Demographic Research a free, expedited, online journal
of peer-reviewed research and commentary
in the population sciences published by the
Max Planck Institute for Demographic Research
Doberaner Strasse 114 · D-18057 Rostock · GERMANY
www.demographic-research.org

DEMOGRAPHIC RESEARCH
VOLUME 7, ARTICLE 11, PAGES 407-432
PUBLISHED 29 AUGUST 2002
www.demographic-research.org/Volumes/Vol7/11/
DOI: 10.4054/DemRes.2002.7.11

Research Article

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Event History Analysis Based on Data Collected in Shanghai, Hebei, and Shaanxi

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Abstract

Based on a unique data set on the event history of marriage and divorce collected in the In-Depth Fertility Surveys conducted in Shanghai, Shaanxi, and Hebei in 1985 and a multivariate hazards model, this paper investigates the association between divorce risk and socio-demographic factors in China. Controlling for several other socio-demographic factors, we demonstrate that the risk of divorce for women who married before age 18 is twice as high as that of those married after age 20; the risk of divorce of arranged marriages is about 2.6 times as high as that of not-arranged ones. The number of children is highly and negatively correlated with risk of divorce; the traditional son preference does not seem having substantial effects on divorce among women who have one or two children; but the risk of divorce of women who have three or more daughters without a son was 2.2 times as high as that of those women who have three or more

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children with at least one son. The divorce level in urban areas is higher than that in rural areas. The greater proportion of arranged and early marriages plus some other special factors in a less developed region (Shaanxi) contributes to its higher general divorce rate before 1985, in comparison with the advanced region (Shanghai). The divorce level in Shanghai after 1985 has become higher than that in Shaanxi. It seems that education level is positively related to divorce and labor force participation is negatively related to divorce, but the estimates are not statistically significant. Some explanations of these findings are also discussed in this paper.

1. Introduction

While divorce has long been culturally discouraged in China (Parish and Whyte 1978; Whyte and Parish 1984; Li 1985; Honig and Hershatter 1988; Bao 1990), the divorce level has been rapidly increasing since 1980 (Lan 1985; Liu 1987; Wang 1987; Yang 1987; Platte 1988). Based on the aggregate data at the population level, Zeng and Wu (2000) estimate and discuss the general divorce rates (Note 1) in China and in its 30 provinces since 1980. The general divorce rate in China increased from 2.01 per thousand married couples in 1982 to 2.86 in 1990: an increase of 42 percent in eight years. It continued to increase to 3.13 in 1995. A substantial increase in divorce was observed in almost all provinces. A fairly strong regional pattern of divorce in China was found: lowest divorce rates in the eastern coast and east areas, highest divorce rates in the northwest and northeast areas, and modest divorce rates in the middle and southern part of the country (Zeng and Wu 2000).

To our knowledge, however, very few empirical studies have been published which are based on statistical analyses of individual data on the association between socio-demographic factors and divorce in China. This gap in the literature appears to be mainly due to the scarcity of data on marriage/divorce histories from sufficiently large samples to clarify the multiple correlates of such a rare event as divorce until recent years in China. Many interesting and important questions remain unanswered. Based on a unique data set on the individuals' event history of marriage and divorce (Note 2) collected in the In-Depth Fertility Surveys conducted in Shanghai, Shaanxi, and Hebei in 1985, this paper sheds light on answering the following questions. Is women's socio-economic status correlated with divorce likelihood in the contemporary Chinese context? Do women who marry earlier or later in life have a higher or lower divorce probability? Is arranged marriage a positive or negative factor associated with divorce? How is the number of children related to divorce? Does traditional son-preference in China have any impact on divorce? How do divorce levels differ between rural and urban settlements? Answering such questions through the analysis of the association of divorce with socio-demographic covariates in China is important because it will fill in an academic knowledge gap about the largest population in the world. Note that this paper studies the association of divorce with socio-demographic covariates in China in the period 1955-1985, because no national and provincial representative survey data are available on the event history of divorce after 1985. Nevertheless, we believe that this study provides useful information for a better understanding of divorce in contemporary Chinese society; it can also serve as a basis for analyzing the most recent trends if new event history data on divorce become available in the future. The next section gives a brief review of the socio-cultural background of divorce in contemporary China, which serves as a theoretical context or framework for understanding the meaning of the socio-

demographic variables to be included in our model and the interpretations of our statistical findings. The third section describes the data and model specification. The other sections will present and discuss the findings.

2. A Brief Review on Socio-Cultural Background of Divorce in China

There exists a persistence of deeply-rooted tradition unfavorable to divorce in the Chinese culture. The Confucian ideology regards marriage as a matter of the families of the husband and wife rather than a private matter of the partners. It was stated in the section on marriage definition in the *Book of Rites*, one of the five Chinese classics on Confucian ethical codes, that marriage connects the two sexes for serving upwards the ancestral shrine and continuing downward the descent of the family line. Three additional purposes were added later to the marriage definition in the Confucian codes: caring for parents, increasing family labors and preventing incorrect sexual contacts (Yue, 1990: 227). Because marriage was to serve the ancestral shrine and to continue family line, parents may arrange their children's marriage regardless of love between the partners; the marriage may be in trouble if after a sufficiently long period it cannot produce a son, which is the key to continuing the family line (Zeng, 1995: 1). The three additional purposes of the traditional Chinese marriage (caring for parents, increasing family labors and preventing incorrect sexual contacts) in the Confucian codes may result in early marriages in which the partners lack maturity and a solid emotional basis for the union.

Moreover, fairly restrictive legal and administrative divorce procedures designed to preserve the conjugal family had successfully served their purpose of keeping the divorce rates at a very low level before late 1980s. For example, a couple or one party of the couple intending to divorce usually first reported to their work unit leader after consulting their close family members such as parents. The work unit leader might very likely not agree to the divorce as the first response, and tried to convince the couple not to divorce. If the couple or one party insisted, their case might then be submitted to the civil affairs department. The civil affairs department would try again to prevent the divorce by means of talking with the person(s) concerned and organizing a meeting, to which the related family members or friends were invited to participate, etc. Divorce could be approved by the civil affairs department if an acceptable reason was found. Some cases would be submitted to a local court and the court might repeat the process of trying to persuade the couple not to divorce. Finally, some divorce cases were approved by the court while others might be rejected. Platte (1988) reported that a divorce case was filed six times without being approved. A considerable number of

persons might withdraw their divorce request at one of the stages of family consultation, work unit reporting, civil affairs department and local court hearing, either because they are really convinced that the union should survive or because they were worn down by the time-consuming process. Some couples might never submit their case for a divorce because they were afraid of being ostracized by their family, work unit and society.

While divorce has long been culturally discouraged in China, the number of divorces reached a peak of 1.17 million and the crude divorce rate was 1.99 per thousand in 1953, which was even much higher than the rate in 1990s. The extremely abnormal high divorce rate in 1953 was the result of wide publicity about the 1950 new marriage law, released after the establishment of the People's Republic of China in 1949. The 1950 new marriage law outlawed bigamy, concubinage and child betrothal, which were therefore terminated as divorces. It promoted freedom of marriage, monogamy, and equal rights of men and women. The implementation of the new marriage law helped dismantle the feudal marriage system left over from the old society and consequently resulted in the dissolution of numerous unhappy marriages (Li, 1985: 18).

The movement to increase women's status after 1950 encouraged some young people to divorce if their unhappy marriages were arranged by their families (so called "feudal marriage"). Although it is difficulty to divorce under the Chinese cultural and social context as reviewed above, some women, especially those with higher education, were seeking divorce to challenge the unhappy marriage, the authority of husbands, and demand equality between men and women (Zhao et al. 1987: 163-164). Such trends were more prevalent in more developed provinces/cities than in the poorer areas/villages. The rapid socioeconomic development since the 1980s significantly changed people's attitudes towards divorce and largely relaxed the restrictive legal and administrative procedures of divorce, although traditional Chinese values continued to exist (e.g. Zeng and Wu, 2000). The opening-door to the outside World also introduced the influences of Western ideology on marriage and divorce into China.

3. Data and Model Specifications

The data used for this study are derived from the In-Depth-Fertility-Surveys conducted by the State Statistical Bureau of China, with the technical assistance of the International Statistical Institute. The first phase of the surveys in 1985 covered the provinces Shaanxi and Hebei, and the municipality Shanghai, with a total population of 93 million (SSB 1986: 3). The sample sizes of the Shanghai, Shaanxi and Hebei surveys are 6750, 5368 and 6149 households, respectively. Based on the standard of the World Fertility Surveys, the samples of the In-Depth-Fertility-Surveys are randomly selected

according to strata and cluster sampling framework, representing female population of reproductive ages in the provinces. The questionnaire covers six demographic topics: background, marriage history, birth and pregnancy history, contraceptive knowledge and history of contraceptive use, fertility preferences, and background of current or last spouse. In the first phase of the surveys, detailed marriage and divorce history data were collected; the questionnaire included current marital status; starting and end dates of first, second, third ... marriage(s); and individual's socio-demographic characteristics. A consensus on the reasonably high quality of the data collected in the In-Depth Fertility Surveys had been reached among international and Chinese scholars who analyzed the data and presented papers in an international seminar devoted to these surveys (ISI, 1991; Department of Population Statistics, 1986).

The first phase of the In-Depth Fertility Surveys provided a valuable data set for a comprehensive study on the association of divorce with socio-demographic covariates (Note 3). We believe that the findings may roughly reveal the pattern in China in the period 1955-1985, since it includes one most developed area (Shanghai), one less developed area (Shaanxi), and one moderately developed area (Hebei). It is, however, important to note that the event history data used in this paper were collected in 1985 and there is no such detailed data available since then; the data analysis reported in this paper is within the Chinese cultural and social context between 1955 and 1985. Such analysis may serve as a basis for investigating the most recent trends under the new social environment after 1985 if new event history data on divorce become available in the future.

Table 1 presents the simple statistics of frequency distribution of ever-married women who were interviewed in the survey. Nearly 70 percent of the sampled ever-married women lived in rural areas. Nearly one third of the women in the sample had married before age 20. About 13 percent of the marriages had been arranged by parents or other relatives. About 8 percent of the interviewed women had no child, and about half of the women had at least one son. About 31, 32, and 37 percent of the ever-married women had no education, primary schooling, and middle or higher education, respectively. The education level of their parents was much lower. Women who did not have paid job, and who were agricultural workers, and non-agricultural workers consisted of 48, 17, and 35 percent of the sample, respectively.

Table 1: *Frequency Distribution of Ever-Married Women Interviewed in the Survey*
Classified by Covariates

Covariate		Number	%
Residence	Urban	4168	31.3
	Rural	9138	68.7
Age at 1st marriage	<18	1827	13.7
	18-19	2560	19.2
	20-24	6679	50.2
	>=25	2240	16.8
Marriage type	Arranged	1716	12.9
	Not Arranged	11590	87.1
Number and sex of children	0 child	1028	7.7
	1 son only	2344	17.7
	1 daughter only	1842	13.8
	2 children, ≥ 1 son	3021	22.7
	2 daughters, no son	643	4.8
	≥ 3 children, ≥ 1 son	4170	31.4
	≥ 3 daughters, no son	258	1.9
Women's education	No Education	4119	31.0
	Primary	4222	31.7
	≥ Middle	4965	37.3
Parent education	No Education	6508	52.4
	Primary	4797	38.6
	≥ Middle	1123	9.0
Women's occupation	Had no paid-job	6345	47.8
	Agriculture	2232	16.8
	Non-Agr.	4708	35.4
Province	Shaanxi	4083	30.68
	Shanghai	4143	31.14
	Hebei	5080	38.18

Note: Number and sex of children is counted based on the number of children alive and their sex composition for each ever-married woman at the time of survey.

The average age at divorce of women was 25.8 years old. The average marriage duration at divorce of women was 7.7 years (Note 4). The data on marriage duration and age specific rates of divorce among ever-married women demonstrates that the period of highest risk of divorce is less than 5 years after marriage; the peak divorce rate is at the marriage duration of 3 years. The married women aged 15-19 had the highest divorce rates in comparison with other age groups.

This paper adopts the multivariate hazards models of event history analysis methodology to study the association of each selected covariate and divorce while controlling for the effects of other covariates. Event history analysis is an extension of the cluster of methods connected with the life table, direct and indirect standardization, and increment-decrement techniques (Hoem 1993: 281). The mathematics of and discussions on the multivariate hazards models of event history analysis are available elsewhere (see especially, Hoem 1993; Menken et al. 1981; Teachman 1982; and Allison 1984 for a good exposition), and are not detailed here.

We have chosen seven time-fixed covariates, referring to individual socio-demographic characteristics: province, residence type (rural or urban), women's education, occupation (Note 5), age at marriage, arranged or not arranged marriage, and parents' education. We also included a time-varying composite covariate of number and sex composition of children surviving at each of the marriage duration. Duration of marriage is treated as a basic controlling variable that is time-varying in the multivariate hazards model. Age is also considered implicitly as another time-varying basic controlling variable because variables of age at marriage and time-varying duration of marriage are included in the model. Although the covariates included in our model do not constitute a complete list of explanatory variables of divorce, this is the best we can do given the currently available data (Note 6).

We present the hazards coefficients and the relative risks of divorce estimated by the three models in Table 2. The first model includes all time-fixed and time-varying covariates. The second model includes only the four time-fixed covariates that have been found to be statistically significant in model 1. The third model includes a time-varying composite covariate of number and sex of surviving children, in addition to the four time-fixed covariates that have been found to be statistically significant in model 1 and model 2. Although specifications of the three models differ substantially, the numerical estimates of the hazards model coefficients do not differ very much and are of the theoretically expected pattern. This consistency of the hazards model estimates led us to believe our multivariate hazards model is robust and our estimates are reliable. We also estimated several additional models. One model includes an additional time-varying dummy variable indicating whether the couple is sterilized or not at each marriage duration, but the estimate is not statistically significant. We tried various interaction estimates (such as province with age at 1st marriage, education with arranged

marriage, etc.), but the results are insignificant and do not make sense presumably because the number of events of divorce are too small when we include many combinations of covariates and their interactions in the model. We have not reported the results of these additional models since they do not contribute any additional and reliable insights to our study.

One might wish to estimate the hazards model for each of the three provinces separately. We did not do so because we think treating province codes as dummy variables in a model can parsimoniously control for the regional differences on divorce and reduce the problem of the small number of events given the very low divorce level in China. Similarly, we did not estimate the hazards models for different periods, again, because of the limitation of the sample size. We will mainly present and discuss the results of the first model listed in Table 2 in the subsequent analysis.

4. Findings: The Estimates

For those who are unfamiliar with the hazards model, it may be useful to illustrate how the estimates are interpreted. In Table 2, for instance, the covariate "residence" has two categories: rural and urban. "Rural" (in parentheses) is the reference group. The relative risk of divorce for a rural woman is denoted as one. According to the estimates of model 1, the relative risk of divorce for women in urban areas is 1.48 (Note 7). This means that the divorce risk of an urban woman is 48 percent higher than that of the reference group (a rural woman), with other covariates considered in the model being controlled. The "*" accompanied with the relative risk (1.48) means the estimate is statistically significant at a level of $p<0.05$ (Note 8). All other figures of relative risk presented in Table 2 should be understood in this way.

Table 2: *Estimates of the Coefficients and the Relative Risks Based on the Multivariate Hazard Models*

Covariates	Category	Model 1		Model 2		Model 3	
		Coeff	Rel Risk	Coeff	Rel Risk	Coeff	Rel Risk
Province	Shaanxi	0.469	1.599*	0.511	1.666**	0.502	1.652**
(Hebei)	Shanghai	0.442	1.556#	0.495	1.640*	0.505	1.657*
Residence (rural)	Urban	0.393	1.481*	0.483	1.621**	0.477	1.611**
Age at 1st Marriage (>=25)	<18	0.718	2.051*	0.606	1.832#	0.555	1.743#
	18-19	0.559	1.748	0.382	1.466	0.423	1.526
	20-24	0.043	1.044	-0.066	0.936	-0.018	0.982
Arranged Marriage (No)	Yes	0.969	2.636***	0.953	2.595***	0.924	2.519***
Women's education	Primary	0.180	1.197				
(No education.)	>=Middle	0.301	1.351				
Parent's education (No education	Primary	0.316	1.371				
	>=Middle	0.340	1.405				
Women's Occupation	Agriculture	-0.106	0.899				
(had no job)	Non-Agriculture	-0.092	0.912				
Time-varying covariate							
Number and sex composition of	1 girl only	-1.355	0.258***			-1.350	0.259***
Children (no child)	1 boy only	-1.055	0.348***			-1.039	0.354***
	2 kids without a son	-1.861	0.156***			-1.870	0.154***
	2 kids with 1+ son	-1.733	0.177***			-1.734	0.177***
	3+ kids without a son	-1.715	0.180*			-1.752	0.173*
	3+ kids with 1+ sons	-2.500	0.082***			-2.513	0.081***
Global Statistics							
Log Likelihood		-1750.5		-1791.3		-1754.2	
Global Chi-Square		229.6		102.9		223.2	
Degree of freedom		19		7		13	
P-value		0.000		0.000		0.000	

Notes: (1) the category in the parentheses is the reference group.
(2) #, p<0.10; *,p<0.05; **, p<0.01; ***,p<0.001.

The hazards model estimates of model 1 listed in Table 2 show that controlling for the other covariates, women who married before age 18 had the highest divorce rate, while women who married at age 18-19 had the second highest divorce rate. More specifically, the risk of divorce of the marriages that occurred before age 18, at age 18-19, and at age 20-24 are about 2.1, 1.7 and 1.0 times as high as that of marriages that occurred at or after age 25.

The hazards model estimate (see Table 2) shows that the risk of divorce for arranged marriage is about 2.6 times as high as that of marriage that is not arranged by the family or relatives, controlling for the other factors. The estimate is highly significant.

Since the number of surviving children and sex composition of children at each marriage duration change over time, we must deal with this composite variable as a time-varying covariate, which is one of the major advantages of the multivariate hazards model as compared with traditional multiple regression. The estimates of model 1 in Table 2 show that, as compared with women who have no children, women with one son or one daughter have 35% or 26% of the risk of divorce; women who have two daughters or two children with at least one son have 16% or 18% risk of divorce; women who have 3+ daughters without a son or 3+ children with at least one son have 18% or 8% risk of divorce. Obviously, the number of children is negatively correlated with risk of divorce, and the estimates are highly significant. Of course, it is also possible that more stable marriages from the onset may encourage the couple to have children sooner and in greater numbers. Also, the civil and legal authorities may be less inclined to grant a divorce if the marriage has produced more children. Another point here is that marital difficulties may be associated with separation and a low frequency of intercourse well before divorce, thus resulting in a smaller number of children. The direction of causation between fertility and divorce is therefore not entirely clear, but the association is strongly evident in the data.

The model estimates (Table 2) indicates that the divorce risk of women who had one daughter only or had two daughters without son is somewhat lower than that of women who had one son only or had two kids with at least one son. The divorce risk of women who had three or more daughters without a son was 2.2 times as high as that of women who had three or more kids with at least one son (Note 9). It seems clear that the traditional son preference had no substantial effects on divorce among women who had one or two children. But the risk of divorce of women who had three or more daughters without a son was more than twice as high as that of those who had three or more children with at least one son. We believe that the association of son-preference and divorce might not be evident among women who have only one or two children since it was not clear whether the woman will produce the desired son, and she and her husband could try to have a son later. The woman with three or more daughters without a son

reported a more than twofold increased risk of divorce compared with the woman with three or more children with at least one son. This association might indicate that her husband and her husband's family concluded that mother of at least three daughters without a son was not likely to be able to produce a son. Her increased risk of divorce might thus reflect the strength of her husband's family preferences for a son. Such estimates are consistent with other related Chinese studies (e.g. Zhao, Lu and Guo, 1987: 169).

Controlling for the other factors, educated women had a higher risk of divorce than uneducated women; women who had educated parents tended to have a higher divorce risk than those whose parents were illiterate. But the estimates of women's education and parents' education on divorce are not statistically significant. It is not surprising, therefore, that we also found that the association of divorce and occupation, which is closely related to education in China, is not statistically significant in the hazards model analyses. We tried another model that includes women's education plus province and rural/urban residence, but omits all other covariates that may be associated with education, such as parents' education and women's occupation. The results still show that association of divorce and women's education is not statistically significant.

Controlling for factors such as rural-urban residence, age at first marriage, arranged marriage, number and sex composition of surviving children, divorce risk in Shaanxi was about 60 percent higher than that in Hebei, which has the lowest divorce level among the three regions in this study. Although Shaanxi province has a lower socio-economic development level than Shanghai, its relative risk of divorce (1.60) in the period 1955-1985 was slightly higher than Shanghai's (1.56).

5. Discussions

The negative relationship between age at marriage and divorce risk has been confirmed by our analysis. These differentials are consistent with findings from other studies. Based on a large-scale marriage history survey data set fit to a proportional hazards model, Murphy (1985) concluded that risk of marriage breakdown declines with increase in age at marriage from age 16 to 30. A similar but more recent study in Australia demonstrates that the risk of marriage dissolution for women who first married during their twenties was only two-thirds that of women who married as teenagers. For women who married at age 30 or older, the relative risk was only one-sixth that of teenagers (Bracher et al., 1993). Balakrishnan et al. (1987) shows that the risk of divorce of Canadian women who married at age 19 or younger is about 3.96 times as high as that of those who married at ages 20-21. Smith (1981) also found the lower the age at marriage, the higher the probability of divorce in Sri Lanka and Thailand. Wang,

Chang and Chen (1992) found that early age at first marriage increased divorce risk in Shanghai. Marriages at very young ages are less stable even in the Chinese context where social custom strongly discourages divorce. The very young brides and bridegrooms might be less mature and are more likely to rush into marriage, which might be associated with an unstable union. The lower risk for women who married late might reflect their greater maturity, or the benefit of a longer search for an appropriate partner; alternatively, having not married early may indicate a belief that marriage should be permanent, and a preference not to marry in haste (Bracher et al., 1993: 413). Although we cannot establish the causal relationship between early marriage and divorce, it is clear that a negative relationship between age at marriage and divorce risk exists in China.

We found that arranged marriages had a much higher risk of divorce than the not-arranged marriages. We believe that in the Chinese social context, arranged marriage may more likely lack the emotional base of love between the partners. The Chinese parents who arranged their children's marriages most likely made their decision based on the social, economic, and political conditions of both families rather than on love. The old Chinese saying "Men Dang Hu Dui" (marriage must be based on a comparable gate of the house, i.e. appropriate socio-economic status) reflects this social phenomenon. Richer or politically more powerful families, especially those in rural and poor areas, are in a much better position in marriage negotiations. Poor parents may likely force their daughter to marry a richer man whom the girl does not love. Our empirical study supports the hypothesis that arranged marriages have a higher risk of divorce. The opposite hypothesis – that arranged marriages would be more stable because of the intensive investment of parents and extended kin in the marriage (Xu and Whyte 1990: 710) -- has been rejected by our data. Similar to findings by Blood and Wolfe (1960) and by Xu and Whyte (1990), our study does not support the prediction by defenders of arranged marriages that "love matches start out hot but grow cold, while arranged marriages start out cold but grow hot".

Among 13,306 surveyed ever-married women, 1,716 women, 12.9 percent of the sample, reported that their marriages were arranged. This indicates that arranged marriage is still not a negligible phenomenon in contemporary China, especially in the rural areas, but is less frequent in younger birth cohorts of women (SSB 1986). Society may benefit from the decrease in arranged marriages and might want to promote this trend in order to increase the likelihood that people have an enduring and presumably happier family life.

One of the important reasons for encouraging couples in a troubled union to stay together rather than to divorce is to avoid the negative consequences of divorce on their children. This consideration is taken even more seriously in the Chinese context where divorce is not socially accepted. Chinese couples who wish to divorce are often warned,

"Have you considered the future of your children?" by their family, friends, work unit leaders, and governmental officers. Although the causal relationship between fertility and divorce is not entirely clear, and further research is needed, this study has confirmed the negative association between the number of children and the risk of divorce. This association has also been found in other divorce studies in China. For example, a study of 1,000 cases of divorce by Zhao, Lu and Guo (1987: 169) found that in their sample, 50.3 percent of the divorcees are childless women, 27.1, 14.2 and 8.4 percent have one child, two children, and three or more children, respectively. The negative association between parity and divorce risk has also been found in studies in other countries (e.g. Andersson, 1997; Lutz, 1993; Belacek, 1991; Canabal, 1990; Fergusson, Horwood, and Lloyd, 1990).

Son-preference has been a social phenomenon in Chinese societies for thousands of years. A son is not only important as a worker in the household, but he is also necessary to continue the family line. Although the government has tried to promote the status of daughters in families, and some young urban couples have begun to moderate their preference for sons, progress has been slow in reducing son-preference among most Chinese couples, especially those in rural areas. Morgan, Lye, and Condran (1988) found that sons reduce the risk of marital disruption by 9% more than daughters do, based on the 1980 Current Population Survey of the United States. Their explanation of this phenomenon in the United States, in which there is no or much less son-preference, is that fathers have a greater role in raising sons than daughters and have a consequently differential involvement in the family. This, however, may be only one of the reasons for the lower divorce rates associated with Chinese women who have three or more children and at least one son, as compared to those who had three or more daughters. Sons not only result in the father's greater involvement in the family; more importantly, sons satisfy his desire to continue his family line. If a couple did not produce a son until the third or higher order birth, the wife was likely looked down upon by her husband and her husband's family members; her husband would likely use their inability to produce a son as the main reason to divorce her.

The significantly higher divorce rate in Chinese urban areas than that in rural areas can be understood from rural-urban differentials in socioeconomic environment. The persistence of customary Chinese disapprobation of divorce is clearly weaker in urban areas than it is in rural areas. Urban parents and other senior family members are less forceful than their rural counterparts in interfering in the divorce affairs of their children or other junior family members. The urban officers who handle divorce cases are more likely to agree since they are generally more open-minded. Bracher et al. (1993) and Balakrishnan et al. (1987) also found that the risk of marriage dissolution was much lower for rural wives than that for residents of towns and cities in Canada and Australia, respectively. This is what the economic theory of divorce would suggest, since the

sexual division of labor is greater in rural households than it is in urban households; if a couple's complementary roles tend to increase the gains from marriage, then rural marriage should be more stable (Sander, 1985: 519-523; Bracher et al., 1993: 418; Balakrishnan et al., 1987). Rural women undoubtedly have more difficulty finding alternative work, housing, or a new partner than urban women do, which may present a greater barrier to the dissolution of rural marriages (Bracher et al., 1993: 418; Levinger, 1979). Women in urban areas are economically more independent than women in rural areas, and thus are more willing to ask for a divorce if their marriage is unhappy.

It is generally believed that the higher the socio-economic status, the higher the divorce rates, mainly because in advanced social strata, women are more economically independent and the social attitudes concerning divorce are more liberal. The evidences of higher divorce rates in the industrialized countries than those in the less developed countries may support this hypothesis. It is, however, also noted that socio-economic status and romantic marriage (as opposed to arranged marriage) are positively related. Using Ordinary Least Squares regression without interaction terms, Smith (1981) found that education is positively correlated with marriage stability in Sri Lanka and Thailand. Hoem (1997) showed that the increased risk of a first marriage breaking down was concentrated in women with lower educational attainment in Sweden. The investigation by Blossfeld et al. (1995), however, indicated that the risk of marital disruption increases when a woman's educational attainment improves in Sweden, western Germany, and Italy. But Menken et al. (1981) and Balakrishnan et al. (1987) found that in the U.S. and Canada, education was not statistically significant in their Cox proportional hazards model analysis of divorce. It may be reasonable to assume that women with more education will be more inclined to end an unhappy marriage in the Chinese context. On the other hand, more educated women are more likely to have a romantic marriage and are less likely to be exposed to other high risk factors, such as very early and arranged marriages. These factors operate in opposite directions and may offset each other. The univariate analysis without controlling for other risk factors such as early or arranged marriage indicated that the general divorce rate of women with no education was 11.2% and 60.0% higher than that of woman with primary schooling and women with middle schooling or higher education, respectively. A positive but insignificant association between education and divorce was found, however, in our multivariate hazards model analysis, controlling for the other risk factors such as early or arranged marriage. The relationship between education and divorce in China deserves further investigation in the future when new data become available.

It is interesting to note that the univariate analysis shows that the general divorce rate in an economically backward province Shaanxi (0.0235) was higher than in advanced Shanghai (0.0150) in the period 1955-1985. After controlling for other factors, the multivariate hazards model analysis shows that the divorce risk in Shaanxi was

almost equal to that in Shanghai. This phenomenon cannot be explained directly by a hypothesized positive relationship between socio-economic development and the divorce rate. A few remarks may be useful to understand this phenomenon. First, as discussed earlier, the risk of divorce for arranged marriages is about 2.6 times as high as that of non-arranged (romantic) marriages. Women who married before age 20 have a risk of divorce that is 1.7-2.1 times as high as that of women who married at or after age 25. About 25 percent of all Shaanxi marriages recorded in the survey were arranged, but only 6 percent in Shanghai were arranged. Among the two groups of women aged 20-24 and 45-49 in Shaanxi in the survey time of 1985, 34.5 and 87.3 percent were married before age 20, respectively; the corresponding figures of the comparative cohorts in Shanghai were 6.8 and 52.6 percent, respectively. Obviously, there were many more early and arranged marriages in Shaanxi than there were in Shanghai; these structural differences in marriage certainly contribute to the higher general divorce rate in Shaanxi before 1985. The hazards model estimates that control for the other selected factors, including age at marriage and arranged marriage, however, show that Shaanxi's divorce level did not differ from that in Shanghai. This suggests the advantage of multivariate statistical models as compared to univariate tabulations of demographic rates, which may not reveal the underlying patterns accounted for by a variety of socioeconomic covariates simultaneously. Another possible cause, which could not be measured in the survey but might be helpful for understanding the higher general divorce rate before 1985 that was observed in Shaanxi as compared to Shanghai, was political. In the second half of the 1960s and the first half of the 1970s, a large number of high school graduates from large cities, such as Beijing, were sent to Shaanxi for "Re-Education by the Peasants and Workers" under Mao Zhedong's regime. Some of them married in the local areas. At the beginning of the 1980s, when the era of Mao ended, almost all of them were allowed to return to the large cities from which they originally came. Some of them divorced their rural spouse because of the large differences in education and occupation. Tight restrictions on city residence permits contributed to this case to greater risks of divorce because, although these better-educated exiles were allowed to return to their native city, their rural spouses were not allowed to migrate with them.

Another interesting contrast is that the general divorce rate in Shanxi, a less developed and neighboring province of Shaanxi, was 96.6 percent higher than that in Shanghai in 1982, but it became 24.4 percent lower than that in Shanghai in 1990. The general divorce rate in Shaanxi in 1982 was 12.3 percent higher than that in Shanghai. In 1990, however, the general divorce rate in Shaanxi was 25.7 percent lower than that in Shanghai (Zeng and Wu, 2000). Jones (1997) found that the divorce rate in the 1950s in Islamic Southeast Asia (Peninsular Malaysia Malays, Indonesian Muslims, and Singapore Malays) was substantially higher than that in the industrialized countries, but it declined dramatically after the 1950s, accompanied by rapid socio-demographic

development. Jones' study and our findings of changes in differentials of divorce rates between Shaanxi, Shanxi, and Shanghai in the early 1980s and early 1990s may confirm the observation by Goode and Jones (Jones 1997: 97; Goode 1993: Chapter 8). More specifically, in societies with a relatively higher divorce rate and a low level of socio-economic development, "industrialization" can be expected to lead to a decline or slower increase in divorce rates (such as what happened in Shanxi and Shaanxi). This is because the high risk factors of divorce such as early marriage, arranged marriage, and local cultural tradition in societies with a relatively higher divorce rate and a low level of socio-economic development, may be mitigated during the process of modernization (Jones 1997). In other regions where divorce rates were extremely low before modernization, "industrialization" can be expected to lead to a quicker increase in divorce rates, such as happened in Shanghai and most other provinces of China in the 1990s (see Zeng and Wu 2000, for a more detailed discussion).

6. Concluding Remarks

This study demonstrates that the risk of divorce for women who married before age 18 is significantly higher than that of those who married after age 20, controlling for several other socio-demographic factors. Arranged marriage has a risk of divorce that is about 2.6 times as high as that of non-arranged ones. Estimates of the effects of a time-varying composite covariate of parity and sex of children in the multivariate model show that number of children is highly and negatively correlated with risk of divorce; the traditional son preference does not have significant effects on divorce among women who have one or two children; but the risk of divorce of women who have three or more daughters without a son was more than twice as high as that of those women who have three or more children with at least one son. The divorce level in urban areas is higher than that in rural areas. The greater proportion of arranged and early marriages plus some other special factors in a relatively less developed region (Shaanxi) contributes to its higher general divorce rate (without controlling for other factors) before 1985, in comparison with the advanced region (Shanghai). The divorce level in Shanghai after 1985 has become higher than that in Shaanxi. Education level seems positively related to the risk of divorce; the estimates of the association of education and occupation with divorce are not statistically significant, however, and the causal interpretation would not be straightforward.

The marriage history data set used in this paper is the best currently available for China. The qualitative conclusions in this paper about the association of divorce with socio-demographic covariates, based on these data collected in 1985, might be approximately valid in the late 1980s and 1990s because the directions of the

associations might not have changed dramatically, although the quantitative effects might be changed. It is, however, important to organize new national surveys about marriage history to have a more up-to-date understanding of divorce including the influences of rapid economic development in the later periods.

7. Acknowledgements

We thank the State Statistical Bureau of China and the Data Base at the Research Center of International Statistical Institute for providing the data from the China In-Depth Fertility Surveys. Helpful comments and suggestions provided by the three anonymous reviewers, the editor, Allan Parnell, Susan Greenhalgh, Li Nan, and Zhu Chuzhu are greatly appreciated. Part of the research reported in this paper was supported by a grant from the Rockefeller Foundation to the Economic Demography Program at the Economic Growth Center of Yale University, and was carried out while Zeng Yi was a visiting research scientist at Yale University and an adjunct professor at the University of Minnesota. We are grateful for the research assistance by Xiaoli Li and Yoosong Chang.

Notes

1. The general divorce rate is defined as the number of divorces occurred in one year divided by the mid-year total number of married couples.

2. The term "divorce" in this paper refers to formal divorce. We cannot include separation because there was no legal separation procedure before the 1990s in China and no separation information was collected in the In-Depth Fertility Surveys.

3. The second phase of the In-Depth Fertility Surveys was conducted in April, 1987 in Beijing municipality and in Liaoning, Shangdong, Guangdong, Guizhou, and Gansu provinces, covering a total population of 236 million (SSB 1988). The second phase of the In-Depth Fertility Surveys, however, addressed a question about the date of marriage dissolution only to the currently divorced and widowed women, not to currently remarried women. This unfortunate change in the second phase questionnaire makes it impossible to use the second phase data for this study. Therefore, the estimates reported in this paper are based on only the first phase of the Surveys.

4. According to a recent study based on vital statistics and census data up to the early 1990s, there were relatively more middle-aged Chinese couples who divorced in the early 1990s than those who divorced in early 1980s. The average age at divorce of females and males had increased by 6.4 and 4.1 percent in early 1990 as compared with the early 1980s, respectively (Zeng and Wu, 2000).

5. In theory, women's residence (rural versus urban), education, and occupation may change over their life course. We treat these three covariates approximately as time-fixed variable as in many other regression studies because there was no information about their changes and because such educational and occupational changes after marriage were very rare in China before 1985 when the survey was conducted. Migration between rural and urban areas before 1985 in China was very limited due to the governmental restrictive rules preventing people from moving from rural areas to urban areas. Using Swedish data, Hoem (1996) showed that the chance of making a sensible analysis on the effect of education on divorce risks might be ruined for women who marry as teenagers if the educational variable is measured only at the end of the study period. By contrast, these adverse effects seem to be unimportant once the age at marriage is 20 or above. In China before 1985, the chance for those women who married either before or after age 20 to improve education after marriage was very small, so we believe that the adverse effects due

to using education attainment measured at the time of the survey are unimportant in this study.

6. Some other variables such as husbands' education, husbands' occupation, age difference between husband and wife, and whether the couple lives with parents may be considered as factors associated with divorce behavior in the Chinese context. The In-Depth Fertility Surveys, however, collected only the information of the interviewed women's current husband if they were married, or of the last husband if they were unmarried. In our sample, 81.8 percent of the ever-divorced women were remarried at the time of the survey. Because of the high remarriage rate in China (Zeng and Wang 1993) and because information about a current husband does not provide the information that is needed on the ex-husband to explain the women's likelihood of divorce, we are unable to include the husband's characteristics in our model. Variables such as religion and premarital birth were also considered as important covariates to understand divorce behavior in other populations (see, for example, Menken et. al. 1981; Balakrishnan et. al. 1987). We did not include these variables in this study because religion is not a distinctive feature among most people in China and, therefore, no religion question was asked in the In-Depth Fertility Surveys. There are very few premarital births in China, especially before 1985, when the survey was conducted. Thus, this variable is not included as a factor influencing divorce. The income data collected in the In-Depth Fertility Surveys refer to the household income at the time of the survey, which is not linked to the divorces of the remarried women, who consist of 81.9 percent of the women ever divorced in the sample. Therefore, we are unable to include income variables in our hazards models.

7. The relative risk is calculated as an exponential of the coefficient (see, for example, Menken et al. 1981; Teachman 1982; Allison 1984).

8. The $^{\#}$, *, **, *** accompanied with the relative risk means the estimate is statistically significant at a level of $p<0.10$, $p<0.05$, $p<0.01$, and $p<0.001$, respectively. An estimate of the relative risk without superscript means not statistically significant.

9. We also estimated the other three multivariate models (not listed in Table 2) with "one son only" as reference group, with "two children with at least one son" as reference group, and with "three or more children with at least one son" as reference group. These additional models all gave the same results: relative divorce risk of women who had one daughter only or two daughters only was about 12-26 percent lower than those who had one son only or two kids with at least one son, but the differences were not statistically significant. However, divorce risk of

women who had three or more daughters without a son was 2.2 times as high as that of women who had three or more kids with at least one son. Although this estimate is not statistically significant either due to small number of cases of women with three or more daughters without a son, the fact that the relative risk is as high as 2.2 indicates that having no son is associated with higher divorce risk among women who have at least three children.

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