Age at Marriage and Marital Stability:

Causal Evidence from a Legal Reform in China

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Abstract

An early age at first marriage is known to be associated with a high risk of divorce. This study investigates the causal link between age at marriage and marital stability for women exploiting the introduction in 1981 of a law that reduced the legal age of marriage in China using Chinese Census Data. The law generated kinks in the legal age of marriage faced by women of different ages that are used in a Regression Kink Design (RKD) to assess the effect of age at marriage on the probability of divorce over the following 20 years. The analysis shows that once causal techniques are applied, the well strong negative association between age at marriage and divorce that we found in the data vanishes completely, suggesting the existence of unobservable factors explaining both timing of marriage and the likelihood of divorce.

INTRODUCTION

Demographers have long observed that those who marry younger have been overrepresented among the divorced. Since Becker, Landes and Michael (1977)'s seminal work, it is accepted that an early age at first marriage has been a key predictor of the probability of divorce. Although the negative association between age at marriage and divorce may not be linear, even turning positive after certain age (e.g. Lehrer 2008), the association is found to be consistent across cohorts (Teachman, 2002). Recent work argues that changes in age of first marriage in the US may also explain the decline in divorce rates at the aggregate level (Rotz 2016; Andersen and Hansen, 2012). However, these studies did not provide conclusive evidence whether an early age at marriage *causes* the likelihood of divorce increase. (See Rotz 2016 for exception, which uses legislations regulating the minimum age of marriage in the US).

This study investigates the causal link between age at marriage and marital stability for women exploiting the introduction in 1981 of a law that reduced the legal age of marriage in China using Chinese Census Data. The law generated kinks in the legal age of marriage faced by women of different ages that are used in a Regression Kink Design (RKD) to assess the effect of age at marriage on the probability of divorce over the following 20 years. The analysis shows that once causal techniques are applied, the well strong negative association between age at marriage and divorce that we found in the data vanishes completely, suggesting the existence of unobservable factors explaining both timing of marriage and the likelihood of divorce.

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We make three clear contributions. First, we provide the first causal estimates of of age at marriage relying on a stronger identification strategy (RKD). Second, unlike in the US case where most minimum age at marriage have been increased (such as Rotz 2016), we exploit a reform which reduced the age at marriage, thus, our analyses help understanding the underlying mechanisms. Third, we shed light at the long-run effect of age at marriage on divorce, in a country like, China, where the trends of divorce rates have been increasing.

DATA

We use the 2000 China´s IPUM census data publicly available online, which was collected 19 years after the introduction of the law. We focus the analysis on those women that ever married and live in either rural and urban areas in China. Widows are excluded from the main sample used in the analysis. In total, we use information from more than 800,000 women living in urban areas and 2,500,000 women living in rural areas that reported the information necessary in the analysis.

EMPIRICAL STRATEGY

The main challenge when estimating the causal effect of the age at marriage on marital stability is overcoming the potential endogeneity in the link caused by unobservable factors such as values or marriage preferences that may partially drive the statistical association between time at marriage and divorce.

We address the potential endogeneity in the link between age at marriage and divorce using the introduction of the January 1981 Chinese law that reduced the legal age of marriage for women from 25 to 20 years in urban areas and from 23 to 20 in rural areas as a source of exogenous variation of the age at marriage. In urban areas, those that were older than 25 when the law was introduced could not get legally married until they were 25 and the introduction of the law did not affect them. On the other hand, those girls that were between 25 and 20 years old when the law was introduced faced an effective legal age of marriage equivalent to their age when the law was introduced. For example, a girl that was 24 years and six months old when the law was introduced, could not get legally married until she is 24 and six months and the new law decreased the legal age of marriage from 25 to 20. Within this age range (20 to 25 years old when the law was introduced), women that are one month younger faced an effective legal age of marriage one month lower. In result, there is a kink in the effective legal age of marriage faced by women living in urban areas that are slightly younger than 25 when the law was introduced. A similar kink is found for women slightly younger than 23 years old when the law was introduced that live in rural areas.

We follow Card et al. (2016) and use a fuzzy Regression Kink Design (RKD) exploiting the age kinks in the legal age of marriage to estimate the effect of the age at marriage on the probability of ever divorce. The logic of this approach resembles that of a regression discontinuity design, except that the RKK exploits a change in the slope of the running variable at the cut-off rather than a change on its level.

The effect of interest is estimated through a two-stage process. First, we estimate the following regression:

$$Age\ at\ marriage_i = \beta_0\, F(Age\ at\ policy) + \beta_1\, Dpolicy * g(Age\ at\ policy) + \mu_i$$

where girl´s age at marriage is the dependent variable, *F(Age at policy)* is a smooth function of the age of the girl in months-years at policy, *Dpolicy* is a dummy variable equal to one if the girl is younger than 25 years old in urban areas and 23 in rural areas and *g(Age at policy)* is a smooth function of the date when the girl turned 25 or 23, depending on whether she lives in a urban or a rural setting.

We then use the predicted probability of the age at marriage obtained from the first stage regression to estimate the causal effect of age at marriage on the probability of ever divorce.

$$Divorce_i = \alpha_1 \, Age\ \widehat{at\ marriage}_i + \alpha_2 \, F(Age\ at\ policy) + \ u_i$$

Regressions are estimated using *state of the art* local linear regressions and the optimal bandwidth described in Calonico et al. 2014. Standard errors are clustered at the year-month cohort as recommended by Lee and Lemieux (2010) for RDD with discrete running variable.

The validity of RKK relies on two main identification conditions. First, the parameter β_0 in the first stage regression should be relevant and largely statistically significant to avoid a problem of weak instruments. Second, the slope of outcome determinants should change smoothly at the discontinuity.

RESULTS

We start the analysis by examining the statistical association between age at marriage and the probability of ever divorced. The results reported in table 1 suggest that in urban areas, girls marrying when they were 25-29 are the group with the lowest prevalence of divorce. On the other hand, in rural areas the group with the lowest prevalence of divorce are those women married when they were 20-24 years old.

We then assess the statistical association between the age at marriage and the probability of ever divorced using the sample of girls married at age 20-25 in urban areas or 20-23 in rural areas. These are the women for which the causal effect will be identified in the RKK analysis. The results of the naïve correlations are reported in table 1 and suggest that within these samples of women, increasing the age at marriage is strongly associated with a smaller probability of divorce.

The results of the RKK analyses are reported in table 2 for women living in urban areas and in table 3 for women living in rural areas. The results of the first stage regressions and the graphical evidence displayed in the figures show that while the kink at the cut-off is large for girls living in urban areas, the kink is less clear for girls living in rural areas, validating the estimations of the second stage regressions using the urban sample and casting doubts on those obtained using the rural one. The results of the second stage equations, particularly those results obtained from the urban sample, reveal that the causal effect of age at marriage on the probability of divorce within the sample of interest is very small and statistically indistinguishable for 0.

Table 1: Age at marriage and ever divorce (OLS estimates)

	Urban areas		Rural areas	
	(1)	(2)	(3)	(4)
VARIABLES	Ever divorced	Ever divorced	Ever divorced	Ever divorced
Age at marriage<20	0.00681***		-0.000803*	
	(0.000805)		(0.000453)	
Age at marriage 20-24	0.00341***		-0.00697***	
	(0.000590)		(0.000419)	
Age at marriage 30-34	0.0295***		0.0716***	
	(0.00197)		(0.00144)	
Age at marriage>34	0.117***		0.199***	
	(0.00379)		(0.00217)	
Age at marriage		-0.00222***		-0.00395***
		(0.000172)		(0.000134)
Mean: Ever divorce	0.048	0.045	0.037	0.031
Age-at-marriage range of girls in sample	All	20-25	All	20-23
Observations	824,588	579,623	2,536,734	1,372,685
R-squared	0.009	0.008	0.023	0.011

Robust standard errors in parentheses. Ommitted category: Age at marriage 25-29. Regression includes region of birth fixed effects and control variables for the year of birth and whether the girl is from Han ethnic group.*** p<0.01, ** p<0.05, * p<0.1.

Table 2: Age at marriage and ever divorced among women: Urban areas in China

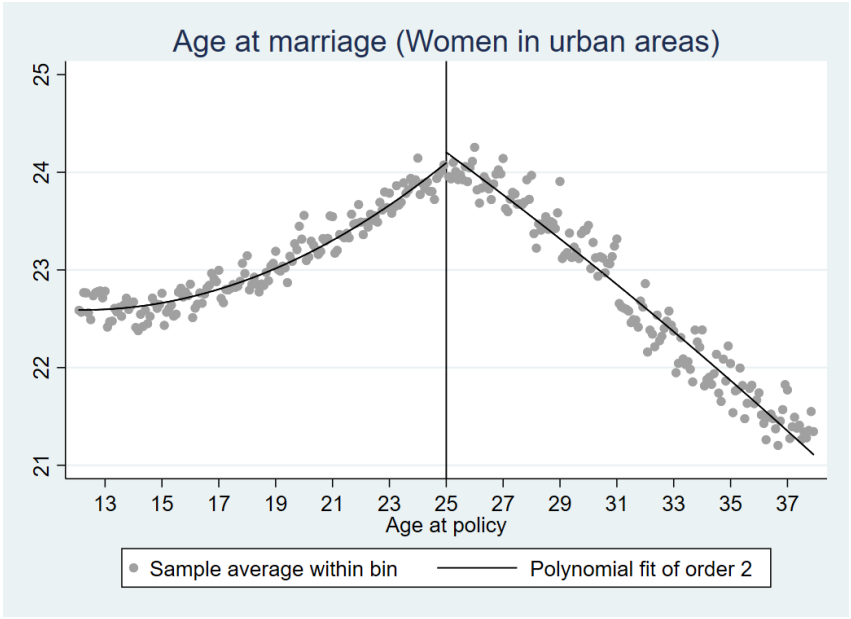
	Conventional		Bias corrected		Robust	
	FS	SS	FS	SS	FS	SS
	Age at marriage	Ever divorced	Age at marriage	Ever divorced	Age at marriage	Ever divorced
ΔAge at policy≥25	-0.01879***		-0.0159***		-0.0159***	
	(0.00463)		(0.00463)		(0.0055)	
Age at marriage		0.00329		0.00733		0.00733
		(0.01400)		(0.01400)		(0.01674)
N	824662	824662	824662	824662	824662	824662
Bandwidth	66.262	66.262	123.954	123.954	123.954	123.954

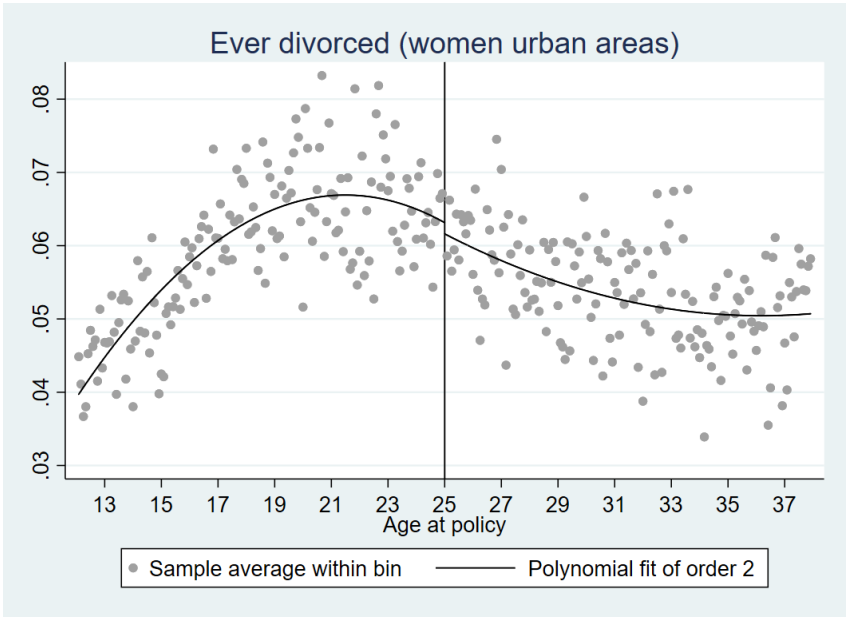
Note: Standard errors clustered at the running variable level (year-month of birth). Point estimates and variances estimated following Calonico et al. 2014.***p<0.01;**p<0.05;*p<0.1.

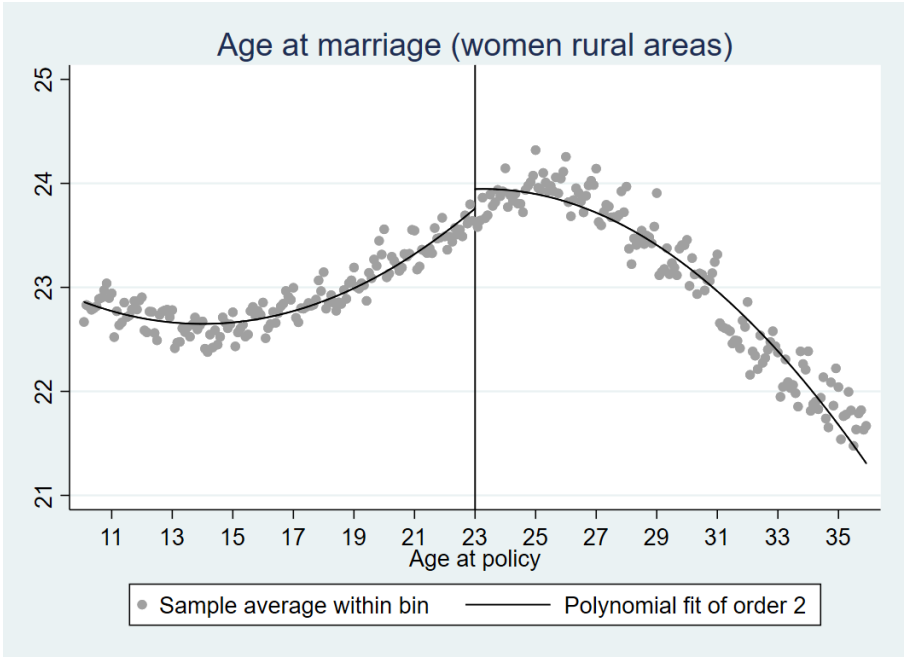
Table 3: Age at marriage and ever divorced among women: Rural areas in China

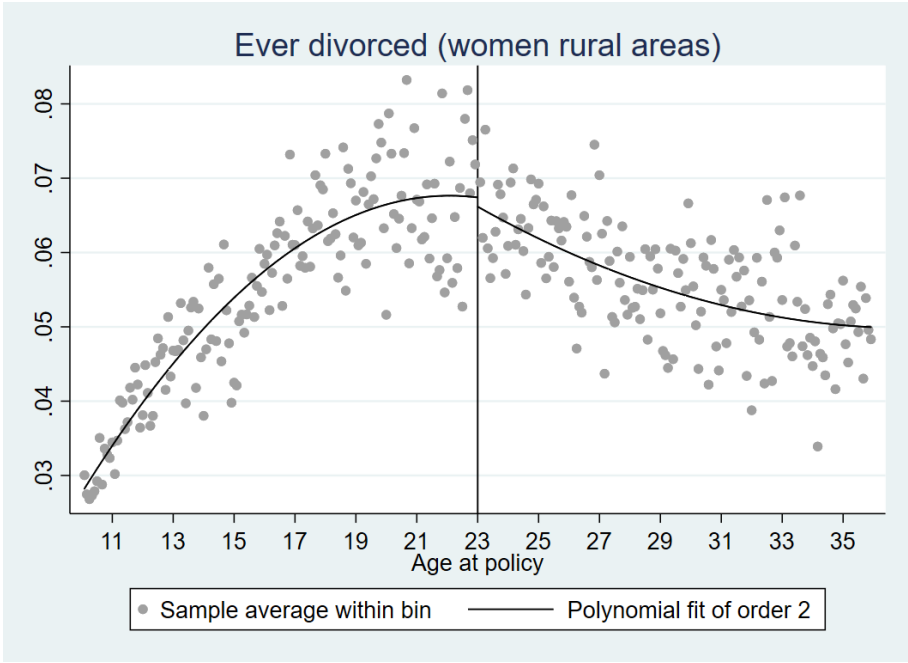
	Conventional		Bias corrected		Robust	
	FS	SS	FS	SS	FS	SS
	Age at marriage	Ever divorced	Age at marriage	Ever divorced	Age at marriage	Ever divorced
ΔAge at policy≥23	-0.00899		-0.00568		-0.00568	
	(0.00427)		(0.00427)		(0.00556)	
Age at marriage		-0.02180		-.03377		-0.03377
		(0.02911)		(0.02911)		(0.03689)
N	2536732	2536732	2536732	2536732	2536732	2536732
Bandwidth	50.484	50.484	86.965	86.965	86.965	86.965

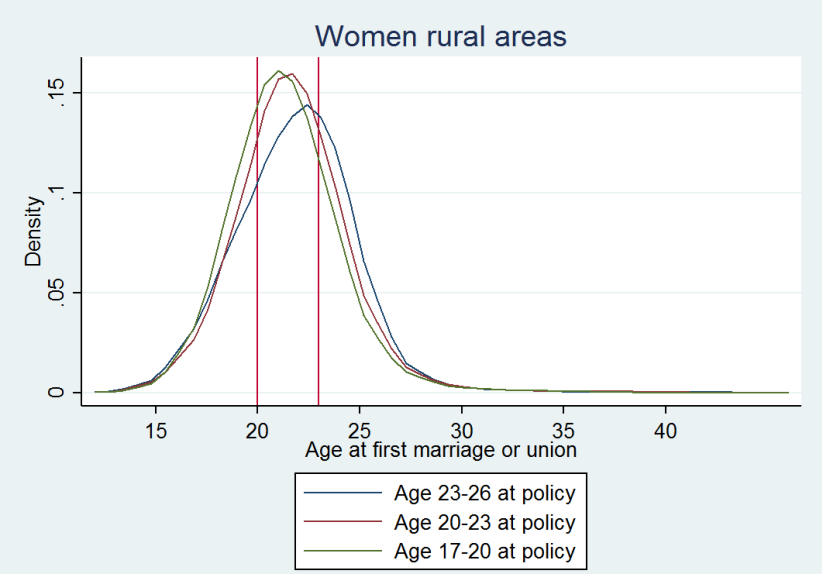
Note: Standard errors clustered at the running variable level (year-month of birth). Point estimates and variances estimated following Calonico et al. 2014.***p<0.01;**p<0.05;*p<0.1.

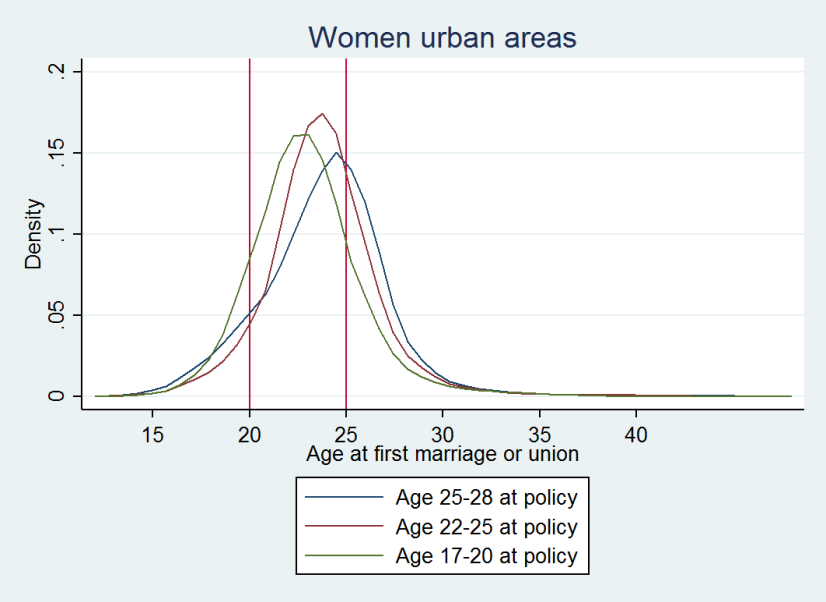

Age at marriage (Women in urban areas)
25
24
23
22
21
13 15 17 19 21 23 25 27 29 31 33 35 37
Age at policy
Sample average within bin
Polynomial fit of order 2


Ever divorced (women urban areas)
.08
.07
.06
.05
.04
.03
13 15 17 19 21 23 25 27 29 31 33 35 37
Age at policy
Sample average within bin
Polynomial fit of order 2


Age at marriage (women rural areas)
25
24
23
22
21
11 13 15 17 19 21 23 25 27 29 31 33 35
Age at policy
Sample average within bin
Polynomial fit of order 2


Ever divorced (women rural areas)
.08
.07
.06
.05
.04
.03
11 13 15 17 19 21 23 25 27 29 31 33 35
Age at policy
Sample average within bin
Polynomial fit of order 2





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