

**THE DECISION TO MARRY OR COHABIT
AND ECONOMIC CRISES**

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Abstract

This paper aims to investigate the relationship between peoples' decisions to marry or cohabit and their economic circumstances – both personal, as measured by their employment status, and peripheral, as measured by the unemployment rate in their local county. This paper will look at the role economic factors, as well as demographic and personal factors, play in the decision of whether or not to marry, cohabit, or stay single.

JEL classification: D1; J12; J16

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I. Introduction

People tend to think of marriage as a romantic phenomenon, where people rely on their emotions rather than logic in order to make a choice to spend their life with someone. Is this true, though? Do people throw logic out the window and make a decision solely based on feelings? The field of economics has a tendency to break decisions – even ones as sacred as the choice to get married – down to marginal benefits and marginal costs. This paper aims to discover if the timing of the choice to marry – or to cohabit – is affected by general economic conditions. Specifically, this paper attempts to estimate the impact of general economic uncertainty as measured by national and county level unemployment on the probability that an individual decides to marry or cohabit in the following year.

After a brief introduction to the institution of marriage, as well as to cohabitation, Section II of this paper reviews the current literature surrounding marriage and cohabitation. Section III explains the framework used and the expected effects of variables in the random effects probit regressions with marriage and cohabitation outcomes. Section IV describes the dataset, the National Longitudinal Study of Youth, used in this analysis. Section V contains the results of several different regressions on the data and points out areas of interest for further studies, and Section VI concludes. An appendix is included in Section VII.

While there is a large economic literature on marriage, most of it centers around individual matching decisions and family structure. There has not been much research on how marriages are affected by current global events and how

people decide whether or not – and when – to marry. The United States – along with the rest of the world – has faced an ever-changing relational landscape over the past few decades. With changing social norms in the 1960s and 1970s, divorce became more socially and economically acceptable in the United States. The divorce rate more than doubled between 1965 and 1975 (Cohn et al., 2011). Women were starting to make choices for themselves, did not need men to provide for them,¹ and were becoming more independent. Likewise, there was less of a stigma for both genders if they wanted to get out of an unhappy marriage. These changes in America’s culture have both allowed marriage to be a more temporary institution, and have given individuals more of a choice of whether or not to marry.

Marriage creation also has changed in the last few decades. During the ‘60s and ‘70s, marriage creation rates were waning. In 1960, only 15% of adults 18 and older had never married, and 72% were currently married. By 2010, the proportion of never married adults had almost doubled to 28%, and a mere 51% were married (Cohn et al., 2011). The institution of marriage has seen a dramatic change over the past 50 years. Today, people get married for a variety of reasons – to affirm their love for each other, to create a mutually beneficial financial partnership, or to uphold a traditional family structure. Similarly, people choose either not to marry or to delay marriage for an assortment of reasons: to refuse to conform to societal standards, to wait for greater financial stability, to find someone with whom they match well, or to not be subjected to a long-term

¹ The labor force participation for women aged 25-54 in 1980 was 64% as opposed to 39.8% in 1955 as reported in the BLS’ “Trends in labor force participation in the United States” report.

commitment. People get divorced for an even greater array of reasons, among which are irreconcilable differences, a change in feelings, infidelity, abuse, financial stresses, and diverging future plans.

In addition to the changes that have occurred in the institution of marriage, the need for marriage in the US has decreased over the past few decades. Of course, many people still choose to marry, but cohabitation has become an increasingly viable alternative for many (Guzzo, 2014). It is no longer frowned upon by society, and couples reap many of the same benefits of marriage, without the costs or intense commitment associated with marriage. This newly viable alternative could act as a substitute to marriage, with exceptional strength during an economic recession. During a recession, a couple choosing to cohabit would share expenses and feel as though they were making a commitment without the cost of a wedding or the dramatic life change of a marriage in the face of economic uncertainty.

In the last decade, the United States experienced an incredible economic recession that changed millions of lives. Circumstances changed drastically, and one would expect that this has impacted people's decision-making processes with regards to marriage. Looking at individual level data across the United States from 1979-2012, I plan to see if economic recessions, as measured by county-level unemployment rates, had a significant effect on the creation rate of marriages or of cohabitation unions for individuals. Past economic research has shown that during this time period, the rate of divorce fell significantly, which is logical. Divorce is both financially and emotionally costly. Afterwards couples need to pay for separate houses and furnishings, health insurance, and transportation back

and forth for children, among other things (Chowdhury, 2013). While divorce has been greatly studied, marital creation in times of economic uncertainty is a more novel research study. One would assume that since it has been proven that relationships are affected by the state of the economy, as seen in divorce, the front end of relationships – marriage – would likely be affected as well.

Marriage can be broken up into two stages: finding a match and deciding upon the timing of marrying that match. On one hand, there may be fundamental changes in the economy that affect the likelihood of finding a match. For example, things like major industrial shifts could affect a match's attractiveness if they are strongly specialized in a declining industry. On the other hand, transitory shocks to the economy are more likely to affect the timing of a match turning into cohabitation or marriage, rather than changing an individual's fundamental probability of finding a partner over his or her lifetime. Temporary shocks like recessions, as well as changes in culture can have an effect on the timing of both cohabitation and marriage. While it is challenging to distinguish between transitory and permanent effects, this paper makes the assumption that most effects caused by changes in general economic uncertainty (as opposed to factors more specifically related to the individual) would be transitory and timing related, rather than fundamental.

There is not much research on the change in the creation rate of marriages, and this study becomes more complicated during times of recession, which could cause an increase or a decrease in marriage creation. People may wait to get married since weddings are expensive and couples might want to be financially stable or have more job security before tying the knot. On the other

hand, marriage allows couples to share health insurance, and if they did not previously cohabit, will allow for the possibility of dual incomes with only one major set of expenses; in other words, they create economies of scale. Looking at the creation rate of marriages, where both individuals are making a choice - rather than divorce rates, where one person can make a decision and their spouse is forced into it - will give a more holistic view of how the economic crisis that took place in the last decade affected decision-making.

II. Literature Review

Most existing literature on recessions and marriage relates to divorce, but this is important to consider because it demonstrates how general economic conditions impact existing relationships. Researchers have found that divorce rates fall during recessionary periods. Abdur Chowdhury (2013) uses the Vital Statistics dataset from 1978 to 2009 from the National Center for Health Statistics and finds that divorce is pro-cyclical. He attributes the fall in divorce rates during recessions to the costly nature of the elimination of the gains from cost sharing of public goods that marriage causes. However, he also finds that after the economy picks back up and a sort of bottleneck of divorces is released, divorce rates increase since people can now afford to divorce. However, Chowdhury does not consider factors beyond income, such as ethnicity, religion, or geographic location (Chowdhury, 2013). Jessamyn Schaller (2012) uses the same Vital Statistics data – from 1978 to 2009 - and shows that aggregate marriage and divorce rates both move pro-cyclically, and that labor market conditions have a significant effect on decisions about marriage and divorce. She

is one of the few researchers who considers marriage creation in addition to dissolution. She, however, only considers the business cycle on a national level, whereas it is reasonable to believe that the business cycles of states or counties might move differently than the national business cycle does. Schaller also only looks at aggregate marriage rates, rather than looking at the level of the individual.

Philip Cohen (2014) seems to have the most comprehensive research, since he used the American Community Survey data from 2008 to 2011 to analyze the determinants of divorce. This survey asks questions about the individuals such as education, race, and the location where they live (not where the divorce occurred). By having access to all these factors, Cohen can pull out possible confounding effects. He looks at many different variables, and was the first to do a large-scale multivariate regression of the different factors on a divorce, including the impact of a recession. He finds “...a sharp deviation from [the expected number of divorces] in 2009, followed by a rebound back toward the expected level” in the following years, 2010 and 2011 (Cohen, 2014, p. 621). Cohen explains this deviation by saying that the economic crisis caused a decline in divorce rates. Rather than reflecting the odds of divorce for specific marriages, this fluctuation may reflect the timing of divorce. In other words, instead of divorcing during the height of the recession, couples may choose to wait until they have the resources to part ways. Moreover, Cohen finds that divorce rates are not significantly greater in states with higher unemployment rates, which further weakens the argument that the odds of divorce increase in a recession. One of the limitations of the American Community Survey however, is that

questions about divorce were only introduced in 2008, and thus Cohen has only four years of data to analyze.

There has also been a significant amount of literature on how economic crises affect financial uncertainty and how that, in turn, affects marriage quality. Much of this literature, however, only looks at data sets in Midwestern towns, which leads to several possible confounding variables (geographic location and religion). Researchers found that the recessions increased couples' levels of uncertainty, especially with regard to finances, and that these uncertainties caused a strain on marriages and lowered levels of marital satisfaction (Conger et al., 1990; Romo, 2014). Several papers have extended this research to outside of the United States. Researchers found that in both Korea and Turkey, greater economic hardship leads to marital problems (Aytac & Rankin, 2009; Kwon & Reuter, 2003).

Overall, most of the marriage literature focuses on divorce rates or marriage pressures. Marriage creation is interesting and peculiar as it allows for a more holistic view, since it is a choice by both individuals, rather than a dissolution, which can be initiated by only one party. Looking at the creation of marriages also allows one to see the changes in overall sentiment towards marriage.

Most cohabitation literature focuses on whether or not cohabitation is a viable substitute for marriage. In Karen Guzzo's 2014 paper, she recognizes that "cohabitation is now the modal first union for young adults, and most marriages are preceded by cohabitation even as fewer cohabitations transition to marriage" (p. 826). She uses the National Survey of Family Growth from 2002 and 2006-

2010 to measure compositional shifts in the socioeconomic and demographic characteristics of couples who cohabit, as well as changes in the cohabitation unions themselves. It is clear that cohabitation is becoming a long-term alternative to marriage, as the transition to marriage from cohabitation has declined since the 2000s. Cohabitation is becoming increasingly acceptable, and the notion of marriage is no longer a necessary part of the cohabitation process. Guzzo found that cohabitations formed after 1995 are increasingly likely to dissolve and those after 2000 are decreasingly likely to transition to marriage. Cohabitations that begin with an engagement are less likely to dissolve, whereas cohabitations of younger couples or couples with children born prior to the cohabitation are more at risk of dissolving. Farmer and Horowitz (2015) study strategic non-marital cohabitation, motivated by the fact that a higher percentage of marriages that began with cohabitation end in divorce relative to marriages that were not preceded by cohabitation. They develop a model that may explain this puzzling relationship. Specifically, since the exit costs of cohabitation are quite high, couples are less likely to exit a cohabitation union, which leads them to settle for a lower quality partner, thus increasing the odds of future divorce.

Karen Guzzo (2006) also considers how marriage market conditions affect entrance into cohabitation versus marriage. Her paper focuses on the widening racial and socioeconomic differences in marriage rates, and how they can be attributed to the availability of marriageable men in the local marriage market. Guzzo, as well as Addo (2014), find that higher levels of education, employment, and income levels are positively related to union formation.

The cohabitation literature looks at how cohabitation is slowly becoming an economic and a social substitute for marriage, and how labor market and financial factors are dictating the choices that people make with regards to cohabitation and marriage. I'd like to look directly at county unemployment rates, to see not only how personal employment, but also employment sentiment, affect people's decisions to marry or cohabit.

III. Framework

As previously mentioned, the choice to marry or cohabit can be broken down into the ability to find a match and the choice of when to marry or live with this match. Both the ability to find a match and the choice of timing will affect people's likelihood of marriage or cohabitation in a given year. Our framework will begin with a discussion of the effects of the variables that influence an individual's ability to find a match, followed by a discussion of the variables that affect timing of a marriage or cohabitation.

It is reasonable to assume that there are differences in the likelihood of marriage creation or cohabitation based on an individual's background. This background includes geographical location; education – based on the highest degree the individual has received; religion; religious piety as measured by frequency of attendance; race of the individual; the racial match between the individual and the partner; whether or not the individual is in poverty; if the individual's income is more than 10 times the poverty level; and if the individual has or is expecting children.

The county in which an individual resides likely has a strong impact on their probability to marry, since it will capture both cultural effects and the availability of matches in an area. For example, I would expect counties in southern states, like Alabama or Georgia, to be much more accepting of young marriages due to their culture, whereas a state like New York or California would tend to be less open to the idea of youthful marriages. In addition, the northern, and typically more liberal, states might be more accepting of cohabitation than southern states. The county an individual lives in also dictates the availability of matches available. If a female lives in Alaska, she will have far fewer choices in a mate than if she lived in Manhattan. Similarly, if a male lives in a coal-mining area, there will likely be a lower percentage of females in the area, and thus less possible matches.

One would assume that higher levels of education and income are positively correlated with marriage, since they make an individual a more desirable match. Marriage is a forward-looking decision, and as such, individuals could judge matches by their ability to provide down the road or their current income levels. Higher levels of education are generally a good indicator for a higher earning potential. Individuals with a higher earning potential or higher income are likely better candidates in the marriage market, so obtaining a higher education could give an individual a higher probability of finding a match. Attending college or graduate school also helps an individual to meet more potential matches, through both the campus and the network of alumni. Higher educations also tend to lead to jobs with more mobility and more opportunities to meet people. Thus, higher levels of education should correlate positively with

both cohabitation and marriage, since they allow individuals to be a better candidate in the marriage market and to have greater access to potential matches.

With regards to religion, it would seem plausible that people who identify with a religion, like Christian or Jewish, would have higher levels of marriage creation. Dedicated individuals of these religions (as indicated by piety) most likely would abide by scriptural law, which does not allow premarital sex, or cohabitation since it would be a visible signal of non-prescribed behavior. In a similar manner, pious Christians and Jews may not practice more current dating patterns and may be more likely to want to start a family at a young age. Both factors are likely to lead to younger and more marriages and a decreased rate of cohabitation. In addition, a religious match variable could have a positive effect on the decision to marry, since some individuals desire a spouse who shares their faith.

One would expect race to play into odds for marriage, as well. Past literature has shown that race impacts the likelihood of divorce, and given that divorce and marriage are related, one would expect that race would have an effect on marriage as well (Cohen, 2014). In addition, different races may have an easier or harder time finding a match. Certain races are more likely to enter into interracial matches than others, and thus all else equal would have an easier time finding a match. In addition, because interracial marriages are much less common than racial match marriages, a racial match theoretically should increase the probability of marriage (Fu, 2010).

Certain variables will have a more transitory effect on a couple's decision to cohabit or marry, and will primarily affect timing. This paper focuses on the

economic climate and how it affects the timing of marriage. Marriage is an interesting institution because both its creation and dissolution are costly. Still, the institution of marriage itself acts as a way to cut recurring costs, such as housing, utilities, or healthcare. When creating a marriage, couples not only pay for the marriage license, but generally for a wedding as well, which can be quite expensive – the average cost of a formal wedding in 2014 was estimated by the wedding magazine, *The Knot*, to be \$31,213. During a marriage, through economies of scale, couples are able to split expenses like mortgage payments or rent, grocery bills, and utilities between two individuals. The costs per person are effectively lower, so one would expect these cost savings to increase an individual's interest in becoming married, but if the entry costs are seen as too high, or one or both of the persons in the relationship are feeling general uncertainty, it could cause a delay in marriage. Today, we may see this effect of delaying marriage leading to the choice to cohabit, since current social norms allow couples to consider this option more easily. In addition, high uncertainty levels during an economic recession, caused by high unemployment, could cause couples to want to simply postpone marriage. Even if the individuals in question are employed, the fact that there is high unemployment in the economy might create uncertainty as to the near future of their jobs and employment status. If either one or both individuals are unemployed, the couple may wait until they feel that they have greater financial stability before deciding to formalize the relationship through marriage. In the meantime they may choose to cohabit. Based on potentially high costs (if the couple wishes to have a formal wedding) and higher levels of uncertainty in times of recession, one would expect the

probability of getting married to fall when unemployment rates rise, but the probability of cohabiting to rise.

Cohabitation likely positively affects the likelihood of marriage (as well as continued cohabitation). For instance, if a couple takes the step of living together, which tends to be very serious, they are likely thinking about their future and whether or not it includes marriage. During the recession, however, cohabitation may be negatively correlated with marriage rates, since if a couple is already sharing expenses, they would likely be willing to wait to tie the knot until there is more economic certainty and until they have more money for the expenses associated with a marriage. For couples currently living together, the largest economic advantage of marriage would likely be the availability and cost of health and life insurance, or the certainty of a spouse's income or assets.

If the couple is pregnant or has children, one would also expect that they are highly likely to choose to marry or live together. Raising children is much easier when there are two parents involved, rather than having to split time & parenting responsibilities and transport children from one parent's house to another. Even more trivial aspects, like holidays, are made easier in a two-parent household. These considerations likely have an effect on couples choosing to marry or cohabit if children are (or will be) involved. There is a large literature on co-parenting and the impact of having a two-parent household on children, which could encourage couples to marry or cohabit for the benefit of their children. The one factor that could change the impact of children on future marriages is whether the children are with the current partner or are from previous relationships. One would assume that having a child with one's current

partner would increase the likelihood of both marriage and cohabitation, but if a child is from a previous relationship, it might make cohabitation and marriage both less probable for an individual, since he or she could be seen as a less suitable match. Unfortunately, there is no way to distinguish between these effects in the dataset used, since questions about children do not ask the identity of the parents of the children living in the household. In our model, having children will be defined as a pregnancy or any children currently residing in the household.

Another variable that could affect the choice of when to marry is age. One would anticipate that marriage and cohabitation correlate positively with age up until a certain point, perhaps the mean age of marriage, which tends to be in the late twenties or early thirties, after which they correlate negatively. Since I expect it to be a quadratic relationship, rather than linear, I will put not only age, but also age squared into my regression.

The likelihood of an individual i choosing to marry at time t is:

$$P(C_{it}) = \beta_0 + \delta_k e_{it} + \gamma_m p_{it} + \lambda_r s_{it} + \varepsilon_{it} + \mu_{it},$$

where $P(C_{it})$ is the probability that an individual enters into a marriage, β_0 is the intercept, e_{it} are the k economic variables:

- county unemployment
- personal unemployment
- national unemployment

p_{it} represents the m personal characteristics

- race
- level of education (some college, college, post-graduate degree)
- religion
- frequency of religious attendance
- if they are in poverty

- their wealth (if their income is 10 times higher than poverty cutoff or they're in the top 2% of the sample)
 - age and age squared,
- s_{it} are the r partner and match characteristics:
- whether or not the couple cohabited last year
 - if the couple is pregnant or has children

ε_{it} is put in as the between-entity errors, and μ_{it} are the within-entity errors. These are added as part of the random effects model, to control for an individual's identity and how that may affect the decision to marry.

IV. Dataset

In my research on the creation rate of marriages and cohabitation unions during crisis, I use the Bureau of Labor Statistics' National Longitudinal Surveys of Youth from 1979-2012 and 1997, which is currently ongoing. I requested and used the confidential Geocode data from the NLSY from both 1979 and 1997 cohorts, in order to be able to include county specific unemployment rates. The NLSY79 began in 1979 and currently interviews its participants on a biennial basis, ending in 2012. The sample includes 12,686 men and women who were between 14 and 22 years old when they were first surveyed in 1979. The NLSY97 is a sample of about 9,000 youths who were between 12 and 16 years old when first surveyed in 1997, and is still ongoing. They are currently interviewed on an annual basis. These surveys contain data on marriage, along with cohabitation, geographical location (in the Geocode data), religious preferences, and education, although the exact interview questions vary by year (Bureau of Labor Statistics, 2012).

The sample used in the NLSY is not completely representative of the US population, although this offers more insight into the decisions of minorities. The samples have a larger proportion of black and Hispanic participants than the true population (in 1979, about 60% non-black/non-Hispanic, 25% black, and 16% Hispanic whereas the population in 1980 was 83%/12%/6%; in 1997, 52% non-black/non-Hispanic, 26% black, 21% Hispanic whereas the population in 2000 was 75%/12%/13%²), but have nearly the same gender ratios as the United States population (it was 50/50 in the 1979 data set and 51 male/49 female in the 1997 data set, whereas the true population is 49.2% men). The sample was designed to represent the civilian segment of people in the US, and also included a supplemental sample of economically disadvantaged and minority respondents living in the United States (Bureau of Labor Statistics, 2012).

In order to create the sample in 1979 (a similar method was followed in 1997), a list of housing units in selected areas of the United States was created, and interviewers went to a random sample of these homes and performed short interviews. Based on this information, all appropriately aged individuals (aged 14 to 21) from the random sample were assigned to sample groups and asked to participate in the first NLSY79 interview. In order to ensure the correct age and ethnic composition, the group screened nearly 75,000 dwellings in all 50 states and the District of Columbia (Bureau of Labor Statistics, 2012).

The National Opinion Research Center (NORC) attempted to reach each youth within the sample during each survey round, and the only ones routinely excluded were those who had died or were judged to be extremely difficult. Prior

² See slides 9 & 10 in the C-SPAN presentation by Tom Mesenbourg

to each round of interviews, respondents receive a short advance letter reminding them of the interview and confirming the current address and phone number. There are local interviewers responsible for contacting all respondents in their caseloads and locating those who have moved. In addition, NORC makes every effort to convince respondents who refuse to complete interviews to change their minds. The average interview takes about 60 minutes. The retention rates between 1979 and 1993 exceeded 90 percent. Between 1994 and 2000, the retention rate dropped to about 80 percent, and fell further to the 70s between 2002 and 2012 (Bureau of Labor Statistics, 2012).

This data set has several advantages. Firstly, it has in-depth data on a large number of individuals over many years. Secondly, since there are two separate sample sets – and thus two different generations – I can compare the effects of different recessions (and thus differing unemployment rates) on people of similar ages at the times of different recessions. Between 1979 and 2012, there was a short recession in 1980, a year-long recession in 1981/1982, a recession in the early '90s, another in the early 2000s, and the Great Recession of 2007-2009 (NBER, 2012). This gives me several different time periods to compare, and allows me to extract more information regarding how marriage creation and cohabitation react to different unemployment rates.

From both the 1979 NLSY and the 1997 NLSY, I extracted a panel of currently unmarried individuals, as defined by their responses to their marital status. The individual exits our panel upon marriage. I estimate the effect of many covariates (as detailed earlier) on the probability of marriage and cohabitation using a probit model with individual specific random effects. The

probit would display the likelihood of couples cohabiting or getting married. While I did consider using a hazard model, I felt that the bias possible with time-variant covariates could lead to an inaccurate result.³ As such, I use the probit model with random effects so as to include time varying and individual-invariant characteristics, as well as to evenly weight each individual in my sample.

Unfortunately, since the cohorts from 1979 and 1997 were asked different questions, I cannot directly compare the two cohorts. Still, I can compare the coefficients, and thus the effect on likelihood, that different factors play in the decision to marry or cohabit. To the extent that societal norms have also evolved over this time period, it may be more appropriate to consider these two cohorts separately.

³ See Fisher & Lin (1999) for an explanation of the weaknesses of Hazard models with time-variant covariates.

V. Results

Table 1. Marginal Effects on Probability of Marriage in the Following Year
1979 Cohort

	(1)	(2)
	Marriage	Marriage
Age	.081** (16.23)	.119** (23.13)
Age Squared	-.001** (15.96)	-.002** (23.64)
Some College	-.106** (5.66)	-.131** (6.93)
College	.051 (1.72)	.046 (1.54)
Post Graduate	.164** (3.00)	.149** (2.71)
Children	.085** (5.21)	.043** (2.62)
Black	-.419** (25.70)	-.449** (27.23)
Hispanic	-.082** (4.16)	-.102** (5.07)
Freq. Relig	.028** (7.19)	.030** (7.46)
Jewish	-.103 (1.43)	-.090 (1.23)
Protestant	.085** (4.35)	.096** (4.91)
Catholic	.001 (.04)	.019 (.88)
Employed	.259** (19.37)	
Nat Unemp.		.025** (5.72)
N	118,899	118,899

* $p < 0.05$; ** $p < 0.01$
Z-Scores in parentheses

Table 2. Marginal Effects on Probability of Marriage in the Following Year
1979 Cohort, by Gender

	(1)	(1)
	Men	Women
Age	.101** (14.11)	.066** (9.25)
Age Squared	-.001** (12.63)	-.001** (10.18)
Some College	-.100** (3.47)	-.120** (4.80)
College	.035 (.77)	.054 (1.37)
Post Graduate	.158* (1.96)	.186* (2.48)
Children	.206** (6.83)	.003 (.16)
Black	-.391** (16.62)	-.440** (19.18)
Hispanic	-.055 (1.94)	-.103** (3.74)
Freq. Relig	.029** (5.08)	.020** (3.78)
Jewish	-.047 (.44)	-.167 (1.69)
Protestant	.074** (2.76)	.089** (3.07)
Catholic	-.030 (.99)	.018 (.56)
Employed	.355** (17.66)	.184** (10.01)
N	63,117	55,782
* $p < 0.05$; ** $p < 0.01$		
Z-Scores in parentheses		

The variables I ran against the 1979 cohort's likelihood of getting married display similar coefficients across several regressions, and are incredibly consistent, all within .045 of each other. For the variables that affect people's ability to find a match, results were as expected for the most part, with a few exceptions. Increasing age increases the probability of getting married, up until a certain point where it starts decreasing the likelihood. Having children or being

pregnant increases the likelihood of marriage in certain cases, but not all. People who are divorced or widowed (as shown in Appendix Table 5) have a higher likelihood of marrying than people in the sample who have never been married. This could mean that a prior marriage signals that the individual is “dateable.” However, divorcees and widows with children are less likely to marry than their childless counterparts, which could be due to a “baggage” effect. When I separate the first regression into two groups based on gender, some interesting results surrounding the presence of children arise. The presence of children is much more important to men in their decision to marry, which may seem counterintuitive. One would expect that women would assign a greater weight to the existence of children, since they are usually the ones to raise them, but for women, the existence of children is statistically insignificant. This could reflect either a fundamental difference in the way men decide to marry or cohabit, or it could reflect men answering the survey differently. Men could be less likely to report children in their household that are not their biological children, which could affect results. One could also imagine that if a woman has children from a previous relationship, her current partner might be less likely to marry her, as seen in the regression that includes widows and divorcees. This would likely have a larger effect on women since they typically have primary or sole custody of their children.

Relative to Caucasians, Blacks and Hispanics both have lower likelihoods of getting married. The regressions by gender also find that being a minority has a larger negative effect on marriage for women than for men, which has been supported by prior research (Parker et al., 2014). Protestantism increases the

likelihood of marriage, whereas Judaism and Catholicism are statistically insignificant. Piety (as measured by frequency of religious attendance) has an effect across the sample of increasing the likelihood of marriage, but when an analysis is run which interacts piety with each religion (not shown above), it becomes statistically insignificant across religions and in general.

One of the deviations from expected results is that if individuals have some college, they are less likely to be married than their counterparts without any college education, but having completed college is not statistically significant. Having a post graduate degree, however, increases the odds of marriage.

The variables that are more transitory and likely affect the timing of marriage as opposed to the ability to find a match are very consistent with expectations.

Being employed increased the odds of marriage. It increases the odds of marriage more for men than for women, which is to be expected since cultural expectations are still that men should be able to financially support their families. For the 1979 cohort, higher national unemployment slightly increases the odds of marriage, which is likely due to couples being able to share costs and create economies of scale. Since cohabitation was a less socially acceptable option for this cohort, it may be that couples were choosing to marry to gain access to the benefits of a two-person household.

At a county level (not shown), the unemployment rate has no statistically significant effect for the 1997 cohort. The regression that includes county level unemployment is not presented because the data included in that regression are heavily biased. County unemployment rates were only digitally recorded

beginning in 1990. Consequently, the data from the 1979 cohort that can be matched to county unemployment data represents a small sample and most importantly, are skewed towards older individuals who are still unmarried, causing it to be biased and unreliable.

Table 3. Marginal Effects on Probability of Cohabitation or Marriage in the Following Year
1997 Cohort

	(1)	(1)	(2)	(2)	(3)	(3)
	Cohab	Marriage	Cohab	Marriage	Cohab	Marriage
Children	.746** (39.68)	.605** (25.36)	.759** (40.07)	.613** (25.57)	.755** (39.82)	.606** (25.25)
Age	.732** (33.01)	.571** (17.55)	.691** (29.70)	.531** (15.78)	.722** (31.75)	.565** (17.13)
Age^2	-.014** (30.15)	-.011** (16.49)	-.013** (25.30)	-.010** (13.89)	-.014** (28.30)	-.011** (15.84)
Wealthy	-.161** (9.66)	-.156** (6.89)	-.170** (10.19)	-.163** (7.20)	-.169** (10.13)	-.158** (6.95)
Poverty	-.057** (2.81)	-.158** (5.64)	-.063** (3.12)	-.162** (5.82)	-.061** (3.01)	-.157** (5.61)
Some College	-.039 (.88)	.284** (6.07)	-.041 (.93)	.284** (6.07)	-.038 (.86)	.281** (5.98)
College	.204** (7.28)	.363** (11.74)	.204** (7.30)	.363** (11.76)	.209** (7.44)	.368** (11.87)
Post-Graduate	.394** (5.89)	.739** (10.83)	.407** (6.07)	.750** (10.99)	.365** (5.38)	.751** (10.97)
Black	-.295** (11.39)	-.501** (17.86)	-.301** (11.60)	-.504** (17.96)	-.298** (11.45)	-.505** (17.89)
Asian	-.477** (5.08)	-.498** (5.19)	-.480** (5.12)	-.502** (5.23)	-.462** (4.90)	-.512** (5.26)
American Indian	.409** (3.26)	-.312* (2.36)	.412** (3.28)	-.306* (2.32)	.404** (3.20)	-.309* (2.34)
Cohab Last Year	.569** (28.34)	.423** (16.29)	.569** (28.35)	.422** (16.26)	.572** (28.36)	.426** (16.34)
Protestant	-.094** (4.37)	.056* (2.03)	-.123** (5.59)	.033 (1.18)	-.107** (4.90)	.049 (1.76)
Jewish	-.386 (1.95)	.058 (1.12)	-.421* (2.12)	.027 (.14)	-.455* (2.21)	.065 (.33)
Catholic	-.034 (1.08)	-.154** (3.77)	-.061 (1.94)	-.175** (4.26)	-.042 (1.34)	-.160** (3.88)
Employment	.091 (5.43)**	.048 (2.06)*				
National Unemp			-.037** (6.57)	-.033** (4.51)		
County Unemp					-.014** (4.30)	-.005 (1.35)
N	92,658	92,658	92,658	92,658	91,817	91,817

* $p < 0.05$; ** $p < 0.01$

Z-Scores in parentheses

Table 4. Marginal Effects on Probability of Cohabitation or Marriage in the
Following Year
1997 Cohort, by Gender

	(1)	(1)	(1)	(1)
	Cohab Men	Cohab Women	Marriage Men	Marriage Women
Children	1.155** (40.03)	.460** (18.17)	.780** (20.11)	.491** (15.84)
Age	.800** (23.21)	.722** (24.32)	.746** (1361)	.485** (11.68)
Age^2	-.015** (20.83)	-.014** (22.72)	-.015** (12.80)	-.010** (11.09)
Wealthy	-.095** (3.92)	-.217** (9.45)	-.113** (3.37)	-.192** (6.29)
Poverty	.031 (1.02)	-.118** (4.36)	-.102* (2.36)	-.195** (5.31)
Some College	.015 (.23)	-.052 (.90)	.267** (3.66)	.307** (5.02)
College	.145** (3.34)	.222** (6.07)	.330** (6.89)	.373** (9.08)
Post- Graduate	.279* (2.50)	.455** (5.46)	.867** (7.96)	.659** (7.50)
Black	-.087* (2.41)	-.451** (12.57)	-.368** (8.98)	-.602** (15.63)
Asian	-.410** (3.33)	-.525** (3.80)	-.531** (3.81)	-.453** (3.42)
American Indian	.384* (2.03)	.400* (2.47)	-.296 (1.38)	-.336* (2.02)
Cohab Last Year	.514** (16.86)	.609** (22.58)	.407** (10.05)	.392** (11.50)
Protestant	-.114** (3.58)	-.060* (2.04)	.075 (1.84)	.044 (1.17)
Jewish	-.435 (1.32)	-.353 (1.44)	-.221 (.62)	.196 (.83)
Catholic	-.019 (.42)	-.050 (1.12)	-.152** (2.61)	-.155** (2.70)
Personal Employment	.133** (5.23)	.044 (1.95)	.139** (3.76)	-.027 (.88)
N	48,160	44,498	48,160	44,498
* $p < 0.05$; ** $p < 0.01$				
Z-Scores in parentheses				

For the 1997 cohort, I ran several different regressions, with similar results. The probit had two possible outcome variables: one that was the probability of cohabitation, and one that was the probability of marriage. We'll first examine the results for the cohabitation outcome for the variables that affect an individual's ability to find a match. Having or expecting children increases the odds of cohabiting. Being wealthy decreases the odds of living together, as does being below the poverty line. When individuals only have some college, it is not statistically significant, but having completed college or having a post graduate degree increases the likelihood of cohabiting. A higher level of education increases the odds of cohabitation, likely because it both increases the individual's attractiveness as a match and increases his or her ability to meet potential matches either while in school, or later through the school's network. Blacks and Asians, when compared to Caucasians, have lower probabilities of cohabiting, while American Indians are more likely to cohabit than whites. Protestants are less likely to cohabit, and identifying as Jewish makes an individual less likely to cohabit in the second and third regressions (but it is insignificant in the first). Identifying as Catholic has no statistical significance on cohabitation. While age is a fundamental effect, it primarily dictates timing. Age follows a quadratic relationship, and when solving for the turning point of age, the result is very consistent with expectations based on current research. The pivotal age of marriage and cohabitation is around 26 years for each regression. When separated by gender, the pivotal age for men is consistently two years above the pivotal age for women.

Factors that are more transitory and are more likely to affect the decision of when to marry (as opposed to affecting a person's overall probability of marrying over their lifetime) also followed expectations. Having cohabited the prior year increases the odds of living with someone in the current year. Being employed increases the probability that the individual will cohabit, but when separated by gender, it only has an effect on men.

One surprising effect was that a higher unemployment rate, at both a national and a county level, decreases the likelihood of cohabitation in the following year. Interestingly, the national unemployment rate has a larger marginal effect than that of the county unemployment rate. I was surprised by the overall unemployment results, because one would assume that higher levels of unemployment would cause people to seek economies of scale through cohabitation. However, this could simply reflect that people delay making big decisions or significant changes to their lives whenever uncertainty is higher. This would then cause people to delay both moving in together if not currently cohabiting and marrying.

When it comes to the probability of marrying, the effects of the covariates differ a bit. A college degree and a post-graduate degree both increase the likelihood of marriage, but in these regressions even 'some college' increases the odds of marriage. This agrees with past studies, which show that education is positively correlated with marriage (Guzzo, 2006; Wang, 2015). Being below the poverty line reduces the odds of marriage, as does being more than 10 times above it. The fact that high levels of wealth decrease the likelihood of marriage seems counterintuitive, and in prior literature, income was shown to positively

impact the likelihood of marriage. The result here could be because this variable does not represent the individual's actual income level, but rather a blunt measure of extreme wealth. Less than 5% of the individuals in the sample had this level of wealth, so this measure is really saying that extremely wealthy individuals have a lower probability of marrying next year than middle income individuals.

With regards to the probability of marrying, Blacks, Asians, and American Indians all have lower odds of marrying than Caucasians. We once again find that being black has a larger effect on women's decisions to marry than on men's. Identifying as Jewish is still statistically insignificant. Being Protestant increases the odds of marriage in the first regression, but is insignificant in the second and third regressions. Identifying as Catholic decreases the odds of marriage significantly. It is curious that Protestantism and Catholicism, which have similar beliefs, would have such differing effects on the likelihood of marriage. Even when the ethnicity that is most highly correlated with Catholicism (correlation=.16), Hispanic, is included in the regression (shown in Appendix Table 6), Catholicism still decreases the odds of marriage.

Age has a similar effect as in the cohabitation regression, with the probability increasing until the pivotal age, which is found to be about 26. Having a child or expecting a child significantly increases the odds of marrying. When the first regression is broken down by gender, the presence of children, once again, has a larger positive effect on men's decisions than on women's. Living together the year before, as expected, increases the odds of marriage. Any increase in level of education increases the odds of marriage. Personal employment increases the

odds of marriage, and an increased national unemployment rate decreases the likelihood of marriage, likely because people are delaying marriage until they have greater stability or certainty. Surprisingly, however, the county unemployment rate is statistically insignificant for marriage, which could mean that individuals are basing their decisions more on overall sentiment than actual economic climate of the area in which they live. When the first regression is broken down by gender, personal employment is only significant in the regressions on men. For women, it shows up as insignificant for both cohabitation and marriage, which is supported by societal standards that men are responsible for supporting a family.

Unfortunately, not all of the variables which could be important were available from the NLSY or were available on too small a portion of the sample. For the 1979 cohort, the NLSY had little information on non-spousal partners, so I was unable to use partner unemployment, partner race, or partner religion. In addition, the 1979 cohort only broke race down into Black, Hispanic, or neither. The poverty and income data were also less available on the entire sample for this cohort. The 1979 cohort also does have much data on cohabitation, so although I thought this would be an extremely important factor in whether or not a couple chooses to get married, it was not possible to conduct this analysis. Moreover, this meant that it was not possible in the 1979 cohort to see the likelihood of the couple choosing to cohabit in the following year.

For the 1997 cohort, information on a partner's race or religion was only available on a very small subset of the sample, and thus biased the sample, which was why these covariates are not included. For both cohorts, I had wanted to

include the county that the individual resided in, but since there were so many, the only way to include this would be through a fixed effect. I felt that person specific random effects were more important, so unfortunately I was unable to include fixed effects for each county.

Opportunities for further research exist in including the geographical area the individual lives in, to pull out possible cultural effects. One could also use another dataset that has more data on the match characteristics of the individual and his partner, such as religion and race matches for further insight. Another interesting topic of research could be the investigation of how certain covariates affect minorities and genders differently, as well as how the marriage and cohabitation rates of minorities differ from Caucasians.

VI. Conclusion

This paper attempts to investigate whether or not employment – especially at a county-level – impacts the timing of couples’ decisions to cohabit or marry. Using the longitudinal and confidential Geocode NLSY data from the 1979 and 1997 cohorts, this paper estimates both the effects of certain individual characteristics on the decision to marry or cohabit, and the impact of economic sentiment on the timing of these decisions.

Characteristics that one might expect to be important in one’s decision to live with or enter into a union with another person, such as religion or level of education, were not consistently significant.

Differences in results by gender are also interesting in that they may highlight fundamental differences in the components that men and women are

looking for both in a partner and a spouse. Notably, employment is much more important in men's choices to marry or cohabit, which could be explained by societal norms which expect that men should be able to financially support their families. Similarly, the presence of children impacts the likelihood of marriage quite differently for men and women, again likely due to societal norms related to child rearing and custody.

Differences between the 1979 and 1997 cohorts in the importance of factors such as education and religion on the likelihood of marrying are quite interesting and reflect fundamental cultural changes in the United States over the time period from 1979 to 2012. For the 1979 cohort, only a post-graduate degree acts to increase the likelihood of marriage, whereas in the 1997 cohort, any increase in education level significantly increases the probability of marriage. For the 1979 cohort, Protestantism has a significant positive effect on an individual's likelihood of marriage, and Catholicism has no significant effect. For the 1997 cohort, however, identifying as Protestant has no significance on the likelihood of marriage in most regressions, and Catholicism acts to decrease the probability of marriage. In addition, general economic conditions affect the two cohorts differently, perhaps due to evolving societal norms. For the 1979 cohort, higher national unemployment leads to higher likelihoods of marriage, perhaps because it was the only acceptable way for couples to share costs. For the 1997 cohort, however, higher national unemployment leads to lower likelihoods of marriage and cohabitation, likely due to a desire to delay life-changing decisions until periods of greater perceived stability. Interestingly, for the 1997 cohort, county level unemployment is less important than national unemployment, and is not

statistically significant for marriage. This suggests that people may be basing their decisions on national sentiment and overall uncertainty, rather than the actual economic climate of the area in which they live.

However, the most important result relates to the main topic of this paper: economic uncertainty is found to have a significant effect on individuals' decisions to marry or to cohabit *at a given time*. The overall economic sentiment and economic climate reflected by unemployment rates have very significant effects on when an individual is deciding to make life-changing decisions, such as choosing to live with or marry someone. These results do not suggest that transitory economic conditions impact the fundamental likelihood that a person will find a partner either in that moment or over their lifetime. These results do, however, provide strong evidence that the willingness of individuals to make important decisions in periods of perceived generalized uncertainty is diminished. This concept is well established in literature on investment, but has not previously been thoroughly considered within this very personal sphere.

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VIII. Appendix

Table 5. Marginal Effects on the Probability of Marriage Next Year
1979 Cohort

	(1)
	<i>Marriage</i>
Age	.064** (11.91)
Age Squared	-.001** (13.35)
Some College	-.092** (5.01)
College	.070* (2.42)
Post Graduate	.176** (3.30)
Children	.129** (6.44)
Divorce	.213** (8.13)
Divorce*Children	-.156** (4.85)
Widow	.298** (3.17)
Widow*Children	-.414** (3.36)
Black	-.389** (23.35)
Hispanic	-.078** (4.22)
Freq. Relig	.028** (7.52)
Jewish	-.077 (1.14)
Protestant	.078** (4.20)
Catholic	.004 (.17)
Employed	.261** (19.95)
N	118,899
* $p < 0.05$; ** $p < 0.01$	
Z-Scores in parentheses	

Table 6. Marginal Effects on the Probability of Cohabitation or Marriage Next Year
1997 Cohort

	(1)	(1)
	Cohab	Marriage
Children	.746** (39.58)	.609** (25.45)
Age	.732** (33.01)	.569** (17.53)
Age^2	-.014** (30.15)	-.011** (16.47)
Wealthy	-.161** (9.66)	-.155** (6.87)
Poverty	-.057** (2.81)	-.156** (5.59)
Some College	-.039 (.88)	.281** (6.01)
College	.204** (7.26)	.356** (11.46)
Post-Graduate	.394** (5.88)	.730** (10.69)
Black	-.295** (10.89)	-.515** (17.83)
Asian	-.476** (5.06)	-.510** (5.31)
American Indian	.409** (3.26)	-.313* (2.37)
Hispanic	.001 (.02)	-.056* (2.10)
Cohab Last Year	.569** (28.34)	.422** (16.26)
Protestant	-.094** (4.37)	.053* (1.91)
Jewish	-.386 (1.95)	.050 (.25)
Catholic	-.034 (1.08)	-.143** (3.47)
Employment	.091** (5.43)	.047* (2.05)
N	92,658	92,658

* $p < 0.05$; ** $p < 0.01$

Z-Scores in parentheses