant difference was found for female workers. In those waves of the survey, the direct question of self-identified sexual orientation was not asked. However, respondents were asked about their sexual history, and Badgett (1995) argues that higher absolute and/or relative numbers of same sex sexual experiences would indicate identification with a gay or

[1] This paper, as well as most of the previous literature, is restricted to studies of LGB individuals, leaving out transgender individuals. Authors face the issue that data on transgender individuals is almost nonexistent. (Badgett 2006).

bisexual orientation, and in addition, society might not make a distinction between behavior and self-identified sexual orientation. These concepts will be revisited later in this paper. D.A. Black, H.R. Makar, S.G. Sanders, and L.J Taylor (2003) follow Badgett (1995) using General Social Survey data from 1989-96. Not only do the authors use updated data, but they also alter the definitions of "homosexual" to see if the results are sensitive to the definition used. The survey asks respondents about the sex of their sex partners in the last year, last five years, and since age 18. Respondents are also asked to report the number of male and female partners since age 18. The definition (according to Black et al.) of LGB can range from a respondent having had exclusively same sex partners over the past year to a respondent having had at least one same sex partner sometime since age 18. Black et al. (2003) find that men who have had sex with other men in the past year earn 16% less than straight men, men who have only had sex with other men in the last five years earn 14% less than heterosexual men, women who have had sex with other women in the past year earn 20% more than heterosexual women, and women who have exclusively had sex with other women in the past five years earn 34% more than heterosexual women.

Other authors have found ways to test for discrimination using data sources other than the GSS, such as the Census and youth health surveys. As more studies include questions on sexual orientation and sexual behavior, the availability of data and opportunity for comparison with the GSS grows. Testing the wage gap using additional data sources gives similar results to those obtained using GSS data. For the most part, other studies come to the same general conclusion that a negative income differential exists for gay and bisexual men (Sabia 2014, Carpenter 2007, Klawitter 2015). However, the size of the income gap varies by study and data used. For example, using the 1990 Census, Allegretto and Arthur find that the difference is very small, 3%

or less (2001). Other studies have shown that the wage penalty for gay and bisexual men may be as high as 30% (Badgett 1995, Carpenter 2007). The income effects of sexual orientation for females is less clear. Some studies show no discernable difference in the income of lesbian/bisexual women compared to heterosexual women (Badgett 1995, Sabia 2015). However, some studies indicate that a wage premium exists for lesbian and bisexual women (Black et al 2003, Klawitter 2015). Although much of the empirical research on wage gaps based on sexual orientation utilizes data from the U.S., wage differences are present in other developed nations, such as the U.K. and the Netherlands (Badgett 2006, Klawitter 2015). In addition, discrimination might also occur in employment decisions in the U.S. and other developed nations (Weichselbaumer 2003, Leppel 2009).[2]

Prior research and conclusions might vary, but many studies provide evidence that there are income differences for homosexual/bisexual men and women. The purpose of this paper is to further investigate these differences. First, I test for income gaps based on sexual orientation using recent GSS data so that a comparison may be made to earlier work. Second, I take advantage of the new GSS question on self-identified sexual orientation to investigate the assumption that sexual behavior and sexual orientation are highly correlated, and that using sexual behavior as a proxy for sexual orientation is appropriate when testing for evidence of wage discrimination against LGB individuals. Recent evidence suggests that not all who engage in same-sex sexual activity would identify themselves as gay, lesbian, or bisexual. A study released by the Center for Disease Control shows that approximately 2.3% of men who have had sex with other men identify as heterosexual (Casey E. Copen, Anjani Chandra, and Isaedmarie Febo-Vazquez). The wage gap that has been shown in previous literature would include these

[2] For a full review of the literature on income differentials based on sexual orientation, see Badgett (2006) and Klawitter (2015).

heterosexual-identifying individuals as LGB, based on their behavior. Using the new GSS data I can investigate the wage gap based on both self-identified sexual orientation and sexual behavior. Furthermore, if the results differ based on how respondents are categorized, this indicates that sexual behavior is not an appropriate proxy for sexual orientation, especially when investigating income differences. Finally, a more detailed analysis of whether it is identification as LGB, same-sex sexual behavior, or both that leads to a wage penalty will better inform public policy.

The General Social Survey

This paper mainly follows Badgett (1995) and Black et al (2003) by using similar methodology and more recent GSS data. The GSS is one of few surveys that includes questions about sexuality. While it is socially acceptable to inquire about and record variables such as sex, race, and marital status, it seems that questions of sexual orientation are still somewhat taboo. However, beginning in 2008 the General Social Survey has added a question directly asking respondents their sexual orientation, giving them three choices: gay/lesbian, bisexual, and straight/heterosexual. It is now possible to include self-identified sexual orientation as a variable in income regressions. The survey still includes questions on respondent's sexual history, that is, reported sex of sex partners. Therefore, new research can make comparisons with previous literature, as well as test the outcomes given this new self-reported variable.

This paper utilizes the expansion of the data to analyze income differences based on respondent's self-identified sexual orientation as well as respondents' reported number of male and/or female partners. It is now possible to show the correlation between sexual orientation and sexual behavior, and can also separately identify the mechanisms of potential wage differences.

Furthermore, I am able to analyze income differences for individuals whose sexual behavior does not "match" their sexual orientation. Sexual history with partners of the same sex does not necessarily indicate that an individual self-identifies as LGB.

A potential issue with this type of survey is respondents' possible discomfort with answering one or more questions. Sexual history can be a very sensitive topic. Therefore, observations missing either the income variable or information on sexual orientation/sexual history have been eliminated[3]. The pooled sample of full time year-round workers from 2008-2014 includes 1146 women and 1345 men.

In the available sample, 3.8% of women self-identify as lesbian or bisexual, and 3.3% of the men report gay or bisexual preferences. This is consistent with The Williams Institute estimate of the size of the LGB population in the U.S., which is 3.5%. (Gates 2011). Indication of gay, lesbian, or bisexual orientation is captured by the indicator variable *selfidLGB.* The most inclusive definition used in the previous literature, defining an individual as LGB if that person has had one or more same sex partners, yields much higher proportions. In this text, I designate this categorization with the indicator *LGBbehaviorweak.* 8.8% of the sample of women report having had at least one female sex partner at some point, while 7.6% of the men report at least one same-sex sexual experience (also consistent with the Williams Institute's estimate of 8.2%). The most exclusive way to categorize respondents based on sexual behavior used by Badgett (1995) is to categorize respondents as LGB if their number of same sex partners is greater than

[3] 74 full-time year-round workers were dropped due to lack of information on sexual orientation (30 women and 34 men). The average income of those dropped was approximately $31400 for the women and $43900 for the men. These averages are low when compared to the summary statistics of the main sample. This adds a potential for bias. If the majority of the group that did not give their sexual orientation on the survey were to be in an LGB category, the results may be strengthened. If, on the other hand, many would belong in the heterosexual category, the results would likely not be affected, since the heterosexual sample is large. 74 women and 126 men dropped due to missing information on sexual history. The average incomes for this group are particularly low: $24000 for the women and $36400 for the men. The potential for bias is similar to that described for missing sexual orientation. However, as speculation would not be appropriate, the observations are dropped from the sample.

or equal to their number of opposite sex partners. I will also utilize this definition as a behavior category, designated by *LGBbehaviorstrong*. 3.9% of women and 6.3% of men in the sample fall into this category. The notion that not all individuals with a history of same sex partners identify as LGB is reflected in the correlation table below.

Table 1 shows the correlation between sexual behavior and sexual orientation. The distinction is that *selfidLGB* is based on how a person internally identifies, or how a person "labels" his or her sexual orientation, while *LGBbehavior* categories are solely based on sexual history. These two may be correlated, but as Table 1 shows, sexual behavior is not perfectly correlated with self-identified sexual orientation (at least not in the way that society might expect). Based on this table, it cannot be taken for granted that sexual behavior predicts self-identified sexual orientation.

Table 1.1: Correlations between sexual orientation and behavior

	Women	
	LGBbehaviorweak	*LGBbehaviorstrong*
Self-identify as LGB	0.5787	0.4272
	Men	
	LGBbehaviorweak	*LGBbehaviorstrong*
Self-identify as LGB	0.5600	0.5499

The difference in rates of LGB-identifying individuals and individuals who have had at least one same sex partner tells us that a sizable proportion of the sample has had same-sex sexual experience, but does not identify as LGB. This is expected, based on the Center for Disease Control report referenced earlier. These respondents will be categorized using the variable *HeteroMSM/HeteroWSW.* To be clear, *HeteroMSM/HeteroWSW* indicates that the respondent has had at least one same sex partner, but indicates his or her sexual orientation as heterosexual.

Compared with Badgett (1995) and Black et al. (2003), the proportion of individuals with a history of same-sex partners is larger. Table 2 shows the rates of *LGBbehaviorweak* and *LGBbehaviorstrong* over time (as well as rates of *selfidLGB* since 2008). Although the rates fluctuate from year to year, overall rates in more recent years are larger than rates in the late 1980's/early1990's. The larger proportions could be attributed to any number of factors. It is possible that behavior has actually changed over the years. It is likely that respondents have begun to feel more comfortable disclosing their sexual preferences and sexual history. The survey does not follow the same individuals over the years, so there is no way to be sure. In addition, although there are only four survey rounds with the sexual orientation question so far, it looks like the rate of individuals who self-identify as LGB on the survey may be rising.

Table 1.2: Rates of LGB behavior and orientation over time in GSS samples

	Men			Women		
	LGB behavior weak	*LGB behavior strong*	*Self ID LGB*	*LGB behavior weak*	*LGB behavior strong*	*Self ID LGB*
1989	5.9	3.4		5.5	3.2	
1990	5.3	2.9		2.8	2.5	
1991	4.9	3.7		2.6	1.2	
1993	3.3	2.1		4	2	
1994	5.4	3.3		3.3	1.5	
1996	4.4	3		4.6	1.8	
1998	4.6	3.3		5.6	2.1	
2000	6.9	4.8		6.7	2.9	
2002	5.8	4.6		5.3	3	
2004	6	4.3		4.8	1.7	
2006	6.7	4.6		7.4	2.6	
2008	10.1	8.4	2.9	6.7	3.4	3.5
2010	7.7	5.6	2.5	8.8	4.7	3.4
2012	9.4	7	4	8.7	2.8	3.6
2014	10	8.3	4.5	9.4	4.2	4.7

Tables 3-4 show summary statistics by gender, sexual orientation, and behavior. A person who identifies as heterosexual and has never had a same sex partner is in the *Heterosexual* category. A person who identifies as heterosexual and has had at least one same sex partner is in the *HeteroMSM/HeteroWSW* category. A person who identifies as LGB is in the *selfidLGB* category.[4] A person in the *LGBbehaviorstrong* category has had at least as many same sex partners as opposite sex partners (and these respondents may also be in the *selfidLGB* or *HeteroMSM/HeteroWSW* categories). The *LGBbehaviorstrong* category is the basis for comparison with previous literature, while *selfidLGB* and *HeteroMSM/HeteroWSW* are new categories that are available now through the addition of the sexual orientation question on the survey. Total sample size is the sum of *Heterosexual, SelfidLGB,* and *HeteroMSM/WSW.* Recall that the individuals in the *LGBbehaviorstrong* category can be in either *SelfidLGB* or *HeteroMSM/WSW.* Additionally, adding *SelfidLGB* and *HeteroMSM/WSW* will not equal the N of *LGBbehaviorstrong*, they would add up to equal the N of *LGBbehaviorweak.* Because individuals with no sexual history cannot be categorized by their sexual behavior, and "asexual" is not an option on the survey, individuals with no sexual history are dropped from the sample[5]. The summary statistics shown are for full-time, year-round workers.

Summary statistics include *age*, *children* (respondent's number of children), *educ* (years of education), *hours* (average hours worked each week), *married* (indicator), *black* and *otherrace* (race indicators, where there are three simplified race categories, black, white, and other), *hispanic* (indicator of Hispanic ethnicity), *northeast, Midwest, west, south* (region of the

[4] Regarding the sexual history of those in the *selfidLGB* category: nearly all of them have had at least one same sex partner. While some have also had one or more opposite sex partners, further splitting the *selfidLGB* group would result in very small sample sizes. Additionally, due to heteronormative culture, it is generally expected that LGB individuals go through a sexuality questioning process where they may experiment with both sexes. This is generally not expected for heterosexual individuals. For more on heteronormativity and the questioning process, see *Sex Matters: the sexuality and society reader*, by Mindy Stombler (ed).

[5] 84 respondents with no sexual history were dropped from the sample, and just one identified as LGB.

Table 1.3: Summary Statistics (Women)

	Heterosexual	*SelfidLGB*	*Hetero WSW*	*LGBbehavior Strong*	*LGBbehavior Weak*
Age	44.29	40.15	38.54	39.82	38.98
	(12.30)	(10.28)	(10.52)	(10.97)	(10.56)
Children	1.68	0.90	1.52	1.52	1.30
	(1.47)	(1.22)	(1.26)	(1.48)	(1.28)
Educ	14.55	15.02	13.28	13.59	13.89
	(2.73)	(2.45)	(2.14)	(2.70)	(2.41)
Hours	43.82	43.79	43.28	42.43	43.61
	(10.48)	(11.48)	(9.76)	(8.98)	(10.59)
Married	46.43%	23.08%	30.49%	28.57%	27.91%
Black	16.58%	13.46%	17.07%	19.64%	14.73%
Otherrace	7.70%	1.92%	13.41%	17.86%	9.30%
Hispanic	9.98%	11.54%	15.85%	19.64%	14.73%
Northeast	18.46%	17.31%	14.63%	12.50%	14.73%
Midwest	25.29%	19.23%	18.29%	16.07%	17.83%
West	20.35%	15.38%	32.93%	26.79%	27.13%
bigSMSA	53.89%	55.77%	58.54%	55.36%	58.14%
Income	45976	41527	34248	33335	36976
	(35095)	(27749)	(27726)	(26327)	(28154)
Occavg	40485	43500	37646	37898	39738
	(17944)	(18420)	(18369)	(18719)	(18482)
N	1041	44	61	45	101

Notes: Means are given with standard deviations in parentheses for age, children, years of education, hours worked per week, income, and occupational average income. For all other variables, percentage of the sample that is included in each category is given.

Table 1.4: Summary Statistics (Men)

	Heterosexual	*SelfidLGB*	*Hetero MSM*	*LGBbehavior Strong*	*LGBbehavior weak*
Age	44.02	43.15	44.51	43.49	44.35
	(11.97)	(12.42)	(10.10)	(11.75)	(11.16)
Children	1.69	0.75	2.00	1.32	1.44
	(1.53)	(1.19)	(1.36)	(1.51)	(1.43)
Educ	14.22	14.91	13.12	13.85	13.91
	(2.89)	(2.37)	(2.93)	(3.00)	(2.90)
Hours	48.55	47.75	49.25	50.12	48.71
	(12.17)	(12.19)	(15.40)	(15.28)	(14.30)
married	58.81%	23.64%	68.83%	49.02%	48.41%
Black	10.20%	7.27%	12.99%	13.73%	11.11%
otherrace	9.01%	12.73%	19.48%	16.67%	14.29%
hispanic	12.32%	27.27%	23.38%	21.57%	23.81%
northeast	16.09%	9.09%	10.39%	8.82%	9.52%
midwest	25.23%	25.45%	32.47%	31.37%	30.95%
West	22.78%	29.09%	20.78%	21.57%	23.81%
bigSMSA	55.10%	63.64%	49.35%	58.82%	55.56%
Income	66870	57388	49211	52814	53195
	(51305)	(44323)	(40945)	(40982)	(43242)
Occavg	40179	42613	34815	39159	38286
	(16782)	(19662)	(14506)	(18700)	(17434)
N	1237	44	64	86	103

Notes: Means are given with standard deviations in parentheses for age, children, years of education, hours worked per week, income, and occupational average income. For all other variables, percentage of the sample that is included in each category is given.

country), *bigSMSA* (indicates that the respondent lives in a city with a population over 250,000), *income* (respondent's annual income), and *occavg*, which is calculated based on the respondent's occupational category. The calculation of *occavg* was made using a separate dataset (iPUMS).

For each of 21 occupational categories, the average annual income was calculated. These averages were then linked to each respondent in the GSS sample based on his or her occupation.[6]

One noteworthy difference in the summary statistics is that for both men and women, individuals who identify as LGB on average have fewer children and lower marriage rates. This is to be expected, given the legal difficulties for same-sex couples. Those in the behaviorally LGB categories also exhibit lower marriage rates. Regarding race, the proportion of self-identifying LGB women in the *otherrace* category is very small, which is not the case for men. Heterosexual groups appear to have the highest average incomes. Men in the *HeteroMSM* category have both the lowest average income and the lowest average occupational average. Women in the *HeteroWSW* category and the *LGBbehaviorstrong* category have lower average incomes than those in the *Heterosexual* and *SelfidLGB* categories, although women in the *SelfidLGB* category have the highest average occupational income, which may indicate that lesbian and bisexual women are more likely to have higher-paying occupations.

Overall, lesbian and bisexual women do not have the highest average income though. The same is true for gay and bisexual men: their occupational average income is higher than that of the heterosexual group, but their overall average income is lower. This will be further explored in the discussion section. Another noteworthy difference is in education levels. For both men and women, those in the *HeteroMSM/HeteroWSW* categories have the lowest average education, while the *selfidLGB* category has the highest average education. Each variable displayed in the summary statistics is also included as a control variable, so it is possible explore how each influences income and whether they fully explain the differences in average incomes.

[6] The list of the 21 occupational categories and corresponding average incomes is available in the appendix.

Methodology

The methodology in this paper closely mirrors the methodology used by Badgett (1995). In order to ensure use of a comparable method to Badgett 1995 in the analysis of more recent data, I have replicated her results from 1989-1991. Those results may be found in the appendix. A drawback of the GSS is that income is only given in intervals. There are ways to circumvent this issue**.** In keeping with the methodology used by Badgett, I calculate the conditional medians of each income bracket using a separate dataset, adjust for inflation, and then use the natural log of those medians as the dependent variable, as the income ranges for each category increase with income (Badgett 1995). Once this manipulation is done, OLS can be used. I use data on individual income from the American Community Survey, as the income data is much more detailed and is given in continuous values. Then, I specify income brackets corresponding to the intervals recorded for each GSS respondent. I calculate the median of each interval using the income data from the ACS. Then, for each interval, the corresponding median is substituted as the dependent variable *income* for each GSS respondent. For example, if the GSS records the respondent's income as $20,000-$22,499, and the calculated median of that interval from the ACS is $20,800, then I label the respondent's income as $20,800.[7] The final dependent variable is the natural log of income, *lnincome*.

It is also necessary to correct for selection into the labor market, specifically into full-time year-round work. While this is typically more of a concern for analyzing female respondents, due to the still-somewhat-popular social norm that women will stay home to care for family members, it is possible that gay and bisexual men's decision to join the labor market could differ from heterosexual men's decisions. It is also possible that lesbian and bisexual

[7] I also adjust for inflation using the CPI

women's labor market decisions differ from heterosexual women's. Therefore, it is important to check and account for these possible differences in the decision to join the labor force. There is a possibility that lesbian women are more focused on their careers and less likely to become pregnant and leave the labor force. In addition, other studies have shown that LGB individuals are more likely to be discriminated against in hiring decisions, which may keep them out of a job for longer. The sample I am using includes full-time year-round workers. Someone who has had a long unemployment spell would not be included. Therefore, I find it necessary to perform a Heckman correction for both sexes[8]. The income regression includes full-time year round workers, while the selection regression gives the probability of selection into full-time year-round work. This will control for the fact that selection into full-time year-round work is not random. The selection equation includes all control variables except the occupational control and hours worked, and also includes number of children as the exclusion restriction. Having children at home may impact the decision to work full time, but will likely not affect the wage offered. I would also like to note that I have chosen to restrict the sample to full-time year-round workers because it simplifies the comparisons. I am looking for differences in wages that are not explained by productivity, and it simplifies matters to compare individuals who are close in time spent working. Additionally, one objective of this paper is to make a comparison with previous literature, and in general, the samples in previous papers are also restricted to full-time year-round workers.

Although I restrict the regression to full-time year-round workers, unemployment rates merit reporting. Women who identify as heterosexual and are behaviorally heterosexual

[8] A second commonly used method for interval type data is to use an Interval Regression. Results using Interval Regression can be found in the Appendix. The interval regression results do not differ vastly from results using basic OLS (which are also available in the Appendix). In the main text, I use the conditional median method used in Badgett (1995), since this method also allows use of the Heckman correction.

experience an unemployment rate of 6%. Women in the *selfidLGB*, *HeteroWSW, LGBbehaviorweak,* and *LGBbehaviorstrong* categories experience unemployment rates of 10.5%, 9.7%, 10.1%, and 8.4%, respectively. Men who identify as heterosexual and are behaviorally heterosexual experience and unemployment rate of 7.9%. Men in the *selfidLGB*, *HeteroWSW, LGBbehaviorweak,* and *LGBbehaviorstrong* categories experience unemployment rates of 11.3%, 7.8%, 9.5%, and 10.5%, respectively.

I use different indicators for sexual orientation/sexual behavior/comparison as described above. Control variables include additional labor supply factors such as potential experience[9] (*potential exp, exp*^{2}), education (*educ*), hours worked[10] (*hours*), and an occupational control[11] (*occavg*), labor market conditions such as region (*northeast, midwest, west*) and urban residency (*bigSMSA*)[12], and demographic variables such as race (*black, otherrace*), ethnicity (*Hispanic*), and marital status (*married*). I also include an interaction term between sexual orientation and potential experience (*selfidxexp, LGBxexp, WSWxexp*) for women, to further account for any potential differences in labor market decisions. If lesbian and bisexual women choose to take less time off or no time off to care for family members/children, their real amount of work experience will differ from heterosexual women's, and their wages should differ accordingly. Separate regressions are run by sex. This is because the income equations for men and women are likely to structurally differ (for example, the "marriage premium" on income has been shown to exist

[9] Potential experience= age – years of education – 5. This proxy must be used, as real experience is not available. This proxy also allows age to be captured in the regression when potential experience and education are both included.

[10] Although my sample is full-time workers, "full time" may not be the standard 40 hours a week for each individual. Some work as many as 80 hours each week.

[11] I utilize the variable occavg as described above. Using this method, I am able to control for a large number of occupational categories without sacrificing degrees of freedom (or having 30 or more regressors). A list of the 21 occupational categories may be found in the appendix.

[12] An interaction between sexual orientation and urban residency was explored, but did not add to the analysis and therefore is not included in the regression.

for men, but not for women). Also, separating the regressions by sex greatly simplifies interpretation.

Results

"Behaviorally LGB"

First, I begin by categorizing respondents as LGB based on their behavior, as was done in previous studies where sexual history/behavior was the only option. Table 5 shows the results for women based on sexual behavior. Column 1 includes the indicator *LGBbehaviorweak* as the measure of sexual orientation. Column 3 shows the results with *LGBbehaviorstrong* as the measure of sexual orientation. Columns 2 and 4 are the corresponding selection regression results. While both coefficients of the behavior indicators are negative, *LGBbehaviorweak* is not statistically significant, and *LGBbehaviorstrong* is not strongly statistically significant. Table 6 shows the analogous results for men. For men who have had one or more same sex partners, a negative income differential of 25.1% is shown, and men in the *LGBbehaviorstrong* category experience a negative income differential of 20.8%.[13] In addition, the selection regression results (columns 2 and 4) indicate that men in both behaviorally LGB categories are less likely to "select into" full-time, year-round work.

Self-reported Sexual Orientation

Second, I define sexual orientation as the respondents define it for themselves. Table 7 gives results using measures of self-identified sexual orientation (for women). Column 1 shows results with only self-identified sexual orientation as the sexual orientation indicator. Column 3 adds the *HeteroWSW* category. Columns 2 and 4 show the selection regression results. Table 8

[13] Percentage difference is given by $d=e^{\delta}-1$, where d is the percentage difference and δ is the regression coefficient.

shows corresponding results for men. The coefficient estimate of self-identification as LGB is negative but not significant for both men and women. Also, from the selection results, it is interesting to note that self-identification as LGB appears to make a woman less likely to be working full-time year-round (though this is not strongly significant).

Sexual History versus Sexual Orientation

Men in the *HeteroMSM* category experience a negative income differential of 32%. In addition, men in the *HeteroMSM* category are also less likely to be working full-time year-round. Although the result for women in the *HeteroWSW* category is not significant, it is negative.

Table 1.5: Results with behavior indicators (Women)

	(1)	(2)	(3)	(4)
VARIABLES	Lnincome	selection	lnincome	selection
LGBbehaviorweak	-0.157	-0.0722		
	(0.153)	(0.158)		
LGBbehaviorstrong			-0.410*	-0.00732
			(0.226)	(0.226)
Educ	0.100***	0.0497***	0.100***	0.0502***
	(0.0131)	(0.00891)	(0.0132)	(0.00890)
married	0.119**	-0.211***	0.117**	-0.198***
	(0.0576)	(0.0496)	(0.0565)	(0.0492)
black	-0.0637	-0.109	-0.0588	-0.102
	(0.0651)	(0.0678)	(0.0646)	(0.0677)
otherrace	-0.0189	-0.0567	-0.00456	-0.0511
	(0.0827)	(0.0911)	(0.0828)	(0.0910)
hispanic	0.0108	-0.146*	0.0128	-0.141*
	(0.0780)	(0.0812)	(0.0778)	(0.0813)
potentialexp	0.0249	0.0899***	0.0246	0.0889***
	(0.0154)	(0.00649)	(0.0155)	(0.00641)
expsqrd	-0.000179	-0.00175***	-0.000172	-0.00173***
	(0.000310)	(0.000114)	(0.000311)	(0.000113)
LGBwkxexp	0.00380	-0.00584		
	(0.00670)	(0.00671)		
LGBstrxexp			0.00963	-0.00597
			(0.00961)	(0.00936)
bigSMSA	0.0880*	0.0214	0.0871*	0.0212
	(0.0451)	(0.0499)	(0.0451)	(0.0499)

northeast	0.132**	-0.0327	0.131**	-0.0329
	(0.0597)	(0.0685)	(0.0597)	(0.0685)
midwest	-0.0103	0.0886	-0.0124	0.0905
	(0.0557)	(0.0618)	(0.0559)	(0.0617)
West	0.109*	-0.0466	0.107*	-0.0504
	(0.0606)	(0.0657)	(0.0606)	(0.0656)
occavg	8.20e-06***		8.16e-06***	
	(1.19e-06)		(1.19e-06)	
hours	0.00950***		0.00945***	
	(0.00191)		(0.00191)	
children		-0.0919***		-0.0905***
		(0.0176)		(0.0175)
lambda	-0.304			-0.308
	(0.234)			(0.238)
Constant	7.965***	-1.609***	7.977***	-1.631***
	(0.511)	(0.159)	(0.520)	(0.157)
Observations	1146	3,673	1146	3,673

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1.6: Results with behavior indicators (Men)

	(1)	(2)	(3)	(4)
VARIABLES	Lnincome	selection	lnincome	Selection
LGBbehaviorweak	-0.289**	-0.299***		
	(0.124)	(0.0849)		
LGBbehaviorstrong			-0.233**	-0.249***
			(0.119)	(0.0929)
Educ	0.0904***	0.0283***	0.0899***	0.0281***
	(0.0122)	(0.00900)	(0.0122)	(0.00899)
married	0.291**	0.364***	0.295**	0.371***
	(0.121)	(0.0548)	(0.124)	(0.0547)
black	-0.230**	-0.250***	-0.227**	-0.249***
	(0.111)	(0.0812)	(0.111)	(0.0812)
otherrace	-0.0860	-0.162*	-0.0842	-0.161*
	(0.0965)	(0.0908)	(0.0965)	(0.0908)
hispanic	-0.111	0.0552	-0.118	0.0508
	(0.0774)	(0.0843)	(0.0769)	(0.0842)
potentialexp	0.0888***	0.0939***	0.0873***	0.0931***
	(0.0333)	(0.00685)	(0.0334)	(0.00683)
expsqrd	-0.00163**	-0.00199***	-0.00160**	-0.00198***
	(0.000700)	(0.000120)	(0.000704)	(0.000119)
bigSMSA	0.113**	0.0993*	0.115**	0.0998*
	(0.0568)	(0.0539)	(0.0569)	(0.0539)
northeast	0.147**	-0.103	0.149**	-0.102

	(0.0749)	(0.0750)	(0.0749)	(0.0749)
midwest	0.0329	0.0138	0.0298	0.0101
	(0.0593)	(0.0666)	(0.0591)	(0.0665)
West	0.0649	-0.183***	0.0644	-0.184***
	(0.0848)	(0.0691)	(0.0854)	(0.0690)
occavg	1.21e-05***		1.21e-05***	
	(1.32e-06)		(1.32e-06)	
hours	0.0102***		0.0103***	
	(0.00166)		(0.00166)	
children		0.0126		0.0132
		(0.0181)		(0.0181)
lambda	0.683		0.672	
	(0.486)		(0.492)	
Constant	6.877***	-1.274***	6.894***	-1.276***
	(0.826)	(0.158)	(0.836)	(0.158)
Observations	1345	3,006	1345	3,006

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1.7: Results with self-identified sexual orientation (Women)

	(1)	(2)	(3)	(4)
VARIABLES	Lnincome	selection	lnincome	selection
selfidLGB	-0.138	-0.395*	-0.147	-0.392*
	(0.233)	(0.219)	(0.233)	(0.220)
heteroWSW			-0.123	0.148
			(0.200)	(0.210)
Educ	0.102***	0.0505***	0.101***	0.0498***
	(0.0132)	(0.00891)	(0.0131)	(0.00894)
married	0.117**	-0.205***	0.117**	-0.211***
	(0.0572)	(0.0494)	(0.0575)	(0.0497)
black	-0.0659	-0.102	-0.0649	-0.108
	(0.0647)	(0.0677)	(0.0650)	(0.0678)
otherrace	-0.0270	-0.0537	-0.0235	-0.0564
	(0.0827)	(0.0911)	(0.0829)	(0.0912)
hispanic	0.0159	-0.148*	0.0138	-0.144*
	(0.0783)	(0.0811)	(0.0780)	(0.0812)
potentialexp	0.0256*	0.0874***	0.0250	0.0895***
	(0.0151)	(0.00640)	(0.0152)	(0.00650)
expsqrd	-0.000185	-0.00172***	-0.000180	-0.00175***
	(0.000306)	(0.000113)	(0.000306)	(0.000114)
selfidxexp	-0.000251	0.00764	3.41e-05	0.00702
	(0.0101)	(0.00998)	(0.0101)	(0.0100)
hetwswxexp			0.00322	-0.0141
			(0.00879)	(0.00872)

bigSMSA	0.0880*	0.0193	0.0879*	0.0196
	(0.0451)	(0.0499)	(0.0451)	(0.0499)
northeast	0.131**	-0.0329	0.131**	-0.0324
	(0.0597)	(0.0685)	(0.0598)	(0.0686)
midwest	-0.0110	0.0892	-0.0110	0.0878
	(0.0558)	(0.0618)	(0.0557)	(0.0618)
West	0.103*	-0.0518	0.106*	-0.0497
	(0.0607)	(0.0656)	(0.0608)	(0.0657)
Occavg	8.21e-06***		8.22e-06***	
	(1.19e-06)		(1.19e-06)	
hours	0.00940***		0.00943***	
	(0.00191)		(0.00191)	
Children		-0.0915***		-0.0931***
		(0.0175)		(0.0176)
lambda	-0.305		-0.310	
	(0.236)		(0.232)	
Constant	7.939***	-1.599***	7.969***	-1.599***
	(0.511)	(0.157)	(0.505)	(0.159)
Observations	1146	3,673	1146	3,673

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1.8: Results with self-identified sexual orientation (Men)

	(1)	(2)	(3)	(4)
VARIABLES	Lnincome	selection	lnincome	selection
selfidLGB	-0.120	-0.0886	-0.140	-0.115
	(0.129)	(0.132)	(0.131)	(0.132)
heteroMSM			-0.387**	-0.419***
			(0.165)	(0.104)
Educ	0.0902***	0.0284***	0.0888***	0.0265***
	(0.0123)	(0.00900)	(0.0118)	(0.00904)
married	0.292**	0.374***	0.296**	0.372***
	(0.126)	(0.0549)	(0.124)	(0.0550)
black	-0.232**	-0.257***	-0.224**	-0.248***
	(0.113)	(0.0810)	(0.110)	(0.0812)
otherrace	-0.0908	-0.165*	-0.0756	-0.156*
	(0.0971)	(0.0908)	(0.0954)	(0.0909)
hispanic	-0.121	0.0446	-0.116	0.0491
	(0.0765)	(0.0842)	(0.0768)	(0.0844)
potentialexp	0.0860**	0.0924***	0.0877***	0.0938***
	(0.0335)	(0.00682)	(0.0334)	(0.00686)
expsqrd	-0.00158**	-0.00197***	-0.00161**	-0.00199***
	(0.000706)	(0.000119)	(0.000701)	(0.000120)
bigSMSA	0.113**	0.0991*	0.111**	0.0974*

	(0.0568)	(0.0538)	(0.0562)	(0.0540)
northeast	0.156**	-0.0969	0.149**	-0.103
	(0.0741)	(0.0748)	(0.0747)	(0.0750)
midwest	0.0270	0.00627	0.0340	0.0150
	(0.0589)	(0.0665)	(0.0589)	(0.0667)
West	0.0697	-0.181***	0.0682	-0.181***
	(0.0848)	(0.0690)	(0.0844)	(0.0691)
occavg	1.21e-05***		1.20e-05***	
	(1.33e-06)		(1.33e-06)	
hours	0.0102***		0.0102***	
	(0.00166)		(0.00166)	
children		0.0137		0.0146
		(0.0181)		(0.0182)
lambda	0.657		0.664	
	(0.495)		(0.488)	
Constant	6.907***	-1.287***	6.922***	-1.254***
	(0.846)	(0.158)	(0.823)	(0.158)
Observations	1345	3,006	1345	3,006

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Discussion

Sexual behavior and Income

The income differences based on sexual behavior are consistent with literature that utilizes sexual behavior as a proxy for sexual orientation when looking at the results for men. The results that I find are close to those found in Badgett (1995), where the results are negative and statistically significant for behaviorally gay/bisexual men, and negative but not statistically significant for behaviorally lesbian/bisexual women. This shows that using sexual behavior as a proxy for sexual orientation would continue to indicate a negative income differential for LGB individuals.

Self- Identification and Income

The lack of statistical significance of the self-identifying LGB variable does not mean that it can be concluded that discrimination does not exist for LGB individuals, or even that an income gap does not exist. First, recall that income is reported in intervals. It is possible that an income differential does exist, but it is small enough to be within-intervals. This is still potentially a large difference, especially in higher income brackets. Above $40,000 annual income, the bracket range is $10,000 or more. For example, LGB workers might be near the low end of each bracket rather than towards the median. It is plausible that an income difference still exists, but the bracket ranges are too large for it to be plain in the analysis. Second, sample size is an issue. With only 44 men and 44 women in the sample who self-identify as LGB, there is a possibility that the sample size is too small to produce statistical significance. This issue can be addressed in time as more surveys capture sexual orientation as a variable, and as the GSS collects more years of data using these questions. Finally, the signs of the coefficients for self-identifying LGB men and women are negative, which should not be overlooked even if they are not statistically significant. Additionally, the differences in unemployment rates should not be ignored, as they may be evidence of bias or discrimination in the labor market.

HeteroMSM/HeteroWSW and Income

Regarding the *HeteroMSM/WSW* group, the negative income differential is consistent with the other LGB categorizations in that it appears that any group with LGB identity or behavior appears to experience a negative income differential. It is possible that some form of discrimination is occurring. As argued by Badgett, both behavior and identity are stigmatized, and the behavior alone can be enough to trigger discrimination (1995). While one may be able to point to discrimination in the case of individuals who openly identify as LGB, it is less likely that

discrimination is a factor for people who pass as heterosexual. There are a number of potential reasons aside from discrimination that the *HeteroMSM/WSW* group may earn less. First, it is possible that rather than discrimination, the driving factor for the negative income differential is psychological distress, possibly related to the questioning process. Some studies show a correlation between identity change or uncertainty about sexual orientation and depressive symptoms (Everett 2015, Borders, Guillen, and Meyer 2014). However, I cannot say for certain that these individuals in the *HeteroMSM* category are going through a questioning process. Second, it is possible that individuals who feel comfortable enough to experiment also happen to choose lower paying jobs. In this study, I control for broad occupational categories. The males in the *HeteroMSM* category do have the lowest average occupational income (of the men). But, occupational average income for broad categories is controlled for in the regression, so this does not fully explain the income difference. Third, it is possible that people in the *HeteroMSM/WSW* are in a socially or economically vulnerable position that makes it difficult for them to identify as LGB, either openly or in their survey response. The men in the *HeteroMSM* category have the lowest education level and a higher percentage of individuals who are non-white. In addition, their occupational average income is the lowest and their marriage rate is the highest. It could be that the results are displaying the economic vulnerability of this particular group, meaning that they are not experiencing a wage penalty due to same-sex sexual behavior, but they are experiencing lower income due to other factors, and those factors are also keeping them from identifying as LGB[14].

[14] Religion is also a possible factor in self-identification of sexual orientation. Tables 3 and 4 in the Appendix describe the proportions in each sexual orientation category that belong to each particular religious group and how often religious services are attended. Although the differences between types of religion are small between sexual orientation groups, it appears that men and women in the HeteroMSM/HeteroWSW groups attend weekly religious services at higher rates than those in the heterosexual group do. Those in the selfidLGB category attend weekly religious services at lower rates.

As data that includes these variables becomes more widely available, it will be possible to dig deeper into an investigation of the income differences found in this paper. Additionally, focus groups and other qualitative data could be very helpful in unpacking this story.

Comparison with Previous Literature

The second point of inquiry in this paper is how this variable compares with conclusions in earlier papers. Recall, researchers using the GSS prior to 2008 only had access to respondents' sexual history, not self-identification. Researchers categorized respondents as LGB based on whether they report having had a same sex partner, or if so, how many relative to opposite sex partners, and so on. That prior research rests on the assumption that sexual history is highly correlated with sexual orientation. This paper shows that such an assumption cannot necessarily be taken for granted, however, the results in this paper do indicate that LGB orientation and behavior produce generally the same results: it appears that individuals in any categorization of LGB are likely to experience lower income. While it has been found in most prior literature that gay men experience a wage penalty, and the results of this study are consistent with that finding, the results for lesbian/bisexual women are somewhat in contrast to much of the previous literature. Although Badgett (1995) found a wage penalty (not statistically significant) for lesbian and bisexual women, since then other researchers have generally found a wage premium for lesbian women (Klawitter 2015). The results in this paper match those of Badgett (1995) in that I find a wage penalty for lesbian/bisexual women (that is also not strongly statistically significant). It is possible that lesbian and bisexual women are no longer earning a premium, and may even be incurring a wage penalty.

Discrimination and Policy

Although not all results are statistically significant, every group that falls into some categorization of LGB in this study is shown to experience a lower income. In addition, LGB groups experience a higher unemployment rate. Policy designed to combat discrimination based on sexual orientation might be necessary to ensure that all workers have a fair chance at finding a job and that they do not experience any sort of wage penalty.

Conclusion

The purpose of this paper is to further investigate income differentials for lesbian, gay, and bisexual individuals, and to investigate whether and how sexual behavior leads to an income differential. I utilize the General Social Survey years 2008-2014. After correcting for selection into the labor market and the interval nature of the method by which income is recorded by the GSS, income is analyzed with indicators for a variety of groups based on sexual behavior and reported sexual orientation. Earlier work is mainly based on sexual behavior, rather than self-identification. Recent data allows separation of the two. This paper finds that individuals who self-identify as lesbian, gay, or bisexual (LGB) do not face a statistically different income level than those who identify as heterosexual, although the coefficient of self-identifying as LGB on income is negative. The coefficients of being behaviorally LGB on income are also negative for both men and women. This is somewhat in contrast to earlier work, where income premiums were found for lesbian/bisexual women. A surprising result of this paper is the income difference for men who have had a same-sex partner but self-identify as heterosexual. These men earn roughly 32% less than those whose sexual history and reported orientation are consistent. The results indicate that there is some aspect of sexual history that is linked with income, and that

sexual behavior may not be an appropriate indicator of self-identified sexual orientation. Further targeted research is necessary to find out why this could be. A possible explanation is that behavior alone may be enough to trigger discrimination (Badgett 1995). A second possibility is that heterosexual men who have engaged in same-sex sexual behavior may be experiencing some kind of psychological distress, possibly related to the questioning process, and this may lead to issues in the workplace. A third possibility is that these men may have chosen lower paying detailed occupations, as I only control for broad occupations categories. A fourth possibility is that these men are in economically vulnerable positions, and it is the position that prevents them from identifying as gay or bisexual. Although the current data is limited for the purpose of investigation these reasons, pinpointing the reason for the income differential provides a direction for future research.

A main conclusion of the paper is that for virtually all behaviorally LGB and self-identifying LGB groups, a negative income differential is shown, although not all coefficients are statistically significant. While these results for men are consistent with most prior literature, the results for women are not. Some studies have shown a positive income differential for LGB women (Black et al. 2003, Klawitter 2015). This study may indicate a penalty in the labor market for all LGB individuals, which may be due to discrimination. Currently, not all states within the United States protect LGB individuals from workplace discrimination. This study provides evidence that such protections could be necessary.

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CHAPTER 2: WILL THE KIDS BE ALL RIGHT? THE EFFECTS OF PARENTAL DIVORCE ON INCOME

SUMMARY

The event of divorce has the potential to adversely affect those involved, including the children of the divorced couple. This paper investigates the potential negative impacts of divorce on children's income later in life. Previous studies show that individuals with divorced parents tend to have lower income, lower education levels, and problems in their own relationships. Mechanisms through which this may occur include financial hardship, parental absence, and family conflict. Given increases in women's labor force participation rates and improvement in the gender wage gap, the financial hardship mechanism has the potential to become less powerful over time[15]. The primary purpose of this paper is to determine whether negative effects persist for each gender and for millennials, particularly lower income effects, and to investigate whether women's increased relative economic power has altered the impacts affecting children of divorce later in life. Results from the Panel Study of Income Dynamics (PSID) indicate that negative income effects from parental divorce persist for millennial men, however, millennial women do not experience negative effects on income.

Introduction

Divorce has become so common in the United States that between 43% and 46% of American marriages end in divorce (Benokraitis 2014, Schoen and Canudas-Romo 2006).

[15] From 1979-2015, women's labor force participation rate climbed from 50.9% to 56.7%, and the median weekly wage of full-time working women as a percentage of men's climbed from 62.3% to 81% (BLS 2015).

Although it can be the right step for some couples, divorce has been shown to have a number of negative impacts, including financial strain and emotional stress (Benokraitis 2014). A particular concern regarding divorce is the well-being of children. Divorce can be stressful on children for a number of reasons, including parental conflict, loss of a parent/parental absence, and a reduced standard of living (Seccombe 2012). Roughly 40% of children in the U.S. will experience parental divorce before reaching adulthood (Amato 2000). Some potential areas where children may experience negative outcomes include academic achievement, psychological issues, behavior, and social problems (Amato and Keith1991, Amato 2000). Much of the literature on the subject provides evidence that there are multiple negative effects of parental divorce on children. Children of divorced parents may be worse off on a number of measures than children whose parents stayed continuously married, at least until adulthood (Amato 1991, Amato 2000, Amato 2014). In addition, many studies also provide evidence that the negative impacts reach into adulthood, affecting productivity and health. Studies indicate that adults whose parents had divorced have lower income, poorer health outcomes, more of their own marital issues, and are at higher risk of depression (Amato2000, Amato 2014, Larson and Halfon 2012).

However, the potential positive impacts should not be discounted. While some reported benefits do not have an easily measured economic component, reported benefits such as happier mother, happier father, increased closeness to parents and siblings, and less conflict indicate that divorce may make some families better off (Halligan, Chang, and Knox 2014). Although many studies investigate the negative impacts of divorce, it should not be assumed that divorce is always negative overall.

The objective of this study is to continue the investigation into effects from parental divorce that reach into adulthood. In particular, using more recent data, I test whether parental

divorce still impacts children's income later in life. Additionally, I separate the sample by gender and age group and place emphasis on the respondent's mother's employment status. With divorce becoming so much more common, children of divorce may have a larger support network of peers with divorced parents, and the social stigma may not be as harsh as it was in previous decades, when divorce was less common. Younger generations might be more equipped to handle the stress of parental divorce. There is also evidence that working mothers provide some benefit to children later in life: a study by McGinn, Castro, and Lingo shows that having a working mother boosts income for daughters when they reach adulthood (2015). Given this boost from a mother's labor force status, it is plausible that having a working mother could mitigate some of the negative impact of parental divorce concerning income for children later in life.

Literature and Motivation

The rich literature regarding the impact of parental divorce on children primarily finds the impacts to be negative (Benokraitis 2014, Amato 2002). For a number of measures, including educational attainment, well-being, behavioral and psychological problems, and anxiety/depression, studies find that children whose parents divorce fare worse than children whose parents are continuously married (Amato 2014). Many studies also indicate that these negative impacts reach into adulthood. Children whose parents divorce grow up to have lower income and educational attainment, and report having more problems in their own relationships (Amato 2014, Ross and Mirowsky 1999). Parental divorce can even lead to health problems when the children grow up. In addition to poorer physical health, parental divorce during childhood is associated with increased mortality risk (Amato 2014, Larson and Halfon 2012).

By 1991, enough studies on the subject existed for a meta-analysis to be conducted; authors Amato and Keith analyze 92 studies that compare children living in divorced, single parent families with children whose parents stayed continuously married (Amato and Keith 1991). Most of these studies indicate lower levels of well-being, based on a number of measures, for children whose parents divorce. Overall, the 92 studies analyzed by Amato and Keith show negative consequences for children of divorced parents in the following outcomes: academic achievement, conduct, psychological adjustment, self-concept, social adjustment, and mother-child and father-child relations (1991). There are multiple theories as to why parental divorce would have negative impacts on children. The first is the idea of parental absence. In many cases (81%), one parent gets primary custody after a divorce, and 83% of the custodial parents are mothers (Benokraitis 2014). This could lead to less contact between parent and child, particularly father and child (Seccombe 2012). Because parental attention and support is a vital resource for children's intellectual and emotional development, parental absence could have negative consequences for children, such as increased behavioral problems, lower academic achievement, and lower self-esteem (Amato and Keith 1991). A second major theory explaining negative consequences of divorce is the economic disadvantage perspective. Divorce can lead to financial hardship for many families, since the economic advantages of marriage disappear, and divorce tends to deplete wealth (Zagorsky 2005). Many single parents tend to be women, who are already statistically likely to earn less than their male counterparts (Benokraitis 2014, Blau et al. 2014). Financial hardship can lead to a multitude of issues for children, such as a lower standard of living, poor nutrition, and generally worse health outcomes (Amato and Keith 1991). The third major perspective involves stressors on the children. The family conflict perspective assumes that it is the stressful conflict, rather than the divorce itself, that leads children to exhibit

problems with academics, behavior, and self-esteem (Amato and Keith 1991). Each theory is shown to only partially explain the negative consequences of parental divorce, with the family conflict perspective most strongly supported by the available evidence. A 2001 update of the meta-analysis analyzes 67 studies conducted in the 1990's. Children who have experienced parental divorce continue to score lower in academic achievement, conduct, psychological adjustment, self-concept, and social relations relative to children who live with continuously married parents (Amato 2001).

Although parental absence, financial hardship, and family conflict are all mediators that may partially explain why parental divorce has negative impacts on children, it is necessary to consider additional theories. Stress frameworks assume that divorce is a process for children that imposes continual stress. Parental absence, economic issues, and family conflict are all stressors for children, and any or all of these may increase the risk of emotional, behavioral, and health issues for children (Amato 2000). The selection perspective, on the other hand, argues that the divorce is not the problem-causing factor. According to the selection perspective, poorly adjusted people are selected out of marriage (Amato 2000). People with certain interpersonal, social, and emotional issues might have marital issues as well. Regarding children, the selection perspective argues that certain parental personality traits cause marital discord and inept parenting (Amato 2000). According to this theory, problems exhibited by children would be present during the marriage as well as after the marriage ends (Amato 2000). Although different studies give various results, in general divorce can lead to new issues for children and can exacerbate problems that were present before the divorce (Amato 2000).

The negative consequences of parental divorce have also been shown in many studies to reach into adulthood. Parental divorce is a risk factor for adulthood problems such as low

socioeconomic status, poor well-being, increased marital problems, and increased likelihood of divorce (Amato 2000). The theories that explain the negative consequences for children can be extended to explain adulthood problems if we assume that those mediators for childhood issues have lasting impacts. If the children have lower academic success, self-concept, and ability to psychologically adjust, it follows that those traits would have lasting effects (Benokratis 2014). Financial hardship, and family income in particular, significantly affects children's education and earnings (Hill and Duncan 1987). Studies show that adults who experienced parental divorce during childhood are likely to have both less education and lower income, are more likely to have nonmarital births, are at higher risk of depression, have poorer physical health, and have more problems in their own marriages (Amato 2014). Specifically, regarding marriages, children with divorced parents have been shown to be more likely to get divorced themselves, are less likely to get married in the first place, and if married, tend to marry at a younger age than average (Keith and Findlay 1988).

Given all of this negativity, do we have any reason to think that the effects are becoming weaker over time, or that divorce could even be beneficial? A smaller body of literature investigates positive impacts of parental divorce.

The way researchers view the traditional nuclear family could potentially introduce bias into the ways that non-traditional families are studied. Canetto discusses the research biases based on gender and views of the traditional family (1996). Typically, the traditional nuclear family is viewed as the optimal case, however, there is no evidence that this view is accurate. However, the assumption that the nuclear family is optimal is very strong, which may lead researchers to discount non-traditional families, or begin by assuming that children in non-

traditional families are worse off. The very concept of a traditional family is at odds with reality (Canetto 1996).

Studies have shown that children are better off if parents in high conflict marriages divorce rather than stay married (Amato 2014, Amato and Booth 1997). Given the family conflict theory discussed above, it follows that separating the parents in order to decrease conflict stress may be better for children in the long run. In addition, the implementation of community programs designed to mitigate the negative consequences of divorce can improve outcomes. A randomized trial of the New Beginnings Program, designed to help children of divorced parents with mental health problems, substance abuse, and social problems, indicated that such a program can help children achieve higher aspirations, higher grade point averages, and higher self-esteem (Sigal et al. 2012). Theoretically, these benefits would reach into adulthood, giving these young adults advantages in the labor market. Social change might also be a factor in weakening the negative effects. More recent studies tend to yield weaker effects of parental divorce on children (Amato 1991). Increasing female employment rates and decreases in the gender wage gap may help to mitigate the financial strain of divorce for single-mother headed households (Gahler and Garriga 2012). It is possible that the negative impacts from parental divorce have weakened.

There also is evidence that a mother's labor force status can influence a child's income later in life (McGinn, Castro, and Lingo 2015). While less recent studies have shown that maternal employment is not beneficial for sons, more recent studies have shown that maternal employment can have positive effects on the academic achievement of both male and female children, and can positively impact the income of female children (Hill and Duncan 1987, McGinn, Castro, and Lingo 2015).

Theory

The issue of parental divorce draws interest because of the potential for long-lasting negative impacts. The focus of this study is on children's income when they reach adulthood. One could expect parental divorce to impact income later in life through the aforementioned mechanisms: financial strain, family conflict, and parental absence. It has been shown that stressors from parental divorce during childhood can have far-reaching negative impacts (Benokraitis 2014, Seccombe 2012, Amato 2000). Therefore, it can be expected that experiencing parental divorce during childhood could potentially lower income later in life. It is common for women and children to experience financial strain after a divorce, because typically men have greater economic power and earnings potential, and the event of a divorce removes men's economic contribution, at least partially. Fathers may still be expected to contribute, but upon divorce, men are more likely to disengage with their children (Seltzer 1994). Financial strain during childhood may lead to unemployment and underemployment, lower wages, and lower educational attainment later in life (Wagmiller et al. 2006). A measure of family financial situations will assist in determining whether financial strain is the primary mechanism through which negative impacts of divorce are observed, if those negative impacts are observed at all. Family conflict may impact future income through emotional distress during formative childhood years, and evidence indicates that children experience depression and anxiety from their parents' separation (Seltzer 1994). A study by Smith and Smith shows that childhood psychological conditions, such as depression, have long-term economic consequences in the form of a 20% reduction in income (2010). Finally, parental absence could lead to negative impacts, however, a large portion of the consequences of an absent father are economic in nature

(Mclanahan 1999). Parental absence as a mechanism for lower income later in life must be studied in tandem with financial strain as a mechanism.

While each mechanism merits investigation, it is possible that the general negative impact from parental divorce as well as the motivating mechanism differs for each gender and for younger age groups. As discussed above, there may even be some positive impacts of parental divorce. In terms of differences by gender, one might expect boys and girls to process parental divorce differently. Boys and girls cope with stress differently; girls are more likely to seek social support and focus on relationships (Frydenburg and Lewis 1991). Additionally, having a working mother during childhood increases education levels for women, and parental divorce may increase the likelihood of a working mother.

For younger age groups, who will be referred to as "millennials" (children born between 1980-2000), it is plausible that the negative effects shown in previous literature have diminished. One reason differences could exist for younger generations is that society may be better equipped to handle divorce. The traditional marriage structure is less common, divorce is more common, and women have gained more power in the labor market. Women gaining more power in the labor market, as well as higher income, could help mitigate financial strain. Mother's labor force status could affect the financial strain perspective mechanism through which negative impacts from parental divorce emerge. Having the mother in the labor force could alleviate some of the financial strain of divorce, as she will have income and work experience. Although child support and alimony are designed to prevent serious financial strain after a divorce, approximately 77% of custodial parents do not receive as much in child support as they are supposed to, and 23% receive no child support (Benokratis 2014). In addition, a divorce places higher living costs on the divorcees, as they can no longer take advantage of the economies of scale enjoyed in a

marriage (Blau et al 2014, Benokraitis 2014). Therefore, it may be expected that working mothers could alleviate some, but certainly not all financial strain in the event of a divorce. However, a significant difference may exist between millennials and older age groups because millennials are more likely to have had a working mother. In addition, since divorce is so common, children in recent years might have had an easier time finding a social support network. If approximately half of children have divorced parents, it should be easier for a single child to find one or more friends who have also experienced parental divorce. Although one might expect to see negative impacts of divorce for older generations when genders are combined, it is possible that any negative impacts are less severe for women, and that effects are less significant or even nonexistent for millennials.

Data and Methodology

I utilize the 2013 cross section of the PSID and the Childhood Retrospective Circumstances Study, a supplement to the PSID that was administered in 2014 and linked to the 2013 main cross-section. The Childhood Retrospective Circumstances Study (CRCS) provides necessary information on parents, therefore it is not necessary to link each respondent with his or her parents in the panel data. Summary statistics are presented below in Tables 1 and 2. The sample includes 2609 women and 2194 men who were working in 2012, whose parents were initially married at some point, and who responded in the CRCS. Summary statistics include annual income in 2012 (*income*), age, number of children (*children*), highest degree obtained (*highdegree)*, average hours worked weekly in 2012, occupational average income (*occavg*)[16],

[16] The occupational average income is calculated using the iPUMS 2012. For each of 25 occupational categories, the average income is calculated and listed as each respondent's occupational average, according to occupation listed for his or her primary job. The 25 occupational categories are listed in the Appendix

Table 2.1: Summary Statistics for Women
***Means with standard deviations in parentheses, or percentage of the sample as marked

Variable	Older women - parents together	Millennial women - parents together	Older women - parents divorced	Millennial women - parents divorced
Income	40283	32247	37404	26650
	(52940)	(24615)	(28917)	(22305)
age	50.13	28.06	46.01	27.60
	(10.10)	(3.34)	(9.20)	(3.80)
Number of children	0.71	0.94	0.95	1.17
	(1.04)	(1.17)	(1.13)	(1.28)
Highdegree*	1.12	1.21	0.86	0.91
	(1.22)	(1.19)	(1.11)	(1.07)
Weekly hours worked	36.38	38.77	38.26	36.37
	(12.76)	(11.75)	(11.16)	(12.48)
occavg	33907	34332	33749	30133
	(17230)	(17744)	(17626)	(16733)
momwork	68.39%	84.65%	84.77%	88.83%
married	69.06%	63.74%	61.72%	50.84%
divorced	16.17%	4.39%	23.44%	8.38%
black	24.70%	24.56%	37.50%	43.58%
Other race	4.43%	7.75%	2.34%	4.47%
Northeast	16.98%	13.30%	8.98%	7.82%
North central	26.71%	31.73%	28.52%	20.11%
West	15.91%	19.59%	19.14%	21.23%
Hispanic	4.63%	11.26%	6.25%	11.17%
N	1490	684	256	179

*The degree scale is as follows: 1 Associate's degree/AA, 2 Bachelor's degree/BA/BS, 3 Master's degree/MA/MS/MBA, 4 Doctorate/PhD, 5 LLB, JD (Law degrees), 6 MD, DDS, DVM, DO (Medical degrees), 8 Honorary degree

Table 2.2: Summary Statistics for Men
***Means with standard deviations in parentheses, or percentage of the sample as marked

Variable	Older men - parents together	Millennial men - parents together	Older men - parents divorced	Millennial men - parents divorced
Income	64522	45791	55636	38745
	(63251)	(39592)	(67814)	(30799)
age	50.12	28.43	45.85	27.91
	(10.50)	(3.33)	(9.32)	(3.91)
Number of children	0.81	0.86	0.95	1.01
	(1.16)	(1.13)	(1.15)	(1.29)
Highdegree*	1.09	1.07	0.81	0.57
	(1.26)	(1.17)	(1.18)	(0.96)
Weekly hours worked	43.00	43.72	42.08	43.34
	(12.99)	(12.21)	(11.71)	(14.12)
occavg	38543	37001	36935	33311
	(18048)	(18362)	(18774)	(16830)
momwork	68.27%	80.35%	80.20%	85.07%
married	86.36%	70.43%	80.20%	65.67%
divorced	8.08%	2.53%	10.15%	2.99%
black	18.24%	19.07%	29.44%	23.88%
Other race	5.19%	6.81%	4.57%	8.96%
Northeast	17.79%	12.26%	14.21%	11.19%
Northcentral	25.06%	29.18%	28.93%	31.34%
West	17.35%	21.60%	18.27%	21.64%
Hispanic	5.78%	9.73%	4.06%	11.94%
N	1349	514	197	134

*The degree scale is as follows: 1 Associate's degree/AA, 2 Bachelor's degree/BA/BS, 3 Master's degree/MA/MS/MBA, 4 Doctorate/PhD, 5 LLB, JD (Law degrees), 6 MD, DDS, DVM, DO (Medical degrees), 8 Honorary degree

whether mother worked during the respondent's childhood (*momwork*), marital status, region of the country, race, and Hispanic/latino origin. The sample is separated for the purpose of providing summary statistics by whether their parents divorced prior to the respondent reaching age 17. The sample is also separated by gender and age group. The groups with parental divorce

have a lower average income, and show a distribution toward lower level degrees. The 'divorced parents' group has a lower proportion of married respondents and a higher proportion of divorced respondents. They also appear to be in lower paying occupations, and the group with divorced parents includes a higher proportion of black respondents. A higher proportion of millennials have divorced parents.

This study measures how parental divorce could impact children's income later in life. Particularly,

$$Ln(Y) = \beta_0 + \beta_1 X + \zeta M + \delta Z + u$$

is measured, where Y is the respondent's annual income. X is an indicator of whether the respondent's parents divorced during the respondent's childhood (before age 17). M is a measure of the mother's labor force status, an indicator describing whether the respondent's mother was in the labor force during the respondent's childhood (*momworked*). Z is a vector of additional explanatory variables which includes demographic and family characteristics that could have influences in the labor market (age, race, ethnicity, marital status, family financial situation during childhood, region, and number of children) and productivity characteristics (highest degree obtained, weekly work hours, and occupational control *occavg*). Regressions are separated by gender and age group. Because of the relative likelihood that some women may choose to stay out of the labor force in favor of taking on the duties of a homemaker, it is necessary to perform a Heckman correction for women. The selection equation for the Heckman correction includes all variables in the main regression and an additional selection variable: household income.

Results

Results are presented in Tables 3 and 4. In Table 3, Column 1 is the Heckman main regression results for older women, Column 3 is the Heckman main regression results for

Table 2.3: Results for Women

	(1) Older women	(2) Older Women	(4) Millennial Women	(5) Millennial Women
VARIABLES	lnincome	Selection	lnincome	Selection
age	0.0538***	0.0804*	0.336***	-0.0120
	(0.0191)	(0.0435)	(0.124)	(0.251)
agesquared	-0.000533***	-0.000968**	-0.00519**	0.000226
	(0.000184)	(0.000389)	(0.00226)	(0.00467)
children	0.0278	0.0477	-0.109***	-0.202***
	(0.0235)	(0.0630)	(0.0307)	(0.0576)
highdegree	0.110***	-0.226***	0.116***	-0.154*
	(0.0185)	(0.0653)	(0.0325)	(0.0858)
avghrs	0.0532***		0.0424***	
	(0.00169)		(0.00255)	
occavg	1.66e-05***	0.000150***	5.83e-06**	8.42e-05***
	(1.47e-06)	(5.45e-06)	(2.45e-06)	(5.91e-06)
divparents	0.0317	0.0126	-0.00812	-0.231
	(0.0584)	(0.163)	(0.0780)	(0.160)
momwork	-0.0473	0.0498	0.195**	-0.00733
	(0.0451)	(0.120)	(0.0866)	(0.192)
familysituation	0.0336	-0.00324	0.0524	0.0235
	(0.0230)	(0.0592)	(0.0333)	(0.0797)
married	0.121**	-0.117	0.152**	-0.525***
	(0.0568)	(0.143)	(0.0679)	(0.177)
divorced	0.00437	-0.00318	0.115	0.105
	(0.0657)	(0.169)	(0.143)	(0.321)
black	-0.0136	0.208	-0.0611	0.199
	(0.0537)	(0.140)	(0.0781)	(0.174)
otherrace	0.0917	-0.00867	0.0891	-0.129
	(0.104)	(0.283)	(0.129)	(0.290)
northeast	0.219***	0.399**	-0.0723	0.473
	(0.0622)	(0.187)	(0.106)	(0.321)
northcentral	-0.00695	0.438***	-0.147*	0.226
	(0.0517)	(0.141)	(0.0786)	(0.179)
west	0.174***	-0.183	0.0821	-0.00636
	(0.0622)	(0.171)	(0.0891)	(0.199)
hispanic	0.156	0.198	-0.0599	-0.0567
	(0.0968)	(0.276)	(0.105)	(0.237)

hhincome		5.00e-08		6.90e-06***
		(2.46e-07)		(2.43e-06)
Constant	5.944***	-3.000**	2.512	-0.0657
	(0.500)	(1.222)	(1.681)	(3.328)
Observations	1746	1746	863	863

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2.4: Results for Men

	(1)	(2)
	Older men	Millennial Men
VARIABLES	lnincome	lnincome
age	0.110***	0.307**
	(0.0201)	(0.133)
agesquared	-0.00114***	-0.00447*
	(0.000195)	(0.00241)
children	-0.0128	-0.0284
	(0.0235)	(0.0318)
highdegree	0.102***	0.103***
	(0.0198)	(0.0321)
avghrs	0.0407***	0.0329***
	(0.00183)	(0.00256)
occavg	1.22e-05***	1.09e-05***
	(1.37e-06)	(1.91e-06)
divparents	-0.0417	-0.130*
	(0.0671)	(0.0785)
momeverwork	-0.00670	0.143*
	(0.0489)	(0.0798)
familysitch	0.0319	-0.00235
	(0.0270)	(0.0355)
married	0.364***	0.162**
	(0.0768)	(0.0776)
divorced	-0.0923	0.117
	(0.0929)	(0.199)
black	-0.166***	-0.221***
	(0.0625)	(0.0830)
otherrace	-0.0679	-0.164
	(0.104)	(0.130)
northeast	0.178***	0.0481
	(0.0647)	(0.103)
northcentral	-0.0955*	-0.0114
	(0.0579)	(0.0775)
west	0.118*	0.0190

	(0.0659)	(0.0869)
hispanic	0.0200	0.0922
	(0.101)	(0.112)
Constant	5.397***	3.246*
	(0.518)	(1.817)
Observations	1,531	646
R-squared	0.430	0.427

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

millennial women, and Columns 2 and 4 are the corresponding selection regressions. Selection represents "working" or "not working." In Table 4, Column 1 presents the results for older men, and Column 2 is the results for millennial men.

Although parental divorce does not affect income for women or older men, it does seem to affect millennial men. For millennial men, parental divorce has a negative impact, but having a working mother has a positive impact[17]. Both of these results are significant at a 10% level. If the mother worked, the effect of the parental divorce is nearly cancelled out. However, if parental divorce occurred and the respondent's mother did not work, his income may be lowered by approximately 12.2%[18]. In addition, millennial women experience a boost to income if their mothers worked, although older women do not. Other noteworthy coefficients include those on the number of children: for millennial women, number of children negatively and statistically significantly impacts income. In addition, greater weekly hours worked and occupational average income both increase income, which is to be expected.

[17] Similar tests were performed with the inclusion of a variable indicating whether mothers had worked prior to the divorce. This variable was not significant.
[18] This calculation is given by $d=e^{\beta_1}-1$, where d gives the percent difference in income for the "divorced parents" group, and β_1 is the coefficient on *divparents*.

Discussion

The main research questions of this study are (1) Is there still a negative impact on income from a parental divorce occurring during childhood, (2) do these impacts differ by gender and age group and (3) How might having a working mother, or a "non-traditional" family structure, change the potential negative impacts of a divorce for a child later in life?

The results indicate that while there is a negative impact on income from parental divorce for millennial men, the impact may be alleviated by having a working mother. This may lend support to the theory that having both parents in the labor force can alleviate some of the negative impacts that could come from financial strain. Older men do not appear to experience the same impacts, which differs from previous literature. It is possible that while negative impacts exist for men, the effects diminish over the life cycle. The results differ for women: the impacts of parental divorce are not apparent for both age groups, however, millennial women get a boost from having a working mother. Overall, although impacts differ by gender and age group, the income effects from parental divorce appear to be diminished in comparison with previous studies.

Although parental divorce may have a number of negative impacts, parental divorce does not appear to strongly impact income of children later in life. With divorce having become so much more common, and with women gaining more power in the labor market, it is plausible that the mechanisms through which individuals experienced lower income from parental divorce in the past have been largely mitigated. For young women in particular, having a working mother appears to be greatly beneficial.

Directions for future research include further investigation into the effects of parental divorce on educational attainment, as well as possible economic benefits of parental divorce.

Divorce may be beneficial to the parents who choose to divorce, and may lead to greater happiness in the long run, which could have positive impacts for children. In addition, one limitation of this study is that remarriage was not examined, and remarriage could provide benefits for both adults and children as well.

Conclusion

The purpose of this study is to investigate potential negative impacts from parental divorce, particularly effects on children's income upon reaching adulthood. Effects are examined for millennials as compared to older age groups, and for each gender. This study provides evidence that while negative impacts from parental divorce may still exist for millennial men, these effects are largely mitigated if the respondent's mother was in the labor force during his childhood. Additionally, millennial women experience a boost to adulthood income if their mothers worked.

Prior studies show that there are negative impacts on children from parental divorce, and these negative impacts can reach into adulthood (Benokraitis 2014, Seccombe 2012, Amato 2000). In particular, it has been shown that children of divorced parents earn less later in life. The expectation in this study was that parental divorce will lead to lower income later in life for both men and women. The mechanisms through which this could occur are financial strain, family conflict, and parental absence during childhood. However, the negative impacts are expected to be somewhat alleviated by working mothers: if both parents are in the labor force, it may alleviate some of the financial strain of a divorce. Using the PSID 2013 combined with the Childhood Retrospective Circumstances Study, a supplement to the PSID, the effects of parental divorce and mother's labor force status during childhood on children's adulthood income are

tested. Millennial men experience lower income from parental divorce, but experience a boost if their mothers worked. The impacts of parental divorce are not statistically significant for women. Tasks for future research are to investigate further why the results differ between men and women, how divorce impacts educational attainment, and how remarriage of parents may impact children later in life. In addition, based on further analysis of when mothers worked and whether they were working prior to the divorce, it does not seem to be significant that they worked before the divorce, only that they worked during the respondent's childhood.

This study adds to the current body of literature by separating age groups, men, and women for analysis, and by examining the "working mothers" component. Overall, this study provides evidence that working mothers may be beneficial to children in the event of a divorce. This study also provides evidence that the impact of parental divorce on children's adulthood income may not be a negative one for women, and that for young men, it may only be negative if parents divorce and the mother did not work at all during the respondent's childhood.

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CHAPTER 3: THE BURDENS OF STUDENT DEBT: ARE STUDENT LOANS KEEPING YOUNG ADULTS FROM GETTING MARRIED?

SUMMARY

The purpose of this study is to examine what effects, if any, student loans may have on the well-being of recent college graduates. In particular, the focus of this study is whether student loan debt is preventing or delaying college graduates from getting married. While news articles and surveys indicate that some student loan borrowers are finding themselves in situations where they must delay marriage, there is little empirical evidence to indicate that this is a widespread issue. In addition, particular attention is paid to whether any impact of student loans differs by sex, and if a difference exists, the nature of that difference. Using the Baccalaureate and Beyond Survey 2008-2012, and with questions about women versus men, the impact of student loan repayment burden on the probability of marriage occurring in the four years following graduation is tested. Increased levels of student loan debt were found to negatively relate to the probability of getting married for women, however, the marginal impacts are relatively small.

Introduction

Concerns over student loans have been growing. The benefits of a higher education are well documented. Student loans enable some who might not otherwise be able to afford college or university to borrow and pay later with the expectation of a higher income. However, there is a concern that the amounts borrowed are becoming too large, and the return from a college diploma is not as high as expected. In addition, the presence of student loan debt does not

guarantee a college degree, and default rates are much higher among student borrowers who did not complete college (College Board 2016).

According to the College Board, the cost of education has been rising over the last 30 years. The cumulative effect of these increases over many years has made the cost of attending college, in absolute terms, significantly higher after just 10 years: the average tuition at a public four-year university in the 2015-2016 academic year was 40% higher than in the 2005-2006 academic year (after adjusting for inflation) (College Board 2015). The cost of education in the 2015-2016 year was approximately $9,410 for in-state tuition and fees, and $23,893 for out of state tuition and fees. With room and board included, the average total was $19,548 for in-state students and $34,031 for out-of-state students (College Board 2015).

Student loans are one source of funding for higher education. Other sources include savings, federal and state aid, scholarships, financial help from parents and guardians, and income from full or part-time employment. However, with rising costs, options such as savings and income from employment might not be enough. In order to pay for the average total as an in-state student reported above, one would need to have worked approximately 54 hours per week for 50 weeks at minimum wage in 2016. In addition, total public funding per student for higher education fell by 12% from 2000-2012. (Woodhouse 2015). While some students are fortunate enough to not have to borrow to pay for college, the majority must borrow education loans: 61% of students who graduated in 2013-2014 left with student loan debt, with an average total level of debt of $26,900. Ten years ago, 54% of graduates left college with at least some debt, and the average debt level was $22,900 (in 2014 dollars) (College Board 2015).

How are graduates faring in terms of their ability to repay? If the costs of education have risen, but the corresponding reward of income has risen in proportion, then it would be difficult

to argue that any problem exists for graduates. However, wages for college-educated individuals have not been rising with the cost of college. From 2007-2014, real wage growth for college graduates ranged from -2.7% to 0%, and real wages only grew 1.5% in 2015 (Gould 2016).

In addition to stagnant wages, another issue faced by recent college graduates is proper job matching. Many young adults graduated into a recession from 2007-2009. During the recession, many graduates experienced either unemployment or underemployment. Throughout the recession and even now, younger age groups (20-34) have had higher unemployment rates than average (BLS). Bachelor's degree (and higher) holders faced the lowest unemployment rate of all education groups, but this does not rule out underemployment (BLS). While in 2014, the default rate on education loans was 9%, that number jumped to 14% in 2015 and 16% in 2016 (College Board 2014, 2015, 2016). There are options for students having trouble repaying though, especially for federal student loans, such as loan consolidation and income-based repayment plans, given the graduates are aware of and able to evaluate these options.

Some elements of the media argue that student loans are keeping the millennial generation from realizing its potential. Articles in *The Wall St. Journal*, *The New York Times*, *NBC News*, and *The Washington Post* discuss the idea that student debt might be pushing graduates to put off traditional milestones, citing anecdotal stories about graduates delaying marriage or even canceling engagements due to student debt (Chaker 2009, Mitchell 2012, Lieber 2010, Anderson 2015). However, these stories are not just limited to a few unfortunate college graduates who borrowed too much and cannot find employment. Approximately 61% of recent college graduates left higher education with some amount of student loan debt (College Board 2015). In multiple surveys administered by organizations such as Bankrate.com and Nellie Mae, a significant portion of student debtors claim putting off traditional life milestones, such as

marriage, due to student loan debt (Anderson 2015, Baum and O'Malley 2003, ElBoghdady 2014).

The issue of student loan debt has the potential to cause financial and personal stress for graduates, and many of them report that student loan debt is affecting their financial and personal well-being (Anderson 2015, Baum and O'Malley 2003, ElBoghdady 2014). A number of studies have provided evidence that student loan debt can impact career choice, home purchases, and fertility decisions, therefore it is plausible that student loan debt could affect marriage decisions as well (Field 2009, Gicheva 2011, Bozick and Estacion 2014, Elliot and Nam 2013, Nau et al 2015). Debt aversion has been shown to influence decisions about whether and where to attend college, as well as where to seek employment afterwards (Field 2009, Callender and Jackson 2008, Burdman 2005). It has also been shown that student debt burden is preventing college graduates from building home equity (Elliot and Nam 2013). Family formation decisions may also be impacted: researchers have documented delays in marriage and fertility due to student loan debt (Bozick and Estacion 2014, Gicheva 2011, Nau et al 2015). The decision to marry is particularly interesting because marriage is correlated with home purchase, higher wealth accumulation, higher reported levels of happiness, better health, and fertility (Benokraitis 2012, Grinstein-Weiss et al 2008, Ponder 2016). With so many supposed benefits associated with marriage, many of which are non-pecuniary, the claims that student loan debt is preventing many graduates from marrying or causing a delay merit investigation. The purpose of this study is to investigate whether and how student loan debt may cause college graduates to delay marriage, and how this could affect their well-being.

An additional objective of this study is to analyze whether gender is a relevant factor in the burden of student debt. Given the existing wage gap (full-time working women's median

weekly earnings are 83% of men's median weekly earnings), we might assume that women would face a heavier payment burden in terms of their payment-to-income ratio (BLS). Although wages are highly correlated with choice of college major for graduates, tuition rates are, in general, not. Given that research often finds asymmetric results when comparing men and women, including but not limited to differences in risk aversion and labor market decisions, it follows that factors in marriage decisions might differ between men and women, as well as education funding decisions (Blau et al. 2014, Jianakoplos and Bernasek 1998, Mortenson 1988). For this reason, a large component of the paper will include an investigation into whether and why any differences may exist between men and women regarding the relationship between student loan debt and the marriage decision.

Theory and Literature

The decision to marry is particularly interesting for a number of reasons. First, marriage has many economic benefits. Married couples boast higher savings and general wealth accumulation (Grinstein-Weiss et al 2008, Hirschl et al. 2003). Second, marriage can provide a number of non-pecuniary benefits, such as higher reported happiness, better health outcomes, and stronger commitment to the relationship (compared to cohabiting couples) (Benokraitis 2012). Third, marriage is related to fertility: having children is a traditional reason given for getting married, and the majority (60%) of babies are born to married women in the U.S. (Benokraitis 2012).

Economists hypothesize that the decision to marry is in large part a logical weighing of costs and benefits. However, some driving factors in that decision may be changing over time. Marriage rates have declined in recent years and the average age at first marriage has risen

(CDC.gov, Copen et at. 2012). In addition, the percentage of adults never married by age 45 in the US has risen from 7% of men and 6% of women in 1960 to 19% of men and 14% of women in 2012 (Wang and Parker 2014). However, for college graduates, the probability of first marriage by age 25 is 37% for women and 25% for men, and the probability of first marriage by age 30 is 70% for women and 58% for men (Copen et al. 2012). Commonly cited economic benefits of marriage are increased wealth, sense of commitment and companionship, better health outcomes, economies of scale, risk pooling, and legal and institutional benefits, while costs associated with marriage may include the wedding ceremony itself, accompanying traditions, home purchase, having children, and increased time spent on chores (Blau, Ferber, and Winkler 2013, Benokraitis 2012, Grinstein-Weiss et al 2008, Hirschl 2003, Bozick and Estacion 2014). Taxes can be a benefit or a cost of marriage, depending on the income of each spouse (King 2015). Given the decrease in marriage rates, rising age at first marriage, and increased rates of cohabitation, it is reasonable to assume that the cost-benefit analysis of marriage for the average couple has changed over time in favor of delaying marriage. While the decision is very complex, and many factors have changed over time, the focus of this study is to analyze the potential impact of increased student loan debt on decision to marry.

Student loan debt might affect the decision to marry by adding to the cost of marriage, or by decreasing available resources. Student loan debt will tend to increase the cost of marriage because it is a financial burden that the potential spouse may become responsible for. The question of whether one spouse is legally responsible for the other spouse's student loan debt in the event of death or divorce depends on the type of debt, when the loans were borrowed, and the state of residence. If the loans are United States federal student loans, they are discharged upon death, and family does not assume responsibility for them ("Discharge due to death," Templeton

2015, Brennan 2012, Lockert 2015, Snider 2015). While some private loans may include a "death discharge" clause, not all contain such a clause, and if they do not, a person's family could be liable for the loan balance in the event of the death of the borrower (Brennan 2012, Lockert 2015, Snider 2015). Private lenders may have their own terms and conditions regarding the way that the debt may be settled after death, and may attempt to collect from the student's estate, co-signers, and if the student was married, joint accounts (Lockert 2015, Templeton 2013, Brennan 2012). If the loans were borrowed during marriage, the surviving spouse might be responsible for the private loan balance, depending on the details of the loan contract (Lockert 2015, Brennan 2012). Even if the loans were obtained before marriage, if a borrower dies, the spouse is at risk for becoming legally responsible if the loans were private loans and the couple lived in a community property state (Templeton 2013).

The way loans may be divided in the event of a divorce depends on when the loans were obtained. Generally, educational debt obtained before a marriage is considered separate property, and stays separate after a divorce (Wells 2014). However, if the education debt is taken out during a marriage, it could be divided upon divorce depending on state laws (Smith 2016, Wells 2014). Even though educational debt incurred before a marriage will likely not be split in the event of a divorce, many believe that it will. According to an article in *The Wall Street Journal* that discusses responsibility for student loans after divorce, "Legal experts say one of the most common misconceptions about dividing debt in a divorce is the belief that educational debt incurred before a marriage always becomes shared, marital debt once a couple gets hitched" (Wells 2014). If couples believe that they will be responsible for each other's debt in the event of a divorce, it might cause them to avoid marriage. Even if one spouse is not legally responsible for the other's student debt after a marriage ends, finances are typically shared (and fought over)

within a marriage (Lockert 2015, Benokraitis 2012). In a marriage, finances commonly become intertwined, and a combined income may be used to pay off the debt of one party, which may be enough to cause tension (Aranoff 2016). Some potential spouses might not be willing to help pay off student debt. A National Foundation for Credit Counseling survey found that 54% of survey participants would be unwilling to help their respective spouse pay off a large sum of debt, with 37% of respondents indicating that they would delay marriage until the debt was repaid (Cunningham 2014).

There is another consideration that couples must also weigh before marrying if one or both has student loan debt: monthly payments on an income-contingent repayment plan. If a single party is on an income-contingent repayment plan for federal student loans, marriage could change his or her monthly payments, because after marriage, the plan may be based on the couple's joint income, depending on how taxes are filed (Snider 2015). This could cause monthly student loan payments to increase significantly. Each of these factors, concerns over responsibility for debt after death or divorce, tension over shared payments on one party's debt, and the potential for monthly student loan payments to increase after marriage can add to the cost of marriage and alter a couple's decision when weighing the costs and benefits of marriage.

Another way to analyze the way student debt may factor into the decision is a decrease in available resources. Let us assume that adults weigh the costs and benefits of marriage, and wait to marry until they feel they have sufficient resources such that the benefits outweigh the costs. In other words, there is some fixed cost associated with marriage, and couples enter into a marriage when they feel they have sufficient resources to cover the cost (Bozick and Estacion 2014, Becker 1974). Individuals with higher debt would have a lower ability to reach this resource threshold. If it is more difficult for individuals with student loans to reach the resource

threshold, one would expect that a higher student debt burden would lead individuals to delay marriage until either some proportion of the debt is repaid or until income is higher.

While the decision to marry may be complex, choosing not to marry does not bar individuals from cohabiting. Cohabitation is an option that has become more socially acceptable (Daugherty and Copen 2012). More couples are choosing to cohabit before marriage, and premarital cohabitation has contributed to a delay in first marriage for men and women (Copen et al. 2012). It is possible for couples to reap some of the benefits of marriage through cohabitation, such as economies of scale and risk pooling to various extents. Cohabitors might not see other benefits, such as legal and institutional benefits and wealth accumulation (Benokraitis 2012, Grinstein-Weiss et al 2008, Hirschl et al 2003). Evidence suggests that a main motivation for cohabitors to marry is financial status (Smock, Manning, and Porter 2005). Many couples do not cohabit indefinitely: more than 90% of cohabiting relationships end by the fifth year, with 44% resulting in a marriage (Benokraitis 2012).

To summarize, many couples do not want to get married until they feel sufficiently financially stable, and student debt burden lowers available resources and introduces additional costs to marriage, and may make couples feel as though they cannot "afford" to get married. Since cohabitation has become more socially acceptable, high student loan debt may lead some to opt for cohabitation and delay marriage.

This leads to the main hypothesis of this paper: the presence of student debt and the amount of student debt are likely to reduce the probability of getting married in the years following graduation.

Because research tends to show differences in the decisions of men and women, one might expect to see differences between men and women regarding education debt and marriage.

First, marriage statistics differ between men and women: the median age at first marriage is 25.8 for women and 28.3 for men, and the proportions of men and women who have never married differ (Copen et al. 2012, Wang and Parker 2014). Second, debt decisions differ. Women take on less debt than men, and are more likely to seek help for debt problems (Herron 2014). Third, women tend to be more risk averse (Jianakoplos and Bernasek 1998). Finally, there are many differences in labor market decisions that differ between men and women, such as occupation, hours worked, and labor force attachment (Blau et al. 2014) Because of these differences, it follows that any relationship between student loan debt and marriage decisions might differ between men and women.

Although there has been some investigation of the effect of student loans on life choices such as career, further education, and home purchases, the particular body of literature on a possible connection between student debt and likelihood of marriage is more limited (Field 2009, Rothstein and Rouse 2011, Elliott and Nam 2013, Zhang 2013). Gicheva (2011) finds that the amount of student debt an individual holds is negatively related to probability of marriage. Gicheva utilizes the Survey of Consumer Finances, and corrects for endogeneity using an instrument: variations in the availability of education loans (2011). Gicheva's results indicate that an increase in student loan debt of $10,000 decreased the probability of being married by 7.6 percentage points for men and 6.9 percentage points for women (2011). Evidence from the 1993 Baccalaureate and Beyond Survey indicates that loan repayment does relate negatively to marriage timing, but only for women, and the effect diminishes over time (Bozick and Estacion 2014). For an increase of $1000 of student debt, the odds of first marriage are reduced by 2% a month for women during the first four years post-graduation, but this effect diminishes over time (Bozick and Estacion 2014). However, earlier studies show no effect of student loans/other debt

on marriage (Choy and Carroll 2000, Chiteji 2007). Although tuition has been on the rise over time, it has increased more aggressively in recent years, and this has occurred in tandem with decreases in public funding. (College Board 2015, Woodhouse 2015). It is possible that some of these studies came too early to include the increases in debt that have been observed over the last 10 years. The empirical evidence is mixed, but given that many graduates indicate in surveys that student debt has caused them to put off marriage, it is worth continued investigation (Baum and O'Malley 2003, Anderson 2015). The contribution of this paper is to use the most recent Baccalaureate and Beyond Survey, which will (1) capture the impacts of the slow post-recession economy and higher tuition rates, which are the main contributors to the concern over student loans, and (2) include many details about education and education financing.

Data and Methodology

The Baccalaureate and Beyond Survey 2008-2012, conducted by the National Center for Education Statistics, analyzes experiences in the labor market and/or continued education for students who have obtained a bachelor's degree. The study follows respondents from graduation (2007-2008 academic year) through 2012. Because the purpose of this study is to examine the effects of student debt on getting married, respondents who were already married before graduating were removed from the sample[19]. Further, after eliminating respondents who are missing information on student debt and marital status the sample includes 6466 women and 4522 men.

Summary statistics are reported in Table 1. The dependent variable, *married,* is an indicator variable representing whether students who were unmarried at the time of graduation

[19] 3667 individuals who were married or separated in the survey year 2007 were dropped from the sample

Table 3.1: Summary Statistics

Percentages or means with standard deviations in parentheses

	Women	Men
Variable	Mean/Percentage	Mean/Percentage
%Married	34.3%	31.1%
%Delayed marriage	27.3%	26.5%
%hasloans2012	81.3%	77.7%
Debt in Thousands	46.967	43.174
	(61.880)	(62.385)
Age	22.892	23.052
	(3.864)	(3.289)
%Black	12.3%	7.3%
%other race	12.5%	14.7%
%Hispanic	9.0%	8.7%
Annual salary	35822.7	44023.0
	(24272.9)	(31009.2)
mother's education	4.8	4.9
	(2.6)	(2.6)
Father's education	4.7	5.0
	(2.9)	(2.9)
years for BA	5.0	5.1
	(3.3)	(2.8)
Gpa	3.4	3.3
	(4.4)	(4.7)
%enrolled09	27.8%	25.1%
%enrolled12	21.3%	20.6%
% Attended Community college	33.7%	29.7%
%expect post BA education	81.5%	76.2%
% Attended private non-profit	38.8%	35.2%
% Attended private for-profit	3.5%	3.7%
% with masters	21.1%	16.4%

% with doctoral	5.0%	5.2%
% out of LF	14.4%	13.3%
% unemployed in 2012	9.2%	9.0%
%parttime work	9.4%	6.3%
% multiple jobs	7.2%	5.0%
N	6456	4522

have married in the four year period following graduation[20]. Since the average age of the sample at graduation is approximately 23, in 2012 the average respondent is 27. At age 27, approximately 28.1% of Americans with a bachelor's degree are married (Weissman 2014). Respondents are directly asked questions about delaying life milestones due to student debt. For example, the question about delaying marriage is phrased, "All students experience some financial costs as a result of their undergraduate and graduate education, whether they take out loans, pay for their education in other ways, or spend time on coursework that could have been spent working for pay. As a result of your financial costs for undergraduate and graduate education, have you delayed getting married?" The respondents who answer "yes" to this question likely experience a greater impact of student debt on the probability of marriage. Since the question includes other measures of the cost of education, those who answer "yes" are not necessarily indicating that student loans alone are the reason for a delay. In the sample, 27.2% of women and 26.5% of men report delaying marriage due to education costs.

The amount, or burden, of student loans is captured by presence of student debt as well as cumulative student debt in thousands through 2012 (*debtinthou)*. Additional summary statistics reported include demographic characteristics: age, race, ethnicity, parent's education, educational information: GPA, whether the respondent attended community college, school

[20] An investigation into the probability of marriage two years after graduation was also performed; however, the results for the probability of marriage four years after graduation are much more descriptive.

sector (public or private, non-profit or for-profit), enrollment status in 2009 and 2012, and obtained degrees past bachelor's, and labor force characteristics: annual salary and employment status. As expected, the women earn less than the men on average.

The analysis is performed using a simple probit regression, where the dependent variable is a binary, married or not married in 2012, and the main independent variables of interest are presence of student loan debt and cumulative student loan debt. The decision of the *i*th respondent to get married or not depends on the unobserved variable

$$M_i = \beta_0 + \beta_1 P_i + \beta_2 Li + X_i\delta + u_i$$

where P_i is an indicator of whether the respondent has student loan debt or not, L_i represents the cumulative level of debt, and X_i is a vector of additional explanatory variables. M_i^* is a threshold such that if $M_i^* \leq M_i$, the respondent is married, otherwise the respondent is not married. Additional explanatory variables include demographic characteristics (age, race, ethnicity, parent's education), educational information (GPA, whether the respondent attended community college, school sector (public or private, non-profit or for-profit), enrollment status in 2009 and 2012, and obtained degrees past bachelor's), and labor force characteristics (annual salary and employment status). These factors are believed to impact marriage decisions and education funding (Bozick and Estacion 2014). Regressions are performed for men and women separately, based on the results of a Chow test. At least one of the coefficients differs significantly between men and women, therefore separating men and women simplifies interpretation and eliminates the need for gender interaction terms[21]. In addition, based on prior literature and arguments made earlier in this paper, it is reasonable to expect that results will differ by gender. The hypothesis is

[21] Tests were also performed for each variable to determine whether each significantly differed between men and women. The coefficients for age, enrollment status, labor force participation, and unemployment status differed significantly between men and women.

that student debt (all measures) negatively impacts the probability of getting married for both men and women.

Results

Average partial effects are presented in Table 2. Column 1 represents women, and Column 2 represents men. The groups generally differ in the impacts of student debt on the probability of marriage. The coefficient on the presence of student loans is positive and significant for men. In addition, size of debt in thousands is negative and significant for women. For both groups, presence of debt and size of debt were jointly tested and found to be jointly significant at a p-value of .0048 for women and .067 for men. For both groups, race measures are significant: non-white respondents are less likely to be married. Impacts of education variables for women are noteworthy: women who are enrolled in further education programs in 2009 and 2012 are less likely to be married. For men, labor force characteristics are noteworthy. Men experience a lower probability of marriage if they are out of the labor force, unemployed, or work part-time.

Table 3.2: Results

	Women	Men
	dy/dx	dy/dx
hasloans2012	0.0101468	0.0359252**
	(0.0159791)	(0.0173282)
Debtinthou	-0.0004041***	-0.0002452*
	(0.0001253)	(0.0001411)
Age	0.0000217	0.0111646***
	(0.0036301)	(0.0039266)
Black	-0.1503317***	-0.0704754***
	(0.0166658)	(0.0251113)
Othrace	-0.1308687***	-0.1083923***
	(0.0162577)	(0.0179747)

Hispanic or Latino	-0.0152672	-0.0221823
	(0.0210188)	(0.0245932)
Salary	4.73E-07*	7.24E-07***
	(0.000000268)	(2.44E-07)
enrolled09	0.0325392**	0.0146684
	(0.0165443)	(0.0202438)
1.enrolled12	-0.1041246***	0.0096923
	(0.0150793)	(0.0202192)
Momeduc	-0.0087078***	-0.0076472**
	(0.002698)	(0.0031509)
Dadeduc	0.0000801	-0.0006895
	(0.0024558)	(0.0028623)
Gpa	0.0006167***	0.0005563***
	(0.000139)	(0.0001528)
Community	0.0510804***	0.024163
	(0.0128684)	(0.0156754)
Yearsforba	-0.0010896	-0.0031754
	(0.0042195)	(0.0046113)
Expectpost	-0.0173672	-0.0267596
	(0.0154055)	(0.0167752)
Privatenon	-0.0261858**	0.0042511
	(0.0121576)	(0.0147631)
Privatefor	-0.0657206**	0.0304012
	(0.0316471)	(0.038421)
Masters	-0.0494876***	-0.0298278
	(0.0166458)	(0.0213152)
Doctoral	-0.0806552***	0.0281299
	(0.0301185)	(0.039797)
Outoflf	0.0629047***	-0.0555599**
	(0.0196848)	(0.0225508)
unemp2012	0.0052744	-0.137217***
	(0.0222023)	(0.0217317)
Parttime	0.0604934***	-0.0744553***
	(0.0224886)	(0.0272602)
Multiplejobs	-0.0194777	-0.0710597**
	(0.0225405)	(0.0289279)

Standard errors in parentheses

***p<.01, **p<.05, *p<.10

One interpretation on the impacts of student loan debt includes presence of debt: for men, the presence of student loans increases the probability of marriage by 3.6%. For women, each increase in student loan debt of $1000 decreases the probability of marriage by .04%.

Discussion

Student debt burden does not appear to be keeping young men from getting married, and only appears to lower the probability of marriage by a small amount for women. While the majority of respondents in the sample have some student loan debt, only 27.2% of the women and 26.5% of the men report that education costs have caused them to delay marriage.

The implications of the results are that student debt burden may lower the probability of marriage for some women in the four years following college graduation, but the change in probability is relatively small. Regarding gender differences in debt level and repayment, women appear to take out more total debt than men on average, and men are still earning more than women.

Some students might be affected more strongly by student loan debt than the average Baccalaureate and Beyond Survey respondent. One limitation of this study is that the Baccalaureate and Beyond only samples students who have graduated. Students who attended college and took out loans but did not graduate would have the debt, but not the higher income. That group would likely experience more negative effects. A second group that might be disproportionately affected is students who continue to graduate school. While I control for higher degrees in the regressions, it appears that graduate school debt strongly pulls up the

average debt level between 2008 and 2012. Moving forward, it may be worthwhile to separate the graduate students in the sample and focus on their debt levels and potential effects.

A second limitation of this study is that only marital status is given in survey years 2007-08, 2009, and 2012. Timing of marriage is not provided. Therefore, this study is only able to investigate the probability of marriage within the four years after graduation, rather than timing of marriage within that time frame and beyond. In this study, it is only possible to interpret the results as a potential decrease in probability of marriage within a certain time frame, and it is not possible to draw further conclusions about delaying marriage or avoiding it entirely.

A third limitation of this study is the issue of causality. Although a portion of the respondents indicate that they had to delay marriage due to education costs, it would be difficult to extrapolate that into causality terms for the general population. This does provide opportunities for further research to explore causality.

Conclusion

This study utilized the Baccalaureate and Beyond Survey 2008-2012 to test whether student debt burden negatively affects the probability of getting married for graduates. The results indicate that the payment-to-income ratio on student debt negatively impacts the probability of getting married for a portion of women, those who claim that they have had to delay marriage due to education costs, in the four years following graduation.

Student loans can add to the cost of marriage in a number of ways. First, there are specific situations where one spouse may be responsible for the other's debt in the event of death (Lockert 2015, Brennan 2012). Second, although usually educational debt from before the marriage does not get divided after a divorce, it is a common misconception that all debt

becomes shared upon marriage, and this notion may factor in to a cost-benefit analysis of the marriage decision (Wells 2014). Third, paying one person's debt from the combined income of a married couple can cause tension, and many are reluctant to take on a partner's debt payments (Aranoff 2015). Finally, getting married can change monthly payment amounts if one or both spouses were on income-contingent repayment plans before marriage (Snider 2015). In the event of a marriage, spouses may have to accept the financial burden of their partner's debts, and this could cause couples to delay marriage. In addition, some student loan borrowers explicitly claim delaying marriage due to student loan debt. In surveys administered by Nellie Mae and Bankrate.com, large portions of college graduates claim putting off life milestones, such as marriage, due to student loan debt (Anderson 2015, Baum and O'Malley 2003, ElBoghdady 2014). In the survey used for this study, 27.2% of the women and 26.5% of the men report delaying marriage due to education costs. However, there are few recent empirical studies that provide evidence that student loans are causing borrowers to delay or avoid marriage.

The theoretical framework in this study assumes that the decision to marry is a weighing of costs and benefits, and that couples choose to marry when the benefits outweigh the costs. Student loan debt adds to the costs of marriage and can be a drain on resources. Since cohabitation has become more socially acceptable over time, college graduates who choose to delay marriage may instead opt into a cohabiting relationship (Daugherty and Copen 2016).

Using the Baccalaureate and Beyond 2008-2012 Survey, which is focused on college graduates in the four years following graduation, I test whether measures of student debt burden, including presence of debt and total cumulative debt, impact the probability of marriage for men and women four years after graduation. The sample is split into groups by gender. The results show that there is a decrease in the probability of marriage of .04% for each $1000 increase in

student loan debt for women . For men, the presence of student loan debt increases the probability of marriage by 3.6%, however, this result is not strongly statistically significant Overall, the magnitude of the changes in marriage probability are somewhat small.

While there is a small negative impact of student loan debt burden for a subset of the sample, the results indicate that men may have a positive impact from student loan debt burden on marriage probability. One limitation of this study is that the direction of causality for this relationship is not clear. However, it is evident that the portion of the sample who claim a delay in marriage have much lower marriage rates, higher cohabitation rates, and higher cumulative student loan debt.

This study is one of few that investigates a relationship between student loan debt and marriage. This study adds to the body of literature by (1) using recent data that is focused on recent college graduates, and (2) utilizing answers to a direct question in the survey regarding delays in marriage due to education costs. In order to expand on the relationship between student loans and marriage, as well as to explore causality, future research will ideally include investigation into marriage timing in addition to probability. As more information on delays in marriage become available, it will also be necessary to investigate the impacts of delaying marriage on wealth accumulation. An additional direction for future research is to explore how student loan debt impacts the timing of other events, such as home purchase and having children.

Overall, this study shows evidence of a relationship between student loan debt burden and probability of marriage in the four years following college graduation. The relationships differ for women versus men. While the marginal impacts of student loans on marriage probability may be small, delays in marriage early on could have lasting impacts on wealth

accumulation and other reported benefits of marriage, and the potential for lasting impacts should be investigated.

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APPENDIX

Appendix Table 1.1: Replication of Badgett (1995) with GSS Data 1989-1991

VARIABLES	(1) *OLS:Women*	(2) *OLS: Women*	(3) *Heckman : Women*	(4) *OLS: Men*	(5) *OLS: Men*
LGB3	-0.305	-0.290	0.190	-0.256**	-0.279**
	(0.314)	(0.308)	(0.639)	(0.121)	(0.121)
Educ	0.124***	0.0984***	0.127***	0.0935***	0.0840***
	(0.0113)	(0.0130)	(0.0328)	(0.00749)	(0.00915)
Married	-0.0887	-0.0984*	-0.245	0.281***	0.276***
	(0.0557)	(0.0548)	(0.162)	(0.0467)	(0.0465)
White	0.0579	0.0529	0.0622	0.0645	0.0571
	(0.0785)	(0.0771)	(0.108)	(0.0723)	(0.0720)
potentialexp	0.0416***	0.0407***	0.0963*	0.0338***	0.0343***
	(0.00825)	(0.00809)	(0.0560)	(0.00604)	(0.00604)
Expsqrd	-0.000646***	-0.000644***	-0.00167	-0.000416***	-0.000436***
	(0.000164)	(0.000161)	(0.00103)	(0.000112)	(0.000112)
LGB3xexp	0.00950	0.0122	-0.0131		
	(0.0173)	(0.0170)	(0.0339)		
bigSMSA	0.307***	0.308***	0.318***	0.218***	0.208***
	(0.0646)	(0.0637)	(0.0881)	(0.0475)	(0.0476)
Northeast	0.105	0.0861	0.0224	0.189***	0.194***
	(0.0781)	(0.0767)	(0.124)	(0.0595)	(0.0593)
Midwest	-0.00671	-0.0113	-0.145	0.207***	0.197***
	(0.0716)	(0.0702)	(0.163)	(0.0537)	(0.0536)
West	-0.0522	-0.0632	-0.185	0.122**	0.104*
	(0.0783)	(0.0768)	(0.160)	(0.0593)	(0.0594)
Manager		0.609***	0.606***		0.307***
		(0.110)	(0.121)		(0.0892)
Proftech		0.519***	0.519***		0.206**
		(0.105)	(0.116)		(0.0876)
clericalsales		0.445***	0.446***		0.137
		(0.0900)	(0.0977)		(0.0839)
Craftop		0.372***	0.369***		0.130*
		(0.107)	(0.115)		(0.0734)

Lambda			1.116		
			(1.083)		
Constant	7.179***	7.134***	5.743***	7.835***	7.831***
	(0.198)	(0.212)	(1.392)	(0.133)	(0.155)
Observations	743	743	743	951	951
R-squared	0.217	0.253		0.286	0.295

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 1.2: List of occupational categories

1. Exec, admin, managerial
2. Professional specialty
3. Technicians and related
4. Sales
5. Admin support
6. Private household
7. Protective service
8. Armed forces
9. Other service
10. Farm op & managers
11. Farm not managers
12. Related ag
13. Forestry and logging
14. Fishers hunters trappers
15. Mechanics and repairers
16. Construction
17. Extractive

18. Precision production

19. Machine op

20. Transportation

21. Handlers cleaners helpers laborers

Appendix Table 1.3: Religion by Sexual Orientation Category (% of sample)

	Women			Men		
	Heterosexual	selfidLGB	HeteroWSW	Heterosexual	selfidLGB	HeteroMSM
protestant	47.88	34.09	37.1	43.81	25.58	40.32
catholic	23.85	11.36	19.35	22.83	32.56	22.58
jewish	1.35	4.55	1.61	2.02	2.33	0
none	17.6	25	35.48	23.48	34.88	25.81
other	0.87	9.09	0	0.97	4.65	0
buddhism	0.87	0	0	0.89	0	0
hinduism	0.29	0	0	0.97	0	0
other eastern	0	0	0	0.16	0	1.61
moslem/islam	0.19	2.27	0	0.4	0	0
orthodox-christian	0.38	0	1.61	0.24	0	0
christian	6.25	11.36	4.84	4.05	0	9.68
inter-nondenominational	0.48	2.27	0	0.16	0	0

Appendix Table 4: Religious Service Attendance by Sexual Orientatino Category (% of Sample)

	Women			Men		
	Heterosexual	selfidLGB	HeteroWSW	Heterosexual	selfidLGB	HeteroMSM
Never	17.2	23.26	21.82	21.21	27.5	19.67
Less than once/year	6.94	13.95	9.09	9.63	20	8.2
once/year	16.7	16.28	16.36	16.27	17.5	21.31
several X/year	12.17	16.28	10.91	11.07	17.5	13.11
once/month	7.95	6.98	1.82	7.84	2.5	4.92
2-3x/month	9.56	13.95	9.09	8.6	5	4.92
nearly 1x/week	4.73	4.65	1.82	4.43	0	1.64
1x/week	17.61	4.65	18.18	15.08	10	19.67
>1x/week	7.14	0	10.91	5.88	0	6.56

Appendix Table 2.1: Results including whether mothers worked prior to divorce

	OLS: Women	Heckman: Women	Selection: Women	OLS: Men
	(1)	(2)	(3)	(4)
VARIABLES	lnincome	Lnincome	works	lnincome
age	0.0768***	0.0731***	0.0524***	0.102***
	(0.00913)	(0.00922)	(0.0168)	(0.00998)
agesquared	-0.000796***	-0.000750***	-0.000767***	-0.00109***
	(0.000103)	(0.000104)	(0.000176)	(0.000110)
children	-0.0364**	-0.0322*	-0.0919**	-0.0265
	(0.0170)	(0.0171)	(0.0394)	(0.0177)
highdegree	0.121***	0.119***		0.104***
	(0.0160)	(0.0160)		(0.0165)
avghrs	0.0512***	0.0510***		0.0384***
	(0.00143)	(0.00143)		(0.00147)
occavg	1.64e-05***	1.46e-05***	0.000123***	1.21e-05***
	(1.08e-06)	(1.27e-06)	(3.66e-06)	(1.11e-06)
divparents	-0.0108	0.00569	-0.170	-0.322***
	(0.118)	(0.118)	(0.232)	(0.115)
momeverwork	0.0270	0.0291	0.0224	-0.00407
	(0.0428)	(0.0427)	(0.101)	(0.0439)
divparentsANDmomwork	0.0793	0.0617	0.171	0.384***
	(0.146)	(0.145)	(0.259)	(0.149)
momworkbeforediv	-0.0963	-0.0944		-0.140
	(0.0983)	(0.0978)		(0.110)
married	0.122***	0.124***	-0.234**	0.281***
	(0.0430)	(0.0429)	(0.101)	(0.0546)
divorced	0.00527	0.00339	0.0213	-0.107
	(0.0577)	(0.0576)	(0.133)	(0.0790)
black	-0.0162	-0.0175	0.136	-0.187***
	(0.0437)	(0.0436)	(0.0992)	(0.0494)
otherrace	0.0777	0.0814	0.0163	-0.0982
	(0.0808)	(0.0806)	(0.192)	(0.0813)
northeast	0.158***	0.149***	0.377***	0.156***
	(0.0537)	(0.0538)	(0.145)	(0.0545)
northcentral	-0.0426	-0.0489	0.333***	-0.0682
	(0.0433)	(0.0434)	(0.104)	(0.0463)
west	0.133***	0.136***	-0.0839	0.0970*
	(0.0512)	(0.0511)	(0.122)	(0.0524)
hispanic	0.0715	0.0626	-0.00258	0.0205

	(0.0708)	(0.0708)	(0.175)	(0.0753)
hhincome			2.50e-09	
			(2.32e-07)	
lambda			-0.258**	
			(0.102)	
Constant	5.655***	5.812***	-1.720***	6.000***
	(0.194)	(0.204)	(0.398)	(0.214)
Observations	2,609	3,620	3,620	2,194
R-squared	0.491			0.433

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix Table 2.2: List of Occupational Categories from PSID Codebook

1 - 43 Management Occupations
50 - 73 Business Operations Specialists
80 - 95 Financial Specialists
100 - 124 Computer and Mathematical Occupations
130 - 156 Architecture and Engineering Occupations
160 - 196 Life, Physical, and Social Science Occupations
200 - 206 Community and Social Services Occupations
210 - 215 Legal Occupations
220 - 255 Education, Training, and Library Occupations
260 - 296 Arts, Design, Entertainment, Sports, and Media Occupations
300 - 354 Healthcare Practitioners and Technical Occupations
360 - 365 Healthcare Support Occupations
370 - 395 Protective Service Occupations
400 - 416 Food Preparation and Serving Occupations
420 - 425 Building and Grounds Cleaning and Maintenance Occupations
430 - 465 Personal Care and Service Occupations
470 - 496 Sales Occupations
500 - 593 Office and Administrative Support Occupations
600 - 613 Farming, Fishing, and Forestry Occupations
620 - 676 Construction Trades
680 - 694 Extraction Workers
700 - 762 Installation, Maintenance, and Repair Workers
770 - 896 Production Occupations
900 - 975 Transportation and Material Moving Occupations
980 - 983 Military Specific Occupations