Trends in Homogamy by Education, Ethnicity, and Birth Place in China: 1940-2005

Zheng Mu   University of Michigan

Qing Lai   Florida International University

Abstract
         This paper examines China's homogamy trends (1940-2005) along three intertwined social dimensions— education, ethnicity, and birth place. We document the trends by years of marriage using data from the China 2000 census and 2005 inter-census survey (mini-census). To account for the potential "pool of eligibles," we construct indicators based on Schoen's forces of attraction of specific types of marriage. Results show that while educational homogamy trended up by great margins, selections on ethnic origins and birth places have become less common over time. Our findings are well aligned with changes in China's increasingly vibrant domestic migration, the expansion of higher education, and the rising importance of post-secondary educational institutions as potential marriage markets.

Introduction
         In the literature on marriage and social stratification, an increase in homogamy is generally considered an indicator of declining social openness and increasing social inequality, while (Harris and Ono 2005; Kalmijn 1991, 1998; Mare 1991; Mare and Schwartz 2006; Raymo and Xie 2000; Schwartz 2010; Schwartz and Mare 2005; Smits, Ultee, and Lammers 1998; Torche 2010; Zijdeman and Maas 2010). However, the nuanced heterogeneities in various types of homogamy should not be ignored. It has been argued that, along the process of social development, the basis of homogamy has shifted from ascribed characteristics, such as ethnicity and place of birth, to achieved characteristics (for example, education) (Schwartz 2013). This is especially relevant to contemporary China, which has witnessed tremendous expansion of post-secondary education and the following increase in domestic migration due to education (Chan and Zhang 1999; Treiman 2013). During the process, Chinese people, especially those who have received post-secondary education, may start to consider educational institutions they attended as the major arena for mate selection, and they may have increasingly pursued their potential spouses from their peer students (Blossfeld and Timm 2003; Mare 1991; Schwartz and Mare 2005). This may increase the occurrence of educational homogamy, while reducing ethnic homogamy and homogamy based on place of birth. Therefore, a comprehensive study on changes in the three intertwined social dimensions— education, ethnicity, and birth place— is important, as it may reflect the major social changes in education, migration, and marriage markets taking place in contemporary China. However, although there are studies investigating various types of homogamy in China (Han 2010; Mu and Xie 2014), a systematic study on trends in homogamy of contemporary China using nationally-representative data is still lacking.
         Specifically, we document China's homogamy trends (1940-2005) along three intertwined social dimensions— education, ethnicity, and birth place using data from the China 2000 census and 2005 inter-census survey (mini-census). To account for the potential "pool of eligibles," we construct indices based on Schoen's forces of attraction of specific types of marriage. By doing so, this study aims to answer the following two research questions: First, how does Chinese people's marital matching on ascribed and achieved characteristics change? Second, what do the changes imply for other major social changes taking place in contemporary China?

Data and Research Design

This study mainly bases on data from the China 2000 census and China 2005 1% inter-census survey (2005 mini-census). Specifically, from the 2000 census and the 2005 mini-census data, we reconstruct, retrospectively, the experiences of marriage cohorts. We use both descriptive statistics and indicators based on "forces of attraction" (Esteve, Cortina, and Cabré 2009; Qian and Preston 1993) to analyze the three homogamy trends.

Specifically, we refer to Schoen's force of attractions and construct indicators of various types of marriage, to account for the potential "pool of eligibles" for mate selection and to present the trends more accurately. The concept of force of attraction was first introduced by Schoen (1981, 1988). It is a special type of marriage rate based on the harmonic mean of single males and females – that is, those at risk for marriage – for each spousal age combination. The mathematical formula of force of attraction is:

$$\alpha_{ij} = \frac{m_{ij}}{\dfrac{H_i W_j}{(H_i n) + (W_j n)}} \text{, (1)}$$

in which m_{ij} indicates the number of marriages between males of Type i and females of Type j; i and j could be their years of schooling, ethnicity, or place of birth; n is length of the time intervals; H_i and W_j respectively identify the number of eligible males of Type i and that of eligible females of Type j. In this formula, the number of marriages that are actually contracted is considered along with the amount of potential exposure between eligible males of Type i and females of Type j. Thus, the entire population at risk for marriage is taken into account (Blossfeld and Timm 2003). Compared to investigations of only prevailing marriages, our analysis controls for changes in age-sex composition of the marriage market.

For each marriage cohort, we calculate a set of indicators based on forces of attraction (Esteve et al. 2009), which is the ratio of sum of forces of attraction (α_{ij} as defined in Equation (1)) of a certain type, over the sum of all forces of attraction. These indicators reflect the strength of preferences for the specific type of marriage over the overall distribution of couples. It ranges from 0 to 1, with higher values indicating stronger preferences for a specific marriage type.

Preliminary Results

Tables 1 to 3 and Figures 1 to 3 show trends in homogamy based on education, ethnicity, and place of birth. Results consistently show that while educational homogamy trended up by great margins, selections on ethnic origins and birth places have become less common over time. Moreover, as can be seen in Figure 4, for both men and women, education has improved dramatically over time, which may have lengthened individuals' time spent in school and increased their opportunities to find the potential spouses from their peer students. Also, as shown in Table 4, education is negatively correlated with both homogamy based on ethnic and birth place, and positively associated with educational homogamy. Our findings are well aligned with changes in China's increasingly vibrant domestic migration, the expansion of higher education, and the rising importance of post-secondary educational institutions as potential marriage markets.

Tables and Figures

Table 1. Trends in Homogamy by Education													
	Years of education				Proportion & mean difference (H-W) by direction					Force of attraction index			N
Year at 1st marriage	H	W	H-W		H<W		H=W	H>W		H<W	H=W	H>W	
	Mean	Mean	Mean	SD	%	Mean	%	%	Mean				
2000 Data													
1940-1949	4.57	1.62	2.95	3.52	2.3	-3.99	43.1	54.5	5.58	5.6	38.1	56.3	*6,636*
1950-1959	5.33	2.85	2.48	3.43	4.9	-3.89	44.2	50.9	5.25	9.2	46.7	44.1	*19,437*
1960-1969	6.93	4.87	2.06	3.29	7.4	-3.77	43.9	48.6	4.81	9.8	46.6	43.6	*35,934*
1970-1979	7.78	5.99	1.78	3.11	8.3	-3.59	45.6	46.1	4.51	10.8	46.8	42.4	*53,419*
1980-1989	9.05	7.90	1.15	2.76	11.7	-3.32	48.9	39.3	3.90	12.5	48.2	39.3	*92,509*
1990-1999	9.11	8.36	0.75	2.33	11.8	-3.10	56.4	31.8	3.51	11.1	53.6	35.2	*80,722*
2000	9.72	9.21	0.50	2.29	15.0	-3.11	55.9	29.1	3.33	13.2	52.7	34.1	*3,767*
Total	8.23	6.85	1.39	2.92	10.0	-3.35	49.4	40.6	4.24	10.3	47.4	42.3	*292,424*
2005 Data													
1940-1949	4.58	1.62	2.96	3.65	2.2	-4.31	46.6	51.1	5.98	5.8	40.7	53.5	*5,666*
1950-1959	5.31	2.79	2.52	3.51	4.7	-4.23	45.7	49.6	5.47	9.0	46.6	44.4	*23,116*
1960-1969	6.76	4.52	2.24	3.43	7.1	-3.92	43.3	49.6	5.07	9.4	47.7	42.9	*50,448*
1970-1979	7.68	5.74	1.94	3.30	8.4	-3.68	44.1	47.4	4.75	10.3	47.9	41.8	*81,800*
1980-1989	9.06	7.84	1.22	2.89	11.4	-3.38	49.2	39.4	4.08	11.9	50.6	37.5	*144,632*
1990-1999	9.26	8.46	0.79	2.45	11.8	-3.18	56.1	32.1	3.64	11.1	55.0	33.9	*127,429*
2000-2005	9.80	9.28	0.52	2.28	13.8	-3.10	58.7	27.6	3.42	11.2	55.7	33.1	*55,880*
Total	8.50	7.16	1.34	2.97	10.4	-3.38	50.4	39.1	4.31	10.2	49.6	40.2	*488,971*

Source: China 2000 census and China 2005 mini-census.

Note: H=husband, W=wife. Force of attraction index is the ratio of total of harmonic means for the specific type of marriage over total of harmonic means of all marriages.

	Table 2. Trends in Homogamy by Ethnicity											
Year at 1st marriage	%					%		Force of attraction index				N
	H and W both Han	H Han W Minority	H Minority W Han	H and W same minoirty	H and W different minoirities	H and W same ethnicity	H and W same language group	same language group	both Han or both minorities	H Han W Minority	H Minority W Han	
2000 Data												
1940-1949	93.91	0.83	0.77	4.34	0.15	98.25	98.34	84.3	93.0	3.5	3.5	6,636
1950-1959	93.01	0.98	0.83	4.99	0.19	98.00	98.12	86.2	92.8	4.1	3.2	19,437
1960-1969	91.77	1.11	1.03	5.79	0.30	97.56	97.69	85.3	92.1	4.4	3.5	35,934
1970-1979	91.66	1.20	1.19	5.73	0.22	97.39	97.47	85.4	90.9	4.9	4.2	53,419
1980-1989	91.26	1.59	1.31	5.53	0.30	96.80	96.93	80.8	89.3	6.3	4.5	92,509
1990-1999	89.60	2.03	1.47	6.46	0.44	96.07	96.25	77.7	88.9	6.9	4.2	80,722
2000	86.99	2.90	1.81	7.57	0.74	94.56	94.95	79.6	86.9	8.8	4.3	3,767
Total	91.06	1.54	1.26	5.82	0.32	96.88	97.02	82.9	90.8	5.3	3.9	292,424
2005 Data												
1940-1949	93.07	0.55	1.11	5.04	0.23	98.11	98.20	84.7	93.4	2.0	4.6	5,666
1950-1959	91.76	0.83	0.97	6.25	0.19	98.02	98.13	87.4	94.0	2.9	3.2	23,116
1960-1969	90.28	0.91	1.05	7.49	0.27	97.77	97.91	88.4	94.0	3.0	3.0	50,448
1970-1979	90.23	1.10	1.14	7.27	0.26	97.50	97.60	87.1	92.8	3.8	3.4	81,800
1980-1989	89.82	1.48	1.28	7.12	0.31	96.94	97.07	81.9	91.4	4.9	3.7	144,632
1990-1999	87.73	1.97	1.53	8.31	0.47	96.04	96.23	83.2	90.7	5.6	3.8	127,429
2000-2005	85.44	2.42	1.93	9.63	0.57	95.08	95.31	80.1	89.6	6.2	4.2	55,880
Total	89.02	1.55	1.36	7.71	0.36	96.73	96.89	84.8	92.2	4.2	3.6	488,971

Source: China 2000 census and China 2005 mini-census.

Note: H=husband, W=wife. Force of attraction index is the ratio of total of harmonic means for the specific type of marriage over total harmonic means of all marriages.

Table 3. Trends in Homogamy by Place of Birth				
Year at 1st marriage	%		Force of attraction index	N
	H and W same province of birth	H and W same region of birth	H and W same region of birth	
2000 Data				
1940-1949	96.68	98.42	98.1	6,636
1950-1959	94.68	97.25	96.7	19,437
1960-1969	94.29	96.89	96.3	35,934
1970-1979	94.82	97.15	96.7	53,419
1980-1989	94.89	96.85	96.3	92,509
1990-1999	93.70	96.13	95.7	80,722
2000	90.55	94.42	93.9	3,767
Total	94.45	96.74	96.5	292,424
Source: China 2000 census.				
Note: H=husband, W=wife. Force of attraction index is the ratio of total of harmonic means for the specific type of marriage over total harmonic means of all marriages.				

Table 4. Correlations between Couple's Average Years of Schooling and Types of Homogamy		
Types of homogamy	Couple's average years of schooling	
	2000	2005
same education	0.0202	0.0202
same minority	-0.0305	-0.0305
same language group	-0.0328	-0.0328
same province of birth	-0.1245	-0.1245
same region of birth	-0.1044	-0.1044
Source: China 2000 census and China 2005 mini-census.		

Figure 1. Percent Educational Homogamy by Year of Marriage
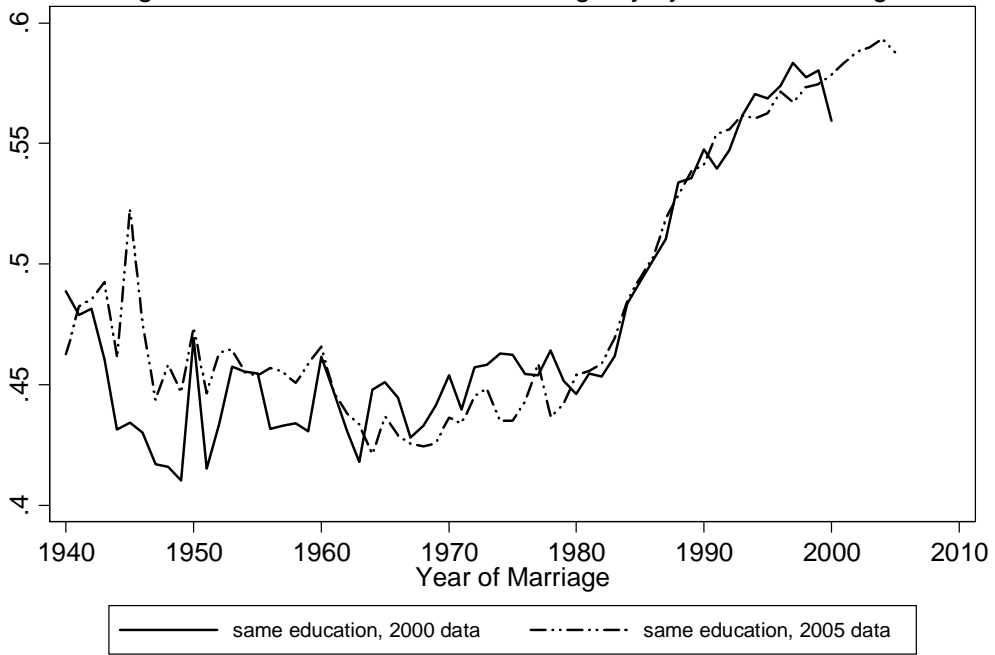
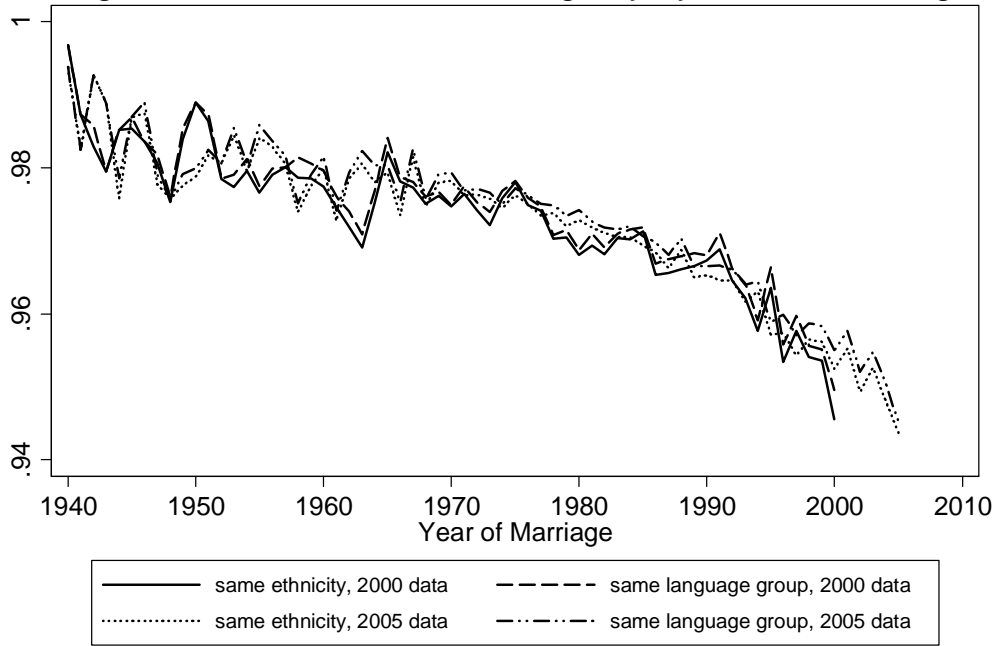Figure 2. Percent Ethnic Homogamy by Year of Marriage

—————— same ethnicity, 2000 data	– – – – – same language group, 2000 data
·················· same ethnicity, 2005 data	—·—··—·— same language group, 2005 data

Figure 3. Percent Birth Place Homogamy by Year of Marriage

| same province of birth, 2000 data | same region of birth, 2000 data |
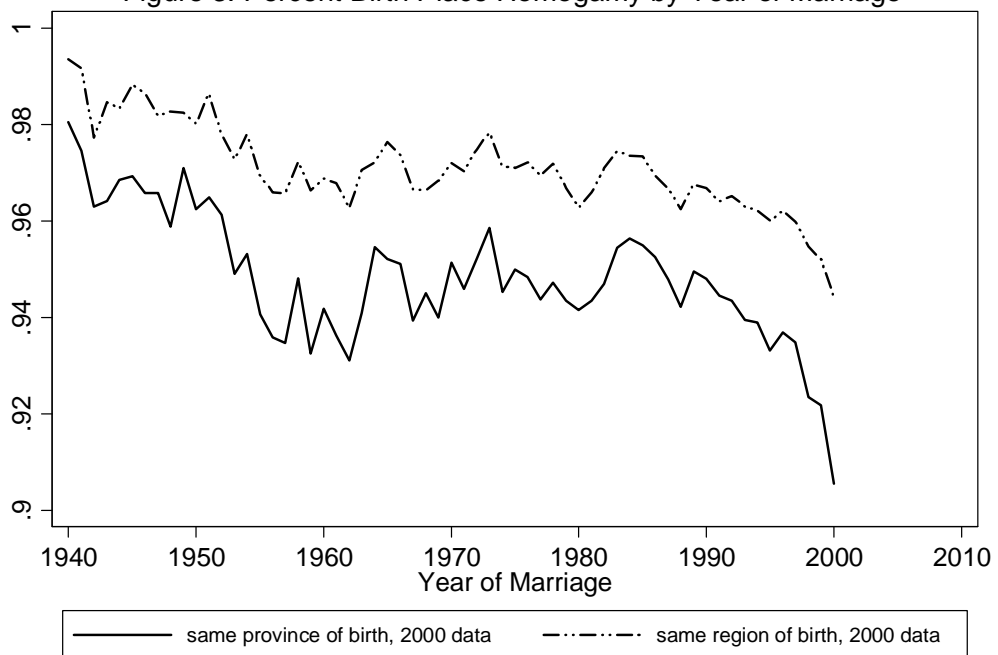
Figure 4. Husbands' and Wives' Education by Year of Marriage

—— husband, 2000 data	— — — wife, 2000 data
·········· husband, 2005 data	—··—··— wife, 2005 data
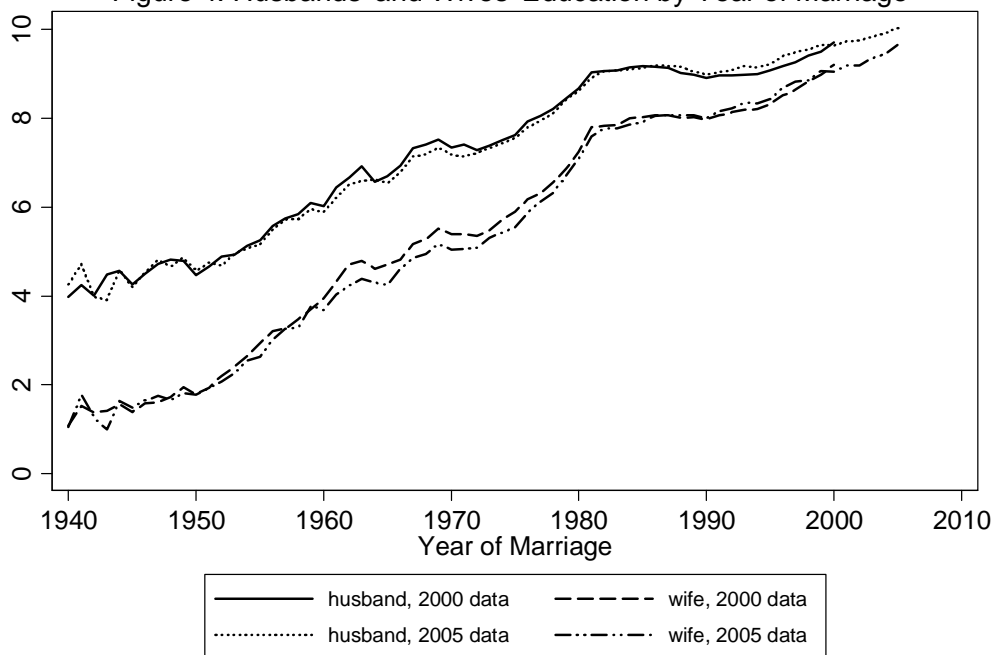
References

Blossfeld, H., Timm, A., eds. 2003. *Who Marries Whom? Educational Systems as Marriage Markets in Modern Societies. European Studies of Population*. Vol. 12 Kluwer Academic Publishers, The Netherlands.

Chan, Kam Wing, and Li Zhang. 1999. "The Hukou System and Rural-Urban Migration in China: Processes and Changes." *The China Quarterly* 160: 818-855.

Esteve, A., Cortina, C., Cabré, A. 2009. "Long Term Trends in Marital Age Homogamy Patterns: Spain, 1922-2006." *Population* 64: 173-202.

Han, Hongyun. 2010. "Trends in Educational Assortative Marriage in China from 1970 to 2000. *Demographic Research* 22 (April 27). Accessed November 1, 2010 from doi:10.4054/DemRes.2010.22.24.

Harris, D., Ono, H. 2005. "How Many Interracial Marriages Would There be If All Groups were of Equal Size in All Places? A New Look at National Estimates of Interracial Marriage." *Social Science Research* 34: 236-251.

Kalmijn, M. 1991. "Shifting Boundaries: Trends in Religious and Educational Homogamy." *American Sociological Review* 56: 786-800.

———. 1998. "Intermarriage and Homogamy: Causes, Patterns, Trends." *Annual Review of Sociology* 24: 395-421.

Mare, R. 1991. "Five Decades of Educational Assortative Mating." *American Sociological Review* 56: 15-32.

Mare, R., and Schwartz, C. 2006. "Income Inequality and Educational Assortative Mating: Accounting for Trends from 1940 to 2003." Working Paper CCPR-017-05, California Center for Population Research, University of California, Los Angeles, CA.

Mu, Zheng, and Yu Xie. 2014. "Marital Age Homogamy in China: A Reversal of Trend in the Reform Era?" *Social Science Research* 44: 141-157.

Qian, Z., Preston, S. 1993. "Changes in American Marriage, 1972 to 1987: Availability and Forces of Attraction by Age and Education." *American Sociological Review* 58: 482-495.

Raymo, J., Xie, Y. 2000. "Temporal and Regional Variation in the Strength of Educational Homogamy." *American Sociological Review* 65: 773-781.

Schoen, R. 1981. "The Harmonic Mean as the Basis of a Realistic Two-Sex Marriage Model." *Demography* 18: 201-216.

———. 1988. *Modeling Multigroup Populations*. New York, NY: Plenum Press.

Schwartz, Christine R. 2010. "Earnings Inequality and the Changing Association between Spouses' Earnings." *American Journal of Sociology* 115: 1524-1557.

———. 2013. "Trends and Variation in Assortative Mating: Causes and Consequences." *Annual Review of Sociology* 39: 451-470.

Schwartz, C., and Mare, R. 2005. "Trends in Educational Assortative Marriage from 1940 to 2003." *Demography* 42: 621-646.

Smits, J., Ultee, W., and Lammers, J. 1998. "Educational Homogamy in 65 Countries: An Explanation of Differences in Openness Using Country-Level Explanatory Variables." *American Sociological Review* 63: 264-285.

Torche, F. 2010. "Educational Assortative Mating and Economic Inequality: A Comparative Analysis of Three Latin American Countries." *Demography* 47: 481-502.

Treiman, Donald J. 2013. "Trends in Educational Attainment in China." *Chinese Sociological Review* 45: 3-25.

Zijdeman, R., and Maas, I. 2010. "Assortative Mating by Occupational Status during Early Industrialization." *Research in Social Stratification and Mobility* 28: 395-415.