LATER MARRIAGE AND DISAPPEARING "SHOTGUN WEDDINGS": THE IMPACT OF ABORTION ON YOUNG WOMEN'S MARRIAGE DECISION

Ruoding Tan

The Graduate Center, City University of New York
CUNY Institute for Demographic Research

I. Background

The late 1960s and early 1970s ushered in a period of seismic change in access to abortion brought by state legislative reform and the 1973 Supreme Court decision on *Roe. v. Wade*. Past research has extensively examined the direct fertility effect of abortion legalization. However, what has received far less attention is whether legalization of abortion altered women's marriage choice as well. One of the most significant demographic changes that parallel the fertility decline among American women during the 1970s was the steady increase in age at first marriage and decline in the marriage rates (Figure 1). The overall marriage rate plunged from 10.8 per thousand people in 1970 to 7.3 per thousand 30 years later. Moreover, changes in the distribution of age at first marriage across cohorts correspond closely to abortion legalization (Figure 2). The fraction of women marrying before age 21 declined from 58.51 % for the cohort born in 1940 to 39.78 % for the cohort born in 1960. Similarly, the fraction of women marrying before 23 plumed from 75.10 % for those born in 1940 to 55.45% for the cohort born in 1960. With entry into marriage falling and the marriage rates decreasing during the 1970s, more young American women choose to remain single for a longer period of time before marrying.

In this paper, I empirically examine the role of greater abortion access in explaining the changes in women's marriage decision. I focus on young unmarried women between ages 15 to 25. This age group is of greater policy concern than older women for two reasons. First, the timing of first marriage is most likely to be the defining moment of other life-course event such as childbearing, higher education and labor force participation for young women. Many authors have argued that the dramatic increase in women's education attainment and representation in professional careers since the 1960s was attributed to the delayed entrance into marriage (Goldin and Katz 2002; Cadwell 1998). Second, a growing body of literature points to the long and lasting negative influence of early teen marriage on a variety of social, economic and family outcomes. Woman who marry before 20 are more likely to drop out of high school, become unemployment, live in poverty and experience an early divorce (Lundberg and Plotnick 1999; Angrist and Evans 1999; Ribar 1994; Dahl 2010).

The second motivation of this paper is to disentangle the abortion effect on marriage from a variety of concurrent legislative, demographic, and social changes that jointly affect family formation behavior. The period between the late 1960s and the early 1970s marks a watershed in American demography. Research shows that early legal access to the oral contraceptive pill for minors was significantly associated with a delay in marriage among college educated women (Goldin and Katz 2002). It has also been shown that the changing legal minimum age of marriage during the same time period lowered the incidence of marriage at a young age (Blank 2009; Dahl 2010). However, most of the studies on the impact of the birth control pill or marriage laws overlook the confounding contemporaneous effect of abortion reform. The availability of legalized abortion services are usually represented as a dichotomous variable that assigns a value of one to all women living in states where abortion was legal and zero to women elsewhere. This crude indicator of abortion availability fails to capture the fact that many women traveled to early legalization states, primarily New York, to obtain abortion prior to *Roe* (Levine et al.

1999). For example, forty-three percent of legal abortions performed between 1971 and 1972 in the U.S. were to non-residents. Seventy-nine percent or 314,929 abortions were performed to women who traveled to New York (Center for Disease Control 1972, 1974).

In this paper, I use abortion surveillance data from 1970 along with re-discovered data on abortions performed in New York in the years before *Roe* to control for a more accurate measure of access to abortion. The changes in abortion policy during this period provided greater internal validity than is possible to obtain currently. Various abortion polices have affected its availability and costs over the past few years. Identifications based on state and federal restrictions on Medicaid funding, or parental notice and consent requirement are often confounded by the uncertainty surrounding the law enforcement and effectiveness (Cartoff and Klerman 1986; Henshaw 1995). The sudden and unambiguous shift in abortion access 40 years ago, on the contrary, served as a credible natural experiment with plausibly exogenous variation.

II.   Abortion and Marriage: the Mechanism

How does greater access to abortion affects young women's marriage decision? The seminal work of Arkerlof, Yellen and Katz (1996) and Goldin and Katz (2002) (hence forth AYL and GK) put forward two channels through which reproductive health policy affects women's decision about entry into marriage.

AYL, develop a theoretical model that relates legalization of abortion (and the availability of contraceptive pills) to the changes in the decision to marry among young women. They argue that the traditional custom of "shogtun marriage", where unmarried partners are forced into marriage in the event of premarital pregnancy, was greatly diminished by the legalization of abortion. In their model, abortion legalization is analogous to a technology shock that triggered the shift in marriage behavior among young people. For women, marriage commitment no longer serves as an enforceable contract should premarital pregnancy occur. Men, on the contrary, are less willing to get married because marriage becomes more like a rational choice instead of a responsibility. As a result, the incidence of shotgun wedding that used to encourage early marriage fell while the rate of out-of-wedlock childbearing rose. While the implications of the AYL model are intriguing, the authors only present time-series trends in aggregate data without empirically testing their model.

In a related work, Goldin and Katz (2002) model women's marriage decisions as outcomes of matching process in the context of expanding legal access to birth control pill among unmarried women during the late 1960s and 1970s. They argue that the diffusion of the pill enable women to delay marriage without bearing the cost of abstinence and a compromised pool of marriageable men. As a result, more women were encouraged to opt for later marriage due to a longer and more informative process of assortative mating.

III.   Data and Results

Current Population Survey
The main data draw upon the June fertility supplements to the Current Population Survey. The data record detailed marital and reproductive history of each female respondent. Specifically, women age 15 and above were asked about their number of marriages, followed by the month and year of first, second and the most recent marriage. Respondents were also surveyed about the month and year in which their first four children were born. For regression analysis, I pool individual information of basic demographic characteristics, education attainment and date of first marriage and birth from the 12 waves of June CPS survey from 1979 to 1995. I include all women older than age 30 at the time of the survey as they are

most likely to be on the marriage market and have begun reproductive life[1]. Given the retrospective nature of the data, I restrict the sample to women ages 30-65, born between 1935 and 1960. The cohort restriction means I am looking at women who turned 20 between 1955 and 1980, a period in which average abortion rate went from 0 to 29.1 per 1000, and for which the diffusion of the contraceptive pill and age of marriage laws explored in this paper converged.

Abortion

Data on the number of abortions are collected from different sources. To address the potential mis-measurement of abortion access from the previous literature, I first manually input the data from the early publications of CDC abortion surveillance surveys between 1970 and 1972. These data are then combined with resident abortions from 1973 to 1985 reported by Guttmacher Institute. The third source of data is from the New York State Department of Health. The newly discovered data contain information on abortions performed in New York by age groups, race and state of residence from 1971 to 1975. The unique data enable us to further explore the age variation in abortion access.

IV. Findings

Abortion and the Timing of First Marriage

I start by investigating whether legalization of abortion induced young women to postpone their marriage. Following Goldin and Katz's (2002) specification, I construct a linear probability model using the standard difference-in-differences method. The identification lies in the cross-state cross-cohort variation in the average abortion rate in a women's state of residence when she was 18 to 21 years of age. I include the sample of all women and examine the effects of abortion on the timing of first marriage across ages 18 to 23. The specification allows me to examine whether teen women responded to the dramatic change in abortion access differently (marry before age 18, 19 and 20). I control for state-cohort variation in pill access (*pill*), state minimum marriage age laws, and race. To capture omitted variables that evolve over time within state, I include state linear trends in some specifications. Table 1 present the results. The estimates show large negative and statistically significant impact of the state abortion rate on the likelihood a woman marries by age 18, 19, 20 and 21. Results are robust to adding state linear trends and the inclusion of state and year of birth fixed effects. As an example, in the case of marrying before age 20, the mean of the abortion rate variable increased from zero through the 1948 birth cohort to .25 per 10 women for the 1960 birth cohort. Thus, the coefficient of greater access to abortion (-0.181) is associated with 4.5 percentage point decrease in the fraction marrying by age 20.

Abortion and Shotgun Marriage

Next, I test the AYL hypothesis that legalization of abortion caused the erosion of the custom of shotgun marriage. Following the literature, I define a shotgun wedding for young unmarried women as first marriage occur seven months prior to the first birth, where the women was single at the time of pregnancy. The empirical findings from Table 2 lend support to the AYL model. Legalization of abortion reduced the likelihood for women to rush into marriage before the first birth by 5 percentage points. The division of the sample into teen women ages 15-19 and young adult women ages 20-24 reveals interesting heterogeneity. Legalization of abortion is associated with 12% decline in the probability that a teen woman legitimizes her premarital pregnancy through marriage. For the subsample of young adult women, the abortion effect is bigger. Legalization of abortion corresponds to 25% decline in the probability of shotgun wedding.

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[1] The mean age at first birth and first marriage is 22.8 and 22.3 respectively in the sample.

V.   Future Work

My next step will be incorporating the age, race specific abortion data from New York into the regression analysis. The data provide us unique opportunities to examine the state-age variation in abortion access prior to *Roe*. I expect to find stronger marriage effects of abortion. To push the framework one step further, I will add more variables regarding women's education and labor market outcomes into the empirical analysis. The purpose is to examine whether legalization of abortion have changed schooling or labor market outcomes for women who postponed their timing of first marriage.

Figure 1A: Marriage Rates: 1955-2007

Marriage rate: per 1000 population

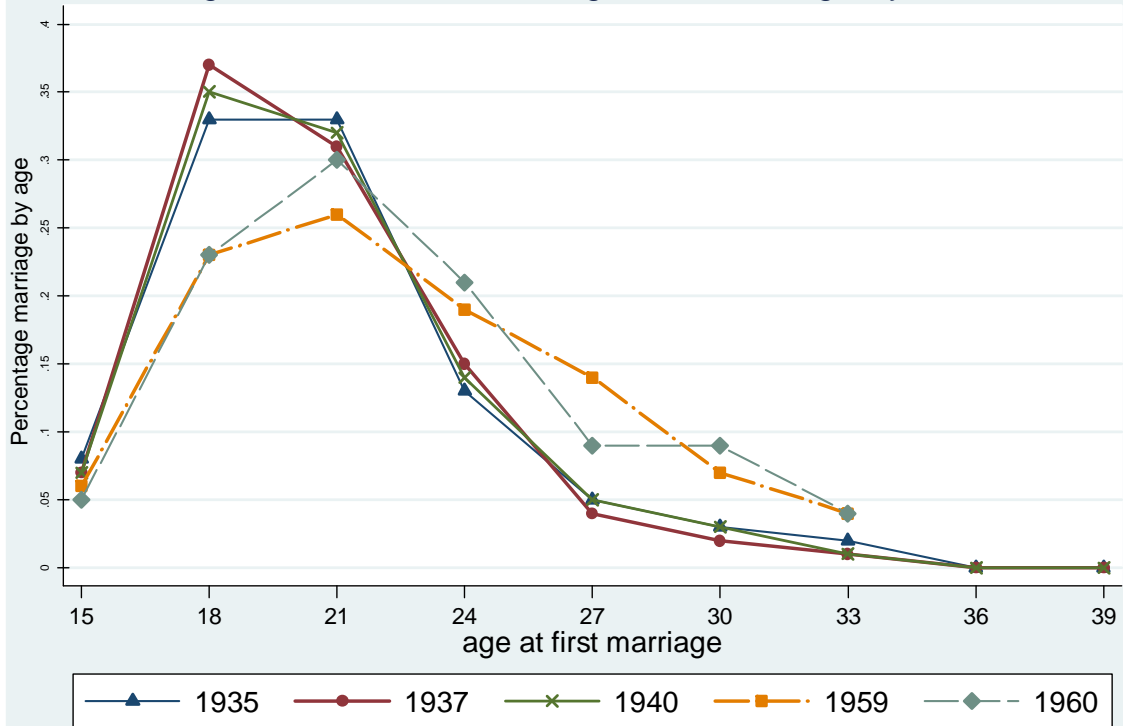Marriage rate: per 1000 unmarried female

Figure 1B: Estimated Median Age at First Marriage by Gender, 1961-2005

Men   Women
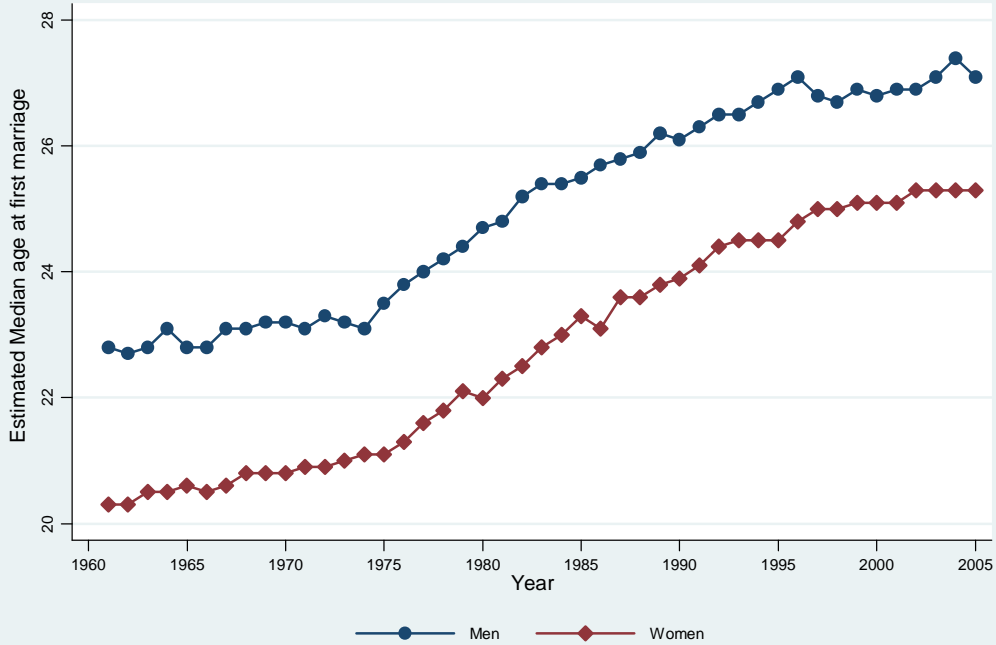
Source: U.S. Census Bureau

Figure 2:The distribution of Age at first marriage, by cohort

Source: June Marriage and Fertility Supplement of Current Population Survey, 1990 1995

Table 1: The Effect of Abortion, Pill Access, Marriage Law on the Timing of First Marriage, All Women

	Married by Age											
	18		19		20		21		22		23	
Mean	0.15		0.26		0.39		0.50		0.60		0.69	
Ave. Adult Abortion Rate at Ages 18-21 per 10 Women	-0.098***	-0.107**	-0.154***	-0.161**	-0.181***	-0.186**	-0.161***	-0.222**	-0.143***	-0.116	-0.154***	-0.124
	[0.03]	[0.05]	[0.04]	[0.08]	[0.05]	[0.09]	[0.05]	[0.11]	[0.05]	[0.11]	[0.04]	[0.10]
ELA by age 18	0.007**	0.005	0.012**	0.011	0.015***	0.01	0.012*	0.01	0.007	0.003	0.005	0
	[0.00]	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
EMA by age 18	-0.001	-0.002	0.006	0.006	0.006	0.005	-0.005	-0.018	-0.002	-0.012	-0.006	-0.001
	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
black	0.008*	0.009*	-0.014**	-0.014**	-0.031***	-0.031***	-0.044***	-0.044***	-0.056***	-0.056***	-0.069***	-0.069***
	[0.00]	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Linear Trends	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
r2_a	0.016	0.016	0.025	0.025	0.031	0.032	0.033	0.034	0.034	0.034	0.034	0.034
N	126511	126511	126511	126511	126511	126511	126511	126511	126511	126511	126511	126511

* $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 2: Effects of State Laws Regarding Abortion Access and Age of Marriage on the Probability of Marrying in Response to Premarital Pregnancy (Shotgun Marriage)

	Dependent Variable: 1=Ever had a shotgun wedding					
	All Women		Teen Women 15-19		Young Women 20-24	
	1	2	3	4	5	6
Legalization of Abortion (dummy)	-0.050***	-0.051***	-0.033**	-0.028*	-0.022***	-0.022***
	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]	[0.01]
Legally Marry (dummy)	-0.007	-0.005	0.004	-0.005	-0.015	-0.015
	[0.01]	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]
black	0.01	0.01	-0.026*	-0.026*	0.075***	0.074***
	[0.01]	[0.01]	[0.02]	[0.02]	[0.01]	[0.01]
Age Dummies	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State Linear Trends	No	Yes	No	Yes	No	Yes
r2_a	0.081	0.081	0.049	0.048	0.022	0.022
N	113563	113563	55556	55556	58007	58007
Mean of Y	0.166		0.251		0.084	

* p<0.10, ** p<0.05, *** p<0.01