Changes in the Determinants of Marriage Entry in Post-Reform Urban China

Jia Yu

Hong Kong University of Science and Technology

Yu Xie

University of Michigan and Peking University

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* Please direct all correspondence to JiaYu (e-mail:yujiaruc@gmail.com) or Yu Xie (e-mail: yuxie@umich.edu) at Population Studies Center, Institute for Social Research, 426 Thompson Street, University of Michigan, Ann Arbor, MI 48106. Yu Xie's research is supported by the Population Studies Center at the University of Michigan, which receives core support from the National Institute of Child Health and Human Development, Grant R24HD041028.

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Abstract

Using national survey data and city-year-specific indicators, we examine the effects of demographic and institutional determinants of entry into marriage in urban China spanning 60 years. Growth in the importance of economic prospects has been observed during the rapid economic development in China. In addition, evidence of cohort changes indicates that the positive effect of working in the state-owned sector has decreased, which reflects the marketization in China that has occurred during recent decades. For the most recent period after the housing reform in urban China, we also find evidence that the effects of education vary with local housing prices. Specifically, higher education is associated with early entry into marriage when housing prices are relatively high but with late entry into marriage when housing prices are relatively low. Taken together, these results suggest that the determinants of marriage should be understood within the context of institutional changes.

1. Introduction

Numerous studies have documented the importance of marriage timing to fertility, education, and women's employment in both developed and developing countries (e.g., Casterline 1994; Coale and Treadway 1986; Rosero-Bixby 1996). Along with family structure, gender relations, and other aspects of the family, marriage timing may also reflect social changes (Nobles and Buttenheim 2008; Raymo 2003; Yabiku 2004). In most societies, the trend has been in the direction of late marriages, i.e., delays in marriage timing (Lesthaeghe and Surkyn 1988; Lesthaeghe and Moors 2000). Several explanations have been proposed for the general trend of delays in marriage timing, the most prominent of which are a decline in fertility, ideational changes, and increased labor force participation of women.

China has been undergoing rapid and significant societal changes in recent decades, in large part precipitated by the economic reform that began in 1978 (Xie 2011). In this study, we situate our empirical work in urban China and examine both temporal and spatial variation in the individual-level determinants of marriage timing, paying close attention to institutional changes associated with the economic reform. We argue that institutional changes affect not only marriage timing overall but also how individual-level characteristics determine entry into marriage in interactive ways.

In this paper, we study changes in the determinants of marriage entry in post-return urban China, capitalizing on recent data from the 2003 and 2008 Chinese General Social Surveys (CGSS) with comparable survey instruments. We examine how the emergence of a market economy and the rise of a consumer culture may have changed the way individual attributes affect marriage formation. Our study consists of two parts. First, we compare cohort

differences in how individual-level determinants affect marriage entry. Second, for the most recent marriage cohort, we explore the temporal-spatial variation in how individual-level determinants influence marriage entry as affected by the local housing price. For the second part, we link CGSS individual-level data to a county-year-specific housing price measure extracted from the China Urban Construction Statistical Yearbook and the China Regional Economy Statistical Yearbook.

2. Theoretical Issues and Previous Studies

A longstanding idea in the literature on marriage formation is gender role specialization (Parsons 1949). During recent decades, this idea has been formally represented by Gary Becker and other scholars (Becker 1973, 1974, 1991) in a "specialization and trading" model. This model maintains that the major gain to marriage lies in the mutual dependence of the spouses, arising out of their differentiated functions in the family, with the wife specializing in domestic labor and the husband in paid work. In addition, it is assumed that, when looking for marriage partners, women and men anticipate this role specialization following marriage and thus trade attributes for their respective specialized roles in order to gain maximally from marriage. Under this model, success in the labor market has very different implications for men and women. For men, obtaining a good position in the labor market increases their desirability as a marriage partner and thus their opportunities to get married. For women, however, more involvement in the labor market means less specialization in domestic work and thus reduced gain from marriage, leading to a higher likelihood of non-marriage or late marriage (Goldscheider and Waite 1986; Preston and Richards 1975).

Oppenheimer (1988) has provided an alternative “marriage-search” theory, which

links women's labor force participation to their marriage patterns. She argues that a woman's high economic status in the labor market makes her an attractive marriage partner in modern society. However, due to both the woman's greater attractiveness in the modern marriage marketand her consequent ability to sustain a more thorough search for a desirable marriage partner, it may take her longer to get married. Over time, Oppenheimer's theory predicts that women in the marriage market will be increasingly evaluated based on their own economic statuses.

Evidence on the relationship between women's economic positions and their entry into marriage, however, remains ambiguous. On the one hand, studies based on macro-level data have generally found a negative relationship between women's economic prospects -- education and earnings, for instance -- and the marriage rates (Coughlin and Drewianka 2011; Cready, Fossett, and K. Jill Kiecolt 1997; Lichter, McClere, and McLaughlin 1991; McLanahan and Casper 1995; Preston and Richards 1975; White 1981). On the other hand, scholars focusing on individual-level characteristics have shown not only that women's economic prospects are positively related to marriage (Cherlin 1980; Goldscheider and Waite 1986; Lichter, McLaughlin, and Ribar. 1992; Oppenheimer and Lew 1995; Thornton, Axinn, and Xie; Waite and Spitze 1981), but that the importance of women's economic prospects for marriage have increased over time (Lichter, McLaughlin, and Ribar; Goldstein and Kenney 2001; Qian and Preston 1993; Sweeney 2002).

In contrast, vidence on the positive role of men's economic prospects in marriage entry has remained consistent. Studies using either cross-sectional or longitudinal data have invariably observed a positive relationship between men's economic prospects and marriage

formation (e.g. Cooney and Hogan 1991; Goldscheider and Waite 1986; Goldstein and Kenney 2001; Lloyd and South 1996; MacDonald and Rindfuss 1981; Mare and Winship 1991; Oppenheimer, Malmijn, and Lim 1997; Qian and Preston 1993; Sassler and Goldscheider 1997; Sassler and Schoen 1999; Sweeney 2002; Teachman, Polonko, and Leigh 1987; Xie, Goyette, and Thornton 2003). The important role of men's economic prospects is not surprising, as it is consistent with the traditional model of marriage in which the husband is considered the breadwinner and the wife the homemaker. However, the combination of the increasing importance of women's economic prospects and the continuing importance of men's economic prospects means that inter-family economic inequality is now significantly exacerbated by assortative mating – the marriage pattern of men and women with similar economic positions (Schwartz 2010).

Most western, developed societies such as the U.S. are relatively stable. In this relatively stable environment, one major social change in recent decades in the U.S. has been a rapid increase of women's labor force participation and attachment (Goldin 2006; Spain and Bianchi 1996). As a result, past research on trends in marriage entry has largely focused on the changing role of women's economic positions, with the expectation that women's economic positions should converge over time in importance with men's economic postions in determining marriage.

In a rapidly changing society such as post-reform China, however, many social changes have been taking place that could affect the determinants of marriage. Such a setting provides a golden opportunity for an examination of how individual-level determinants of marriage vary by macro-level institutional conditions. This study exploits this opportunity,

capitalizing on recent data on marriage determinants across different marriage cohorts and housing prices in China. An explicit aim of the research is to discover, within the contemporary Chinese context, how broader institutional changes alter the way in which individual-level determinants affect marriage formation (Gould and Paserman 2003; Kuo 2003; Lichter et al. 2002).

3. The Social Context of China

China provides a unique setting in which to advance our understanding about mechanisms underlying patterns of changing economic prospects in marriage formation. Since its founding in 1949, the People's Republic of China has undergone several dramatic social changes, especially in terms of economics. Due to the redistributive system and radical political campaigns, the economy in Mainland China stagnated from the 1950s to the 1970s. Beginning in 1978, Mainland China began to implement the Reform-and-Open Policy by introducing a market economy in rural areas. The emergence of labor and capital markets after 1992 finally shifted the urban economy to a market allocation of resources. The marketization in China not only weakened the long-lasting advantage held by the state sector during the Mao era, but also resulted in the transformation of consumption patterns and housing in urban China.

As discussed in the past literature (e.g. Bian 2002; Wu 2008; Xie, Lai, and Wu 2009), the ownership of a work unit (*danwei*) has historically been strongly associated with one's economic welfare, especially during the Mao era. Working in the state sector was commonly labeled as having "iron bowels" (*tie fanwan*), symbolizing advantages in many aspects of life, such as housing during the pre-reform era. However, due to the state-owned enterprises

reform and privatization during the reform era, the advantages of state-sector employment are declining, and jobs in the state sector are no longer likely to last a lifetime. Around 2000, large-scale lay-offs of workers from state-owned and collective enterprises in urban China signaled the declining status of working within the redistributive system. Since work unit is quite an important dimension of an individual's job in China, the attractiveness of obtaining a state-sector job might decline as the reform continues. Such institutional changes in China provide us with the opportunity to examine how changes in state policies and structural changes might alter the importance of specific individual characteristics in marriage formation.

Before the reforms, the consumption pattern in China was characterized by economic egalitarianism (Parish 1981, 1984). Urban residents' consumption was largely dependent on the distribution of consumer goods and services by bureaucratic fiat (Walder 1986). Besides food and daily necessities which must be bought with tickets issued by local governments, home appliances, vehicles and other "luxury" goods were subject to quite limited quotas. Such "redistributive" patterns were eroded by the reform (Tang and Parish 2000). As the average income has increased, urban China has witnessed an ongoing consumer revolution (Davis 1992; Davis 2000). Rises in consumerism and material culture have led to a higher and still-rising living standard as expected by the young cohorts. In addition, as their economic statuses have improved, households and individuals have been given greater autonomy in choosing how they want to live. As living standards, life styles and other aspects of life in urban China have changed, changes in consumption patterns may also be altering the economic context of marriage. Thus, it stands to reason that economic prospects may play

an increasingly important role in marital behavior in conjunction with the rapid economic development in urban China.

Basic, low-rent housing (1% to 2% of household income) was available to virtually all urbanites under Mao, and public housing, which dominated the urban housing market long before the housing reform in the mid-1990s, was constructed, owned, or allocated by work units (Bian et al. 1997; Logan and Bian 1993; Whyte & Parish 1984). The size and quality of the housing provided varied with the ownership and bureaucratic ranks of the work units (Bian 1994; Walder 1986, 1992). However, this redistributive system had many unanticipated consequences (Tang and Parish 2000), such as the abuse of authority in distributing houses, the bad conditions of houses, and the lack of labor force mobility. Since 1988, these abuses have ignited several waves of reforms, including raising rents, detaching housing from work units, and, finally, the commodification and privatization of housing (Bian et al. 1997; Davis 2000). The state monopoly over the housing allocation system started to change with the market reform during the late 1970s. In 1979, the first attempts to privatize state housing units occurred in several coastal cities, and this effort was gradually expanded to the rest of the country. In 1998, a decisive State Council's Housing Reform Directive (the 23rd Decree) required that all new housing units be sold and purchased at market prices, officially terminating a 50-year system in which housing was allocated basically as collective welfare (Jiang 2000). This reform led to the emergence of China's private housing market (so-called "commodity housing"). The amount of private housing built as a share of total annual supply more than doubled from about 13% in 1986 to about 33% in 1993, then grew constantly upward towards 72% by 2006 (Wu et al. 2009). One direct consequence of the housing

marketization has been the skyrocketing of average house prices. In our sample, the average house price increased from 315 RMB per square meter at 1991 to 2628 RMB per square meter by 2008, a triple increase after adjusting for inflation. However, the price rise has been inconsistent across cities, the most extreme increases being observed in the central cities. For example, in Beijing, the increase was from 602 to 12418 RMB per square meter during the same period. Even adjusting for inflation, this is still a 7.8 times increase. The disintegration of the state housing system and the soaring house prices that followed have increased economic pressures on urban residents in China. Several studies have linked this housing insecurity to particular micro-level economic behaviors among urban residents, such as higher savings rates and entrepreneurship (Wei and Zhang 2011a; 2011b).

Since owning a house is considered an economic requirement for marriage formation, the higher housing prices may have imposed intense pressure on young cohorts entering the marriage market since the housing reform. While rising housing prices may deter young people of relatively low socioeconomic status from finding spouses, individuals who could afford their own house may become increasingly attractive as marital partners. Thus, the importance of an individual's economic status in marital behavior is quite likely to be altered by increases in local housing prices.

In studying changes in social determinants of marriage in post-reform urban China, our research also contributes to the empirical literature on the relationship between economic factors and marriage formation. In the past literature, scholars looked only at stable western countries where social changes had been gradual, as in the U.S., and thus may not have been able to capture sharp cohort changes, especially for men. We know that China has

undergone significant societal changes in recent decades, particularly the Great Leap, the Cultural Revolution, and the market transition, and thus such a setting may enable us to observe more obvious patterns in the changing effects of economic status for both women and men. Moreover, institutional changes such as privatization and state-owned enterprises reform in China could also give us a chance to observe how macro-level factors might alter the process of individual marital behavior. In this study, we situate our empirical work in urban China and examine the role of economic foundations in marital behavior within the context of relatively drastic social changes. Our study has two concrete aims:. irst, we will evaluate the trend in the importance of economic prospects in marriage formation for both men and women; second, if we find that such a trend exists, we will explore the trend's causal mechanism by showing how a certain macro-level factor--the local housing price--may mediate the relationship between individual economic status and marriage formation.

4. Data and Measure

4.1 Data

For this study, we analyzed data from the 2003 and 2008 China General Social Surveys (CGSS2003 and CGSS2008). The Chinese General Social Survey is an annual survey of a national representative sample of the adult population aged 18 or above, taking place in urban China in 2003, and in both rural and urban China (except for Tibet) in 2008. The CGSS employs a multi-stage stratified random sampling method. First, principal sampling units are elected from county or county-level districts, stratified by region, rural or urban location, and education levels, then four second-level sampling units are selected in each principal unit,

and two third-level sampling units are selected in each selected third-level unit. One eligible person aged 18 or above is randomly selected from each sampled household to serve as the survey respondent. Since the survey includes very detailed information on the education and work history of each respondent, we were able to construct annual measures from retrospective questions. In this article, we restrict our sample to the urbanites in China.

4.2 Variables and Method

We use a logit model to estimate discrete-time hazard models of the effects of economic status on entry into first marriage. This approach permits us to estimate the effects of fixed and time-varying covariates on entry into marriage and avoids the assumption of proportional hazards (Allison 1995). The dependent variable in the analysis is a dichotomous indicator of whether a marriage occurred in the interval between two given years, with time-varying independent variables fixed at the beginning of the interval. Data are organized into person-year records, with one record for each annual interval in which respondents were at risk for first marriage, including intervals in which a first marriage occurred. For this analysis, the risk for marriage is assumed to begin at age 15.

To study the process and influence of social changes, we compare the marital behavior of successive birth cohorts. Ryder (1965) states that "if [social] change does occur, it differentiates cohorts from one another, and the comparison of their careers becomes a way to study change." Therefore, to compare the cohorts' marriage formation behaviors in the changing social contexts of China, we divide the sample into three birth cohorts for this study: the pre-reform cohort (born before 1960), most of whom were exposed to marriage risk

before the reform of China in 1978; the early-reform cohort (born between 1960 and 1974), most of whom were exposed to marriage risk during the early reform years (1978-1992) in China; the late-reform cohort (born after 1974), most of whom were exposed to marriage risk during the period of comprehensive urban reform after the South Tour Speech of Deng Xiaoping in 1992.

In addition to the cohort comparison, this study also evaluates how the rising housing price might alter the importance of economic prospects in marital behavior in urban China. The house price variable measures the average house price at the municipality level. Data is available for the period from 1990 to 2000 in the China Urban Construction Statistical Yearbook (1991-2001) and for the period from 2001 to 2008 in the China Regional Economy Statistical Yearbook (2002-2009). These two sources list annually the areas and revenue from new house sales at the city (municipality) level. We then calculate the average house price by dividing the total revenue with areas sold. Finally we match the municipality-level average house price to each person-year recode generated from the CGSS data.

The mean values of the independent variables are shown in Appendix 1, separately by sex. We use two time-varying indicators to measure economic prospects: education and employment status. Education and employment are measures well-established by past studies as reflecting labor market position. In this study, education is measured by years of schooling. As has been done in past studies (e.g. Raymo 2003; Sweeney 2002), we construct an additional measure indicating current school enrollment to distinguish effects of accumulated education from time spent in school. Employment is constructed as a dummy variable, indicating whether the respondent obtains a job during each year. As discussed above, to

capture the plausible changing marriage market advantage of working in the state sector, we include the dummy variable indicating the ownership of the respondent's work unit at each year, with 1 referring to the state-owned sector.

Following previous studies (e.g. Xie et al. 2003; Raymo 2003), we model age pattern of entry into marriage as a spline function. Since the legal ages for entering marriage are different for men and women (age 22 for men and age 20 for women), we use different specifications of the spline model. Although the sample was restricted to the current urbanites, some respondents might have experienced *hukou* transformation. Hence, the respondent's time-varying *hukou* status is also included as a dummy variable.[1] As prior research has found that family background characteristics are related to marriage formation (e.g., Michael and Tuma 1985), we include the father's educational level to measure the family socioeconomic status. Studies in the U.S. have suggested that marital behavior might vary across races (e.g. Wilson 1987; Bulcroft and Bulcroft 1993), and thus we add the ethnicity of the respondents into our analysis, with 1 pointing to minorities.

5. Results

5.1 Cohorts Comparison

We first examine how the importance of men's and women's marriage determinants changes across cohorts, including all the variables except average house price. The three columns in Tables 1 and 2 show the multivariate analysis of men's and women's marriage formation for the pre-reform, early-reform, and later-reform cohorts respectively. Results in all three

[1] By the household registration (*hukou)* system, society in Mainland China has been partitioned into two distinct parts: rural and urban (Wu and Treiman 2007). Almost all aspects of life are different between rural and urban areas.

columns of Table 1 indicate that being employed is positively associated with the odds of marriage for men, being particularly significant for the early-reform and late-reform cohorts. By comparing the coefficients of employment status across three cohorts, we could see that obtaining a job in the labor market has been increasingly important during recent decades in China. For the pre-reform cohort, being employed was not associated with significantly greater odds of marriage, yet for the early-reform and later-reform cohorts, being employed was significantly associated, with 67 percent and 621 percent greater odds of marriage respectively. From Table 2, we can observe that the effects of employment status on women's marriage behavior are quite different from men's. In the pre-reform cohort, women's employment status is associated with a 17.4 percent lower odds of getting married, implying that work and family are incompatible for women. Yet such negative effects of being employed disappear in the latter two cohorts. This result suggests that work and family are less and less incompatible as men and women are more equal-gendered in China.

--- Table 1--

--- Table 2--

The effects of education on marriage formation for men in urban China are different from those in western countries. Education mainly has a marriage-delaying effect, which means that highly educated men are willing and able to afford longer periods of mate selection. For urban Chinese men, years of schooling was not significantly related to marriage in the pre-reform cohort, yet significant negative effects can be observed among the

latter two cohorts. For early-reform and later-reform male cohorts, one additional schooling year is associated with 5.1 percent and 9.6 percent lower odds of getting married. Similar to men, education has a negative impact on urban Chinese women. For the three cohorts, one additional schooling year is associated with 7.9 percent, 5.7 percent, and 9.7 percent lower odds of getting married respectively. And such results are quite similar to those in a study of Japanese women (Raymo 2003), reflecting the different marriage formation processes in East Asian and western countries. As we know, for people from western countries, age of first marriage is usually older and more diversified than in East Asian countries. In addition, marriage in the West has been associated with social stratification since the Middle Ages (Thornton, Axinne, and Xie 2007). Therefore, it is quite difficult for lower-class people, especially men, to marry. As a result, education, a major determinant of economic potential, is a competitive resource in the marriage market and thus has a marriage-promoting effect in western countries. In East Asian countries, however, due to the greater importance attached to the family, universal and early marriage has long been prevalent (Thornton and Lin 1994). As most people in the West prefer to finish their educations before entering marriage, higher education is associated with later marriage formation. Our results provide some empirical support for this comparison of marriage patterns between Western and Eastern countries.

By comparing results of cohorts in Tables 1 and 2, we can observe a declining advantage of working in the state sector in marriage formation for both men and women. For urban Chinese men, working in the state sector is significantly associated with 35.9 percent greater odds of getting married in the pre-reform cohort, yet the positive effect declines to 25.7 percent greater odds in the early reform cohort. Finally, such advantages disappear in the

late-reform cohort. For urban Chinese women, the results from Table 2 show a similar pattern. The advantages of working in the state sector decline during the reform and disappear as the reform intensifies. In the pre-reform and early reform cohorts, obtaining work in the state sector significantly increases the odds of getting married by 23.2 percent and 19.0 percent, yet this positive effect no longer exists in the late reform cohort. Such findings, to some extent, reflect the way institutional changes may alter the influence of certain determinants in entering marriage.

Among all three male cohorts, the coefficients of age spline show a similar inverted-U shape to that shown in past research: increasing rapidly between ages 15 and 22, slowing down in the middle 20s, plateauing in the late 20s, and declining thereafter. The pattern of coefficients of women's age spline is similar to the pattern for men shown in Table 1, implying a non-linear effect. As in the previous studies, enrollment is associated with lower odds of marriage among both men and women in all three cohorts. In male cohorts, the marriage-delaying effect of school enrollment has not changed much over time. Yet in female cohorts, the negative effect of schooling enrollment is especially pronounced in the late-reform cohort. This finding is perhaps due to the high full-time enrollment rate in high school and college among the late-reform cohort of women.[2] Moreoever, for males, rural *hukou* status is associated with a higher likelihood of getting married only in the pre-reform

[2]If we include the interaction between educational level and enrollment status based on the model used in Table 2, we can observe that the larger negative effect of enrollment on marriage formation in the late-reform cohort found in Table 2 results primarily from the larger negative effect of high school enrollment and college enrollment.

and early-reform cohorts, not in the late-reform cohort. Yet for urban Chinese women, the advantage of obtaining an urban *hukou* for marriage formation exists only among the late-reform female cohort: urban *hukou* is associated with a 36.1 percent increase in the odds of marriage. Furthermore, ethnicity in urban China is not significantly related to entering marriage among both men and women. Finally, level of father's education does not have a significant impact on marriage formation among men. For women, father's educational level is negatively associated with likelihood of marriage only among the pre-reform cohort, having no significant impact among the two subsequent cohorts.

In short, the results from cohort comparisons suggest that the effects of some determinants in transition to first marriage have changed over time in urban China. First, economic prospects, especially in terms of employment status, are playing an increasingly important role in marriage formation for both men and women in urban China. Furthermore, the pattern for the effect of working in the state sector across the three cohorts reflects how this particular institutional change might alter the individual marriage process. Finally, the results of education are to some extent inconsistent with the theoretical expectation, which predicts that as one aspect of economic potential, schooling years should be increasingly associated with greater odds of marriage for both men and women. However, a negative effect of educational attainment should not be understood merelyon the basis of statistics. As Oppenheimer (1988) has argued, individuals with higher levels of education may experience a prolonged search period, since they may have higher standards regarding their potential spouses and can afford to take their time in choosing a partner. To this end, the role played by education in marriage formation may have two sides. On the one hand, people with more

education may have better economic prospects, which might increase their likelihood of finding a spouse. On the other hand, highly educated people may have greater difficulty in assortative mating and thus may need to wait longer to enter marriage. Moreover, the education system in China was disrupted during the 1960s and 1970s and, as discussed in past literature, the educational return to income was quite low during the Mao and early reform eras. As a consequence, educational attainment during this time might not accurately reflect one's economic potential, and its effects on marriage formation might be confounded by other factors for the pre-reform and early-reform cohorts. This shows why, when treating education as one aspect of an individual's economic prospects, we need to examine the theoretical expectation concerning the changing importance of education during a relatively stable period. Such an analysis will be presented in the next section.

5.2 Mediating the Effects of House Price

From the cohort analysis, we have observed that there has been growth in the importance of some economic prospects in marriage formation, yet the mechanism of such changing effects need further exploration. As argued above, rising average house price due to the housing reform in urban China might be one of the eliciting factors, and I will examine how the importance of economic prospects varies with house price.

Since the supply of commercial houses in China has increased rapidly since the late 1980s, we collected house price data since 1990. To match the house price data, we restrict our sample to current urbanites first exposed to marriage risk after 1990 (i.e. those born after 1975, since their risk of marriage is still assumed to begin at 15). Tables 3 and 4 present the

results for men and women respectively. In the first column of the two tables, we run the model using the same specifications as in Tables 1 and 2 as the baseline models. We can see that the coefficients are quite similar to the results for the late-reform cohort in Tables 1 and 2.

--- Table 3--

--- Table 4--

To determine whether house price increases have altered the effect of education, we first add the linear function of house price and then its interaction with education based on the baseline models for men and women, the results being shown in the second and third columns of Tables 3 and 4.[3] By focusing on the primary effects of education in the first column, we can see that for both men and women, level of education is negatively associated with the odds of marriage. The positive signs of the interactions between education and house price, however, suggest that for both men and women, the negative effect of education on marriage formation will decline and be offset as average house price increases.

Figures 1 and 2 show the predicted probability of getting married per year by years of schooling at different levels of average house price for men and women respectively.[4] The

3 I add the linear function of respondent's birth year to de-trend the influence of education expansion in China during the reform era.

4 The values were computed from the logistic regressions in Tables 3 and 4, assuming that the male and female respondents are both 23 years old, that the respondent is currently employed, that the respondent does not work in the state sector, that the respondent is not currently enrolled in school, that the respondent owns an urban *hukou*, that the ethnicity of the respondent is Han, and that the respondent was born in 1980.

broken and dotted lines show the predicted relationship between years of schooling and risk of marriage when house price is 2528 RMB (average house price of urban China) per square meter. And we could observe a negative association between educational level and probability of getting married for both men and women. The dotted lines show the predicted relationship between schooling years and risk of marriage when house price is 4956 RMB and 7699 RMB (tipping point) per square meter for men and women respectively. And we can observe that the risk of marriage does not vary by educational level for both men and women. The broken and solid lines respectively show the predicted relationship between years of schooling and risk of marriage when house price is 10000 RMB and 14091 RMB (highest house price in 2008) per square meter for men and women. In contrast to the relationship at a low house price, a positive association between education and probability of getting married is observed. Such results suggest that the effects of education on marriage vary with the level of house price: on the one hand, in the areas where the house price is relatively low, education mainly has a marriage-delaying effect, implying that people with more education may be able to afford to wait longer; in the areas where house price is relatively high, education has a marriage-promoting effect, implying that people with more education may be chosen as partners as soon as they appear in the marriage market.

In summary, we find that average house price is a mediating mechanism that results in the varying effect of education on risk of marriage for both men and women. In cities with lower house prices, people with higher education are not especially attractive in the marriage market, and most people still enter marriage as early according to the traditional norms.

The unit of house price is 10 thousand RMB per square meter.

Given the conflict between schooling enrollment and marriage, people who receive more education marry later, resulting in the negative effect of education on marriage formation. In the cities with a higher average house price, however, people with higher educationare more attractive in the marriage market, since their economic statuses are higher and only they can afford to buy houses. This advantage will become greater as house prices increase and could eventually offset or even reverse the marriage-delaying effect of education.

--- Figure 1---

--- Figure 2---

6. Conclusion and Discussion

Previous studies on marriage formation have failed to settle the debate regarding the changing effects of economic prospects. Using data from different societies, some scholars have observed the positive effect of women's economic prospects, which also increases over time (Sweeney 2002), while others have found that higher levels of education among women are associated with lower likelihoods of marriage (Raymo 2003; Thorton 1995). For men, although most researchers have acknowledged a significant positive effect of economic potential on marriage formation (Xie et al. 2003; Oppenheimer and Lew 1995), little evidence has been provided concerning whether such an effect has changed over time. We have attempted to contribute to the literature on the determinants of marriage formation by situating marital behavior in a society that has undergone drastic changes and have tried to discover what factors might result in the changes in the effects of those determinants.

In general, our results suggest that employment status has become increasingly important in marriage formation for both men and women in urban China, a finding which is consistent with the theoretical expectation. In regard to educational attainment, as with the findings for Japan, we have observed a negative effect of education on the likelihood of transition to first marriage for both men and women. However, we suspect that such a negative association might not be constant and may vary with social context and also be altered by institutional changes. To improve our understanding of the marriage process from a contextual perspective, we try to identify the potential driving forces of changing determinants by applying more complex specifications and models within the late-reform cohort. Taking advantage of the changing consumption patterns and housing reform in China, we find that the effect of educational attainment varies with the level of average house price. For both men and women, schooling years will gradually have a positive impact on marriage formation as the house price increases to a particular level.

The extent to which certain determinants of marriage formation will be influenced by a particular institutional change has also been examined in this study. The privatization and reform of state-owned enterprises in China facilitates our examining how the economic structural transformation might alter the effect of work unit characteristics on marital behavior. Our results suggest that the advantage of working in the state sector has declined following the reform and finally disappeared as the reform continued. Thus, another contribution of this study has been to suggest the importance of paying attention to particular institutional transitions and policy configurations.

Future work is needed to explore the changing effects of determinants in marriage for

both men and women. In addition, more attention should be shifted from analysis of single-side potential spouses to the two-sex consideration. For instance, the effect of women's higher education levels might decrease their odds of marriage in areas where there are few college-educated men. To this end, the hierarchical linear model capturing the marriage market characteristics seems necessary. Moreover, the attractiveness of one's economic prospects might depend on the economic status of the potential spouses he/she is considering. Therefore, we should situate the marriage analysis in a market with potential wives and husbands rather than focusing merely on the one-sex mating process. Such integrative studies will enable us to better understand the interactions between men's and women's determinants of marriage.

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Figure 1 Effects of Years of Schooling on Marriage Risk at Different Levels of House Price for Men

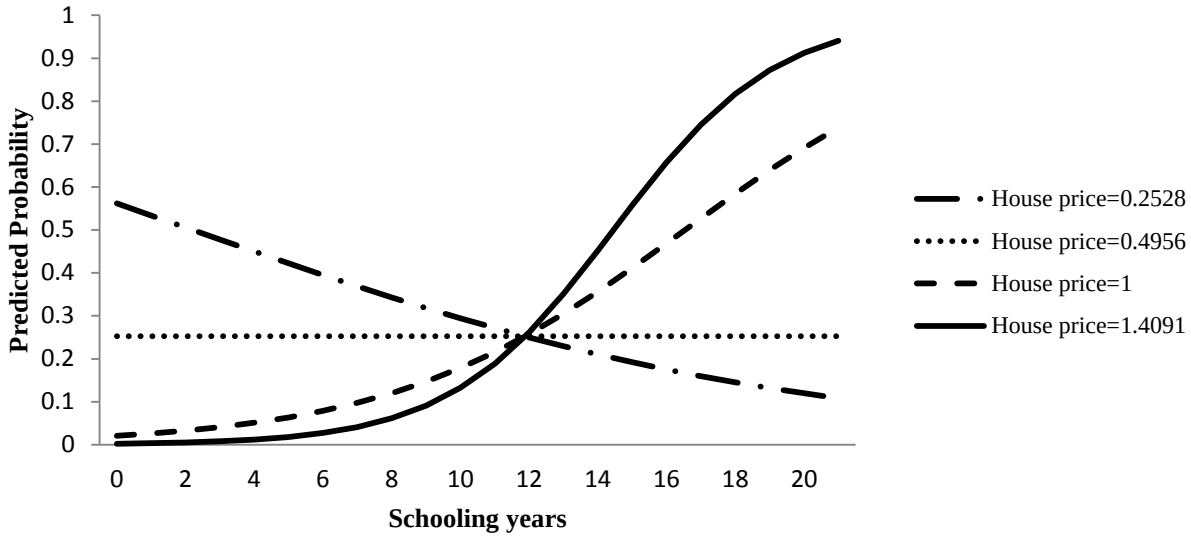

Figure 2 Effects of Years of schooling on Marriage Risk at Different Levels of House Price for Women

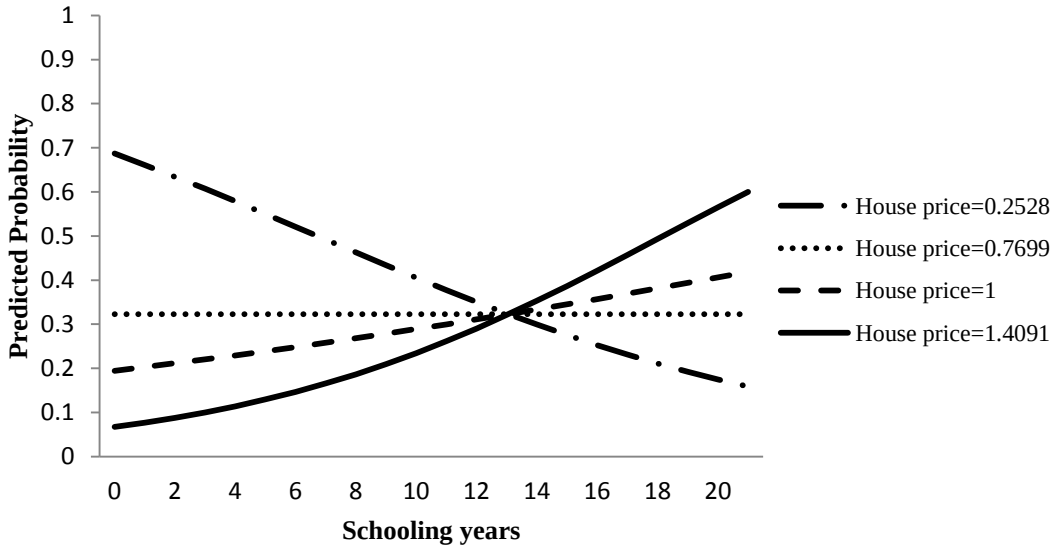

Table 1 Coefficients for Men from the Logistic Regression of Transition to First Marriage on Selected Independent Variables

VARIABLES	Pre-reform Cohort	Early-reform Cohort	Late-reform Cohort

Age (spline function)			
15-21	0.431***	0.647***	0.671***
	(0.036)	(0.0519)	(0.0931)
22-25	0.365***	0.351***	0.483***
	(0.029)	(0.034)	(0.054)
26-30	0.00284	-0.067	0.150*
	(0.032)	(0.049)	(0.079)
31-	-0.078***	0.202**	0.223
	(0.019)	(0.082)	(0.296)
Currently employed	0.138	0.510***	1.975***
	(0.113)	(0.178)	(0.486)
Working in state sector	0.307***	0.229**	-0.092
	(0.077)	(0.096)	(0.148)
Currently enrolled in school	-0.487***	-0.335**	-0.414*
	(0.129)	(0.142)	(0.225)
Years of schooling	-0.016	-0.052***	-0.101***
	(0.011)	(0.016)	(0.027)
Father's education (reference group: primary school)			
Middle school	-0.158	-0.184*	0.169
	(0.120)	(0.111)	(0.155)
High school	-0.263	-0.116	-0.108
	(0.166)	(0.122)	(0.187)
College	-0.353*	-0.323*	-0.135
	(0.185)	(0.187)	(0.271)
Urban *hukou* status	-0.315***	-0.368***	-0.0883
	(0.095)	(0.116)	(0.170)
Minority	0.202	-0.329*	-0.272
	(0.164)	(0.182)	(0.304)
Constant	-11.82***	-16.02***	-17.87***
	(0.746)	(1.091)	(2.004)
Observations	15,107	11,068	5,575

a. *** p<0.01, ** p<0.05, * p<0.1 b. Standard errors in parentheses

Table 2 Coefficients for Women from the Logistic Regression of Transition to First Marriage on Selected Independent Variables

VARIABLES	Pre-reform Cohort	Early-reform Cohort	Late-reform Cohort
Age (spline function)			
15-19	0.455***	0.725***	0.667***
	(0.036)	(0.064)	(0.094)
20-25	0.265***	0.360***	0.431***
	(0.020)	(0.023)	(0.034)
26-30	-0.066	-0.197***	-0.107
	(0.050)	(0.060)	(0.117)
31-	-0.124***	0.086	0.796
	(0.031)	(0.086)	(0.633)
Currently employed	-0.191**	-0.024	0.143
	(0.086)	(0.132)	(0.277)
Working in state sector	0.209**	0.174*	-0.022
	(0.086)	(0.094)	(0.142)
Currently enrolled in school	-1.000***	-0.548***	-1.461***
	(0.153)	(0.137)	(0.229)
Years of schooling	-0.082***	-0.059***	-0.102***
	(0.00979)	(0.014)	(0.021)
Father's education (reference group: primary school)			
Middle school	-0.209	-0.038	0.044
	(0.128)	(0.102)	(0.134)
High school	-0.472***	-0.232*	0.119
	(0.161)	(0.133)	(0.158)
College	-0.444**	-0.213	-0.250
	(0.205)	(0.164)	(0.295)
Urban *hukou* status	0.0800	0.125	0.308**
	(0.0822)	(0.096)	(0.133)
Minority	0.207	-0.111	0.239
	(0.146)	(0.152)	(0.200)
Constant	-10.52***	-16.33***	-14.96***
	(0.667)	(1.234)	(1.802)
Observations	12,014	10,676	6,357

a. *** p<0.01, ** p<0.05, * p<0.1 b. Standard errors in parentheses

Table 3 Models for Men and Women of Transition to First Marriage including House Price[5]

	Male		Female	
	Model 1	Model 2	Model 3	Model 4
Schooling Years	-0.113***	-0.229***	-0.130***	-0.175***
	(0.0323)	(0.0526)	(0.0274)	(0.0373)
House price (10000 RMB)	0.360	-5.490**	-0.152	-2.951*
	(0.487)	(2.166)	(0.404)	(1.639)
House price*schooling years		0.462***		0.226*
		(0.166)		(0.128)
Constant	-18.90***	-18.48***	-22.26***	-22.05***
	(2.530)	(2.550)	(3.201)	(3.207)
N	3,914	3,914	4,629	4,629

a. *** p<0.01, ** p<0.05, * p<0.1 b. Standard errors in parentheses

Appendix: Descriptive Statistics of Main Predictors for Men and Women

VARIABLES	Male (N=2162)	Female (N=2468)
Percentage		
Married	99.26	99.72
Currently employed	91.58	81.82
Working in state sector	47.55	33.51
Currently enrolled in school	9.94	7.48
Urban *hukou* status	81.3	71.6
Minority	4.86	6.96
Father's education		
Primary school	69.89	69.71
Middle school	15.63	16.61
High school	9.85	9.45
College	4.63	4.22
Mean and Standard Deviation		
Age	25.33	23.10
	(4.05)	(3.51)

[5] All the variables in Table 1 and Table 2 are controlled.

Years of schooling	9.95	8.59
	(3.74)	(4.29)
House price (1000 RMB)	0.181	0.175
	(0.183)	(0.179)

a. Measured at the time of the transition to first marriage.