Postponement and Recuperation of First Marriage of Chinese Women

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Background

After the liberation of China in 1949, the mean age at first marriage for Chinese women has been rising steadily, but since the "later" marriage policy was implemented in China in the 1970s, the mean age at first marriage for Chinese women has increased rapidly (Cai, 1991). With the promulgation of the New Marriage Law in 1980, the mean age at first marriage began to decrease(Coale et al., 1991). But since the mid-1980s, the mean age at first marriage has began to show an upward trend. The reform and opening up of the Chinese economy brought about improved living conditions, improved educational attainment, as well as more women's participation in the labor force. This therefore led to a culture of economic independency and delayed marriages among women, as marriage was no longer a factor for economic security. In addition, extension of school years itself may objectively delay marriages(Li and Cheng, 2019; Yu and Xie, 2015; Liu, 2016). Existing studies have shown that although Chinese women had delay marriages but the proportion of never married women has been very low since the 1980s, and China is still a universally married society. Most women are actually not refusing to marry, but rather postponing when to marry(Zhu, 2019). In Asia, the phenomenon of marriage postponement appeared earlier in Korea and Japan. The mean age at first marriage for Chinese women increased continuously, the degree of marriage postponement deepened and the ability of recuperation in young cohorts declined, which made the proportion of never married women grow rapidly(Yoo, 2016; Retherford et al, 2001). Although Chinese women are still married universally at present, it is an issue that needs paying attention to whether Chinese women delay marriages, like Korean and Japanese women, will not be able to compensate at later age, which will lead to the proportion of never marriaged women increased, and then to a change from a universally married society. Therefore, it is necessary to analyze the pattern of women's first marriage and the trend of marriage postponement and recuperation.

Methods

This paper mainly uses the following methods to study the Chinese women's marriage postponement and recuperation. Firstly, the age-specific difference in cumulative first marriage frequency from the benchmark is depicted as a trend line(Sobotka et al., 2012; Yoo, 2016). The decline in cumulative first marriage frequency is considered as the marriage postponement(P), and

the rise in cumulative first marriage frequency after reaching the lowest point is considered as the marriage recuperation(R). The benchmark cohort was set up and the observation cohort was compared with the benchmark cohort. The ratio of marriage recuperation over postponement is computed at ages 25, 30, 35, 40, 45 and 50 as the recuperation index(RI). Secondly, use Hernes model and lsqcurve () function in MATLAB to fit and predict the proportion of ever married women in 1955-1975 birth cohorts and to complete the indicators of marriage postponement, recuperation and recuperation index.

(1) cumulative first marriage frequency(Carmichael, 2016):

$$C_a(y) = \sum_{x=15}^{y} \frac{FM_a(x)}{TP_a} \qquad (1)$$

Where $C_a(y)$ is the female a cohort cumulative first marriage frequency to exact age y; $FM_a(x)$ is the first marriages at age x of female a cohort; TP_a is the total number of female in a cohort.

(2) marriage postponement(P), marriage recuperation(R) and recuperation index(RI) (Sobotka et al, 2012）

m is the age at which the difference in the cumulative first marriage frequency between the benchmark cohort and the observation cohort reaches its maximum. The degree of marriage postponement between observation b cohort and a benchmark cohort is considered as P_b, the marriage recuperation is considered as R_b; recuperation index is considered as RI_b.

$$P_b = \sum_{x=15}^{m} [\frac{FM_b(x)}{TP_b} - \frac{FM_a(x)}{TP_a}] = C_b(m) - C_a(m) \qquad (2)$$

$$R_b = \sum_{x=m+1}^{50} [\frac{FM_b(x)}{TP_b} - \frac{FM_a(x)}{TP_a}] = C_b(50) - C_a(50) - P_b \qquad (3)$$

$$RI_b = \frac{R_b}{-P_b} \qquad (4)$$

(3) Hernes model(Hernes, 1972)

Hernes cumulative distribution function:

$$F(x)=\frac{1}{1+\frac{1-F(0)}{F(0)}\exp(\frac{A-Ab^{x}}{\ln b})} \qquad (5)$$

where parameter $A>0$ is the average initial marriageability, and $0<b<1$ is constant of deterioration; $F(0)$ is the proportion of ever married women at the starting age of marriage.

Data

China conducted censuses in 1982, 1990, 2000 and 2010, covering age, sex, marital status and first marriage age. The Integrated Public Use Microdata Series(IPUMS) is established by the University of Minnesota in collaboration with national statistical agencies, international organizations and universities, stores individual sample information from China's 1982, 1990 and 2000 censuses. In this paper, we use 2010 Chinese census and the sample data of 2000 Chinese census in IPUMS, in which the sample size of women in 2000 China census sample data is 5759928. The 1950 cohort is chosen as the benchmark cohort and the cohorts born between 1930 and 1975 as the observation cohort. We compares the difference in cumulative first marriage frequencies between the observation and the benchmark cohort, and analyses marriage postponement and recuperation.

Result

(1) Age-specific first marriage frequency and proportion of ever married women in cohort

Figure 1 shows the age-specific first marriages frequency of Chinese women in 1930-1975 cohorts. The trend of the age-specific first marriage frequency of women in each cohort is very similar, which increases first and then decreases. With the passage of time, the curve of the age-specific first marriage frequency moves rightward. The peak of age-specific first marriage frequency in 1930-1955 cohorts were decline, and the first marriage age was increased. The peak of age-specific first marriage in 1960-1965 cohorts increased slightly compared with the previous cohorts. The peak of age-specific first marriage frequency in 1970-1975 cohorts were decline, and the peak age of first marriage was delayed.

Figure 2 shows the proportion of ever married women in 1930-1975 cohorts. Over time the curve of the proportion of ever married moves rightward, which means first marriage is being postponed. The more than 50% at the age of 20 in 1930-1950 cohorts got married, and in 1955, the age at which the cohort reached that proportion was delayed to 22 years old. Since 1980, the age of first marriage of women has decreased. Therefore, the more than 50% at the age of 21 in 1960-1970 cohorts got married, and in 1975, the age at which the cohort reached that proportion was delayed to 22 years old. However, the proportion of ever married women in every cohort has reached over 97% at the age of 35, and the proportion of never married is very low. China has always been a universally married country.

(2) Marriage postponement and recuperation

Figure 3 shows the marriage postponement and recuperation process in 1930-1975 cohorts. Table 1 shows the key indicators of the marriage postponement and recuperation process: postponement, recuperation and recuperation index. The degree of marriage delay in 1950 cohort was the most serious than 1930 cohort, and then decreased gradually compared with that in 1935-1945 cohorts. Compared to the benchmark 1950 cohort, the difference in cumulative frequency of first marriage of the 1955 and 1960 cohorts decreased rapidly to the lowest point. Therefore, the delay in marriage was serious in the 1955 and 1960 cohorts. The value of marriage postponement reaches -0.203 at the age of 20 in 1955 cohort, which indicated that the proportion of ever married women at that age decreased by 20.30%. The marriage postponement of women in 1965-1970 cohorts have slowed down because of the China's second Marriage Law was promulgated in 1980, it relax the age restriction of the "later" marriage policy in the 1970s. Compared to the benchmark 1950 cohort, the difference in cumulative frequency of first marriage of the 1975 cohort was higher than that in the previous five years. The delay in marriage become serious in the 1975 cohort. The recuperation index showed a completely recuperated effect in marriage frequency at the age of 30 years old in 1930-1970 cohorts. But in 1975 cohort, the recuperation index by 30 years old was 0.844, which was not completely recuperated.

(3) Hernes Model

Table 2 shows the fitted values of parameters of Hernes model for the proportion of ever married women in cohorts. The SSE is small and the fitting effect good. Figures 4, 5, 6, 7 and 8 show the fitted proportion of ever married women in 1955-1975 cohorts, and the confidence interval is given. Table 3 shows the marriage postponement, recuperation and recuperation index which based on the fitted values of the proportion of ever married women in 1930-1975 cohorts. The results show that the proportion of never married women in all cohorts is very low, and the marriage postponement has been completely recuperated. They have reached the state of universal marriage all their lives, and China is still a universally married society.

Appendix

Figure 1 Age-specific first marriage frequency in 1930-1975 cohorts

Figure 2 Proportion of ever married women in 1930-1975 cohorts

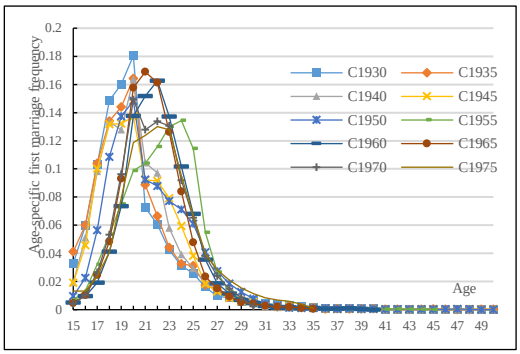


Figure 3 Marriage postponement and recuperation in 1930-1975 cohorts

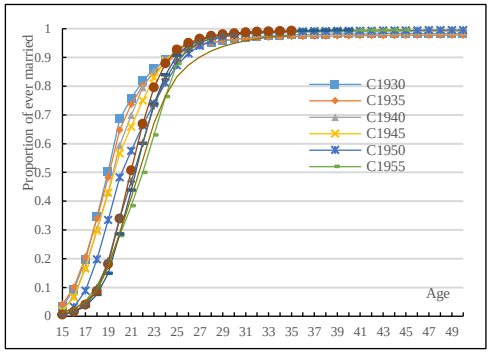


Figure 4 Fitted proportion of ever married women in 1955 cohort

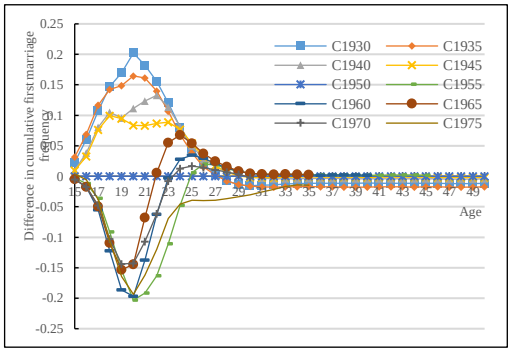


Figure 5 Fitted proportion of ever married women in 1960 cohort

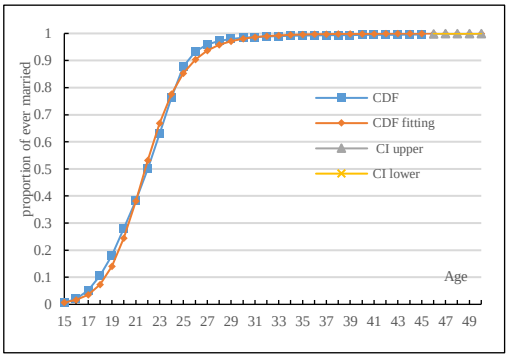


Figure 6 Fitted proportion of ever married women in 1965 cohort

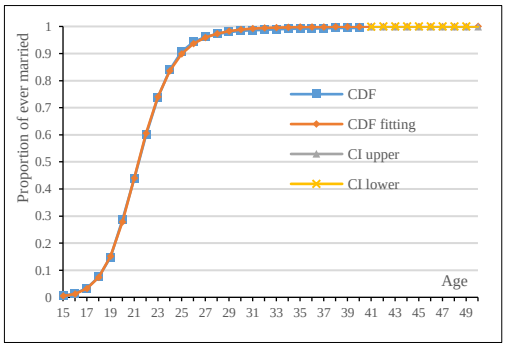


Figure 7 Fitted proportion of ever married women in 1970 cohort

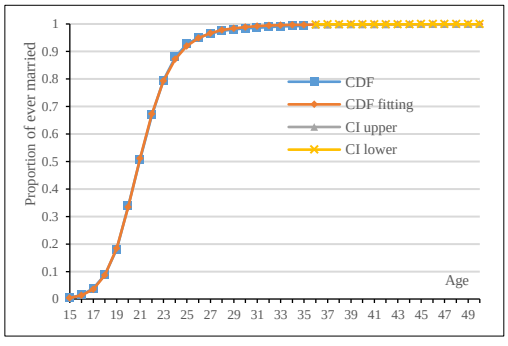
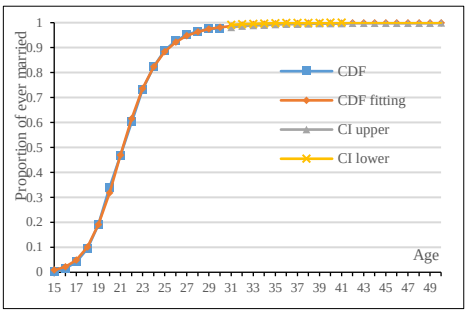


Figure 8 Fitted proportion of ever married women in 1975 cohort



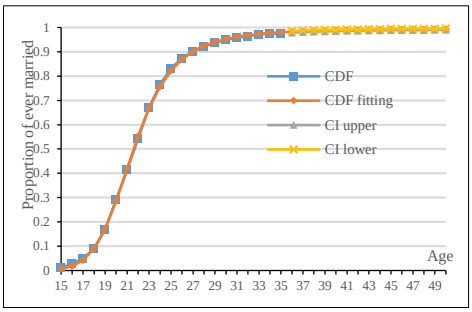


Table 1 Women's marriage postponement and recuperation in 1930-1975 cohorts

cohort	postponement	Age at trough	Recuperation at age						Recuperation Index					
			25	30	35	40	45	50	25	30	35	40	45	50
C1930	0.202	20	-0.157	-0.217	-0.217	-0.213	-0.213	-0.214	0.777	1.076	1.076	1.055	1.056	1.057
C1935	0.165	20	-0.126	-0.181	-0.182	-0.182	-0.182	-0.182	0.767	1.098	1.103	1.107	1.105	1.106
C1940	0.133	22	-0.083	-0.134	-0.136	-0.137	-0.137	-0.137	0.624	1.01	1.028	1.030	1.031	1.032
C1945	0.1	18	-0.045	-0.102	-0.101	-0.101	-0.101	-0.101	0.456	1.021	1.011	1.019	1.017	1.019
C1950	0	0	0	0	0	0	0	0						
C1955	-0.203	20	0.209	0.208	0.206	0.205	0.205		1.028	1.023	1.014	1.007	1.009	
C1960	-0.197	20	0.232	0.201	0.199	0.199			1.176	1.023	1.010	1.009		
C1965	-0.153	19	0.208	0.158	0.156				1.354	1.032	1.018			
C1970	-0.144	19	0.161	0.142					1.117	0.984				
C1975	-0.194	20	0.154	0.163	0.179				0.797	0.844	0.926			

Table 2 Hernes model fitted parameter

cohort	parameters(A,b)	SSE	R2-adjust
C1955	0.8900, 0.9435	0.0095	0.997
C1960	1.0346, 0.9346	5.93E-04	1
C1965	1.1683, 0.9194	3.60E-04	1
C1970	0.9456, 0.9311	9.65E-04	1
C1975	1.0386, 0.9034	6.58E-04	1

Table 3 Women's marriage postponement and recuperation in 1930-1975 cohorts(based on the fitted values of proportion of ever married)

cohort	postponement	Age at trough	Recuperation at age						Recuperation Index					
			25	30	35	40	45	50	25	30	35	40	45	50
C1930	0.202	20	-0.157	-0.217	-0.217	-0.213	-0.213	-0.214	0.777	1.076	1.076	1.055	1.056	1.057
C1935	0.165	20	-0.126	-0.181	-0.182	-0.182	-0.182	-0.182	0.767	1.098	1.103	1.107	1.105	1.106
C1940	0.133	22	-0.083	-0.134	-0.136	-0.137	-0.137	-0.137	0.624	1.01	1.028	1.030	1.031	1.032
C1945	0.1	18	-0.045	-0.102	-0.101	-0.101	-0.101	-0.101	0.456	1.021	1.011	1.019	1.017	1.019
C1950	0	0	0	0	0	0	0	0						
C1955	-0.203	20	0.209	0.208	0.206	0.205	0.205	0.208	1.028	1.023	1.014	1.007	1.009	1.024
C1960	-0.197	20	0.232	0.201	0.199	0.199	0.203	0.202	1.176	1.023	1.010	1.009	1.029	1.025
C1965	-0.153	19	0.208	0.158	0.156	0.159	0.159	0.158	1.354	1.032	1.018	1.039	1.036	1.031
C1970	-0.144	19	0.161	0.142	0.149	0.149	0.149	0.148	1.117	0.984	1.039	1.037	1.036	1.032
C1975	-0.194	20	0.154	0.163	0.179	0.189	0.191	0.192	0.797	0.844	0.926	0.976	0.988	0.990

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