Published in final edited form as:

J Marriage Fam. 2013 February 1; 75(1): 110–126. doi:10.1111/j.1741-3737.2012.01024.x.

Divorce in Korea: Trends and Educational Differentials

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Abstract

The authors extend comparative research on educational differences in divorce by analyzing data from Korea. A primary motivation was to assess whether the theoretically unexpected negative educational gradient in divorce in Japan is also observed in Korea. Using vital statistics records, for marriages and divorces registered between 1991 and 2006, the authors calculated cumulative probabilities of divorce, by marriage cohort ($N = 5,734,577$) and educational attainment. The results indicated that the relationship between education and divorce was negative even in the earliest cohort and that this negative gradient has become more pronounced in more recent cohorts. Contrary to expectations, however, little evidence was found that the concentration of divorce at lower levels of education was exacerbated by the Asian economic crisis in the late 1990s. The authors discuss these findings in light of conventional emphases on the costs of divorce and highlight the importance of better understanding this distinctive east Asia pattern of divorce.

Keywords

divorce; economic crisis; education; Japan; Korea

Introduction

According to prominent sociological theories of family change, the relationship between educational attainment and divorce should reflect the costs of marital dissolution. Higher education, and attendant socioeconomic resources, should be positively associated with the likelihood of divorce in settings where marital dissolution is uncommon and its legal, social, and economic costs are high. An increase in the prevalence and normative acceptance of divorce should make it more affordable, thus contributing to a weakening of the positive educational gradient (Goode, 1963, 1993). Ultimately, when the legal, social, and economic costs of divorce no longer present major obstacles to the dissolution of unsatisfactory marriages, a negative educational gradient may emerge as financial strains concentrated at the lower end of the socioeconomic spectrum become a primary reason for marital dissolution (Goode, 1963).

Consistent with these theoretical predictions, recent comparative studies have documented an increase in the relative risk of divorce at the lower end of the educational spectrum across a range of countries (Härkönen & Dronkers, 2006; Matysiak, Styr, & Vignoli, 2011). Cross-national differences in the direction and magnitude of the educational gradient are also largely consistent with expectations. For example, in countries like Italy and Spain, where divorce is relatively uncommon and its social and economic costs are presumably high, the educational gradient in divorce remains positive (Härkönen & Dronkers, 2006). In contrast, a negative gradient is now observed in countries such as Sweden, the Netherlands,

and the United States, where the prevalence of divorce is highest and its costs are presumably low (De Graaf & Kalmijn, 2006; Hoem, 1997; Raley & Bumpass, 2003). McLanahan (2004) argued that the increasingly negative relationship between education and divorce is a part of a more general socioeconomic bifurcation in which family behaviors with potentially negative implications for well-being (e.g., nonmarital childbearing, single parenthood, and divorce) are increasingly concentrated at the lower end of the socioeconomic spectrum, whereas behaviors with potentially positive implications for well-being (e.g., childbearing within marriage, later age at marriage and childbearing, and stable marriage) are increasingly concentrated among individuals with greater socioeconomic resources. She also emphasized the potential implications of this pattern of divergence in family behaviors for socioeconomic inequality for the next generation.

Support for standard theoretical predictions is not universal, however. Recent research on Japan has documented a pronounced negative educational gradient in divorce despite its high social and economic costs (Ono, 2009; Raymo, Fukuda, & Iwasawa, 2012; Raymo, Iwasawa, & Bumpass, 2004). In an effort to make sense of this unexpected finding, Raymo et al. (2012) drew on both existing theory and distinctive features of the Japanese context to suggest and evaluate explanations emphasizing the roles of public policy, gender relations, and the cultural importance of “face.” Ultimately, however, the authors found little empirical support for any of their proposed explanations, leaving the theoretically unexpected negative relationship between education and divorce in Japan unexplained.

In this context, there is significant value in evaluating the generality of the Japanese experience. Does one see similar patterns in countries that resemble Japan with respect to the posited costs of divorce? Alternatively, is Japan an exceptional case, perhaps requiring idiosyncratic explanation? These questions are of considerable theoretical relevance given that evidence of a negative educational gradient in other settings where the costs of divorce remain high would suggest the need for contextual modification or extension of widely referenced theories of modernization and family change. In this article, we take an important step in this direction by examining recent trends in the relationship between educational attainment and divorce in South Korea (*Korea* hereafter). As we discuss in more detail later, important similarities between Korea and Japan with respect to the social and economic contexts of divorce make Korea a particularly valuable source of insight into possible explanations for the unexpected negative relationship between education and divorce in Japan. These include persistent gender inequalities in the labor market, the strong gender division of market work and domestic work, and powerful social norms and beliefs that prioritize “traditional” family behaviors. These factors provide good reason to believe that the costs of divorce remain substantial in Korea despite the growing prevalence of marital dissolution. Standard theories of modernization and family change thus suggest that the educational gradient in divorce should be positive. At the same time, however, the possibility of a negative relationship is suggested by the Japanese experience and the many social, economic, political, and cultural similarities between the two countries.

Macroeconomic factors may also be relevant for understanding the observed negative educational gradient in divorce in Japan, and dramatic macroeconomic changes in Korea over the past 20 years further enhance the value of the Korean experience for evaluating the generality of findings on the educational gradient in divorce in Japan. Linkages between economic stress and divorce are well documented at both the individual and aggregate levels (e.g., White & Rogers, 2000), and the observed negative educational gradient in Japan may reflect the prolonged economic downturn during the 1990s and 2000s that disproportionately affected men and women at the lower end of the educational spectrum (Kosugi, 2004). Unfortunately, efforts to evaluate this hypothesis in Japan have been hampered by data limitations, especially the scarcity of information on divorces occurring in the 1970s and

early 1980s, prior to the economic downturn (Raymo et al., 2012). Korea is an ideal setting in which to further evaluate the role of macroeconomic fluctuations in a setting where the costs of divorce remain high. Of particular importance is the Asian economic crisis of 1997 – 1999 and the associated increases in unemployment, massive layoffs, and subsequent growth in nonstandard employment, the impact of which has been particularly pronounced among less educated and unskilled workers (Hur, 2001).

Despite Korea's value as a source of potential insights into the relationship between education and divorce in settings where the social and economic costs of divorce remain high, existing research is quite limited. Evidence regarding trends in divorce in Korea is limited to description of crude rates and efforts to understand the correlates of divorce (including education) have been hampered by small sample sizes and weak study designs. Our objective was thus to provide a thorough empirical description of recent trends in divorce in Korea, with particular attention to the educational gradient in divorce and change therein. This documentation of trends in divorce is greatly facilitated by our use of data on all registered marriages and divorces over a 16-year period (1991 – 2006), which allowed us to calculate cumulative divorce probabilities, by marriage cohort, for the entire Korean population. Importantly for our purposes, information on the educational attainment of both spouses was included in both the marriage and divorce register data, thus enabling us to examine trends in divorce by educational attainment. The fact that the data cover the years prior to, during, and after the economic crisis of the late 1990s also allowed for an assessment of the extent to which this profound economic shock may have influenced both the overall level of divorce and the educational gradient in divorce. These registration data thus provide a unique opportunity to evaluate the generality of the theoretically unexpected negative relationship between education and divorce observed in Japan and to shed light on the role of macroeconomic volatility in shaping the educational gradient in divorce in a setting where the costs of divorce remain high.

The Korean Context

Divorce rates in Korea have increased dramatically in recent years. As shown in Figure 1, the crude divorce rate (CDR) more than tripled between 1990 (1.0 divorce per 1,000 population) and 2003 (3.5 divorces per 1,000 population) before declining to 2.6 in 2005. Although much lower than in the United States, the CDR in Korea is now similar to that in most European countries and Japan. Classic theories of modernization and family change suggest that this rapid increase in the prevalence of divorce should reduce its cost, and there is indeed some evidence that disapproval of divorce in Korea has declined over time (Eun, 2007). Nevertheless, there are good reasons to believe that the social and economic costs of divorce remain quite high in Korea. For example, the continued strength of normative sanctions against divorce and the difficulty that women face in achieving economic independence are likely to play a particularly important role in keeping the costs of divorce high, especially for women.

In contrast to Western industrialized societies, where increasing secularization and individuation have been linked to many aspects of family change, including high rates of divorce (Lesthaeghe, 1995), evidence of similar attitudinal change is more limited in group-oriented societies like Korea and Japan (e.g., Atoh, 2001). Although increases in educational attainment have presumably contributed to a liberalization of attitudes toward gender and family in Korea, social norms and sanctions continue to provide strong incentives to avoid “deviant” family behaviors such as divorce and nonmarital childbearing (I. H. Park & Cho, 1995). For example, Eun's (2007) study of family attitudes in 19 countries demonstrated that Korea (along with the Philippines) had the most conservative attitudes regarding marriage, cohabitation, and divorce. Similarly, a recent qualitative study of unmarried college students' views on childless couples concluded that Confucian family values remain strong

in Korea (Yang & Rosenblatt, 2008). To the extent that the stigma associated with nonnormative family behaviors is more pronounced for women in patriarchal societies like Korea, the social costs of divorce that they face may be particularly high.

Despite substantial improvement in women's educational attainment (Brinton & Lee, 2001; H. Park 2007b), gender asymmetry in work and family roles remains pronounced in Korea. Almost two thirds of Korean women leave the labor market upon marriage (Lee & Hirata, 2001), and only half of those age 30 through 34 (the majority of whom are married) were in the labor force in 2005. Relatively low rates of labor force participation among married women presumably reflect cultural norms regarding wives' responsibility for childrearing and housework; highly segregated labor markets in which women are more likely to be concentrated in low-paying, nonstandard, and insecure work; and the difficulty that women face in combining inflexible employment schedules with family responsibilities (Brinton, 2001; Choe, Bumpass, & Tsuya, 2004; Sandefur & Park, 2007). The fact that the labor force participation rate of 25- to 29-year-old women (the majority of whom are unmarried) has increased steadily over time while that of 30- to 34-year-old women has remained stable highlights the importance of limited economic opportunities for married women in Korea. Economic dependence on husbands, limited public support for single mothers (Byun, Kim, Yoon, & Han, 2006), limited legal access to alimony or child support (Chang & Min, 2002), and uncertainty regarding child custody (Kim, Won, Lee, & Chang, 2005) all contribute to the high costs of divorce, in particular for women.

These features of the Korean social, economic, and policy environments imply that correspondence between the growing prevalence of divorce and decline in its social and economic costs may be less pronounced than in Western countries. In this context, prominent theories of modernization and family change referenced in recent cross-national research suggest that divorce in Korea should be concentrated among highly educated men and women who are best able to bear its high costs. To the extent that changes in attitudes and improvements in women's economic opportunities have contributed to some reduction in the costs of divorce, these same theories suggest a weakening of the positive educational gradient in more recent marriage cohorts.

The Anomalous Case of Japan

A different possibility is suggested by recent research on Japan demonstrating that the educational gradient in divorce is negative despite the high social and economic costs of marital dissolution (Kat , 2005; Ono, 2009; Raymo et al., 2004, 2012). These findings are not consistent with predictions derived from standard theories of modernization and family change and are difficult to reconcile with evidence that the educational gradient still remains positive in southern European countries, where the costs of divorce are also thought to be relatively high (Härkönen & Dronkers, 2006). In countries like Italy (0.8 divorce per 1,000 population in 2004; see Figure 1) and Spain (1.2 divorces per 1,000 population in 2004; see Figure 1), the prevalence of divorce is still relatively low, and public support for families is limited. For example, in 2001, public expenditures on families (including both cash and in-kind benefits) as a percentage of gross domestic product (GDP) in Spain (0.9%) and Italy (1.2%) were among the lowest in the Organisation for Economic Development and Co-operation (OECD, 2012), suggesting that the social and economic costs of divorce remain relatively high.

A recent study conducted by Raymo et al. (2012) considered three possible explanations for this seemingly anomalous relationship between education and divorce in Japan. First, the authors posited that economic strain may be particularly pronounced for couples at the lower end of the socioeconomic spectrum in settings like Japan, where public income support for families is very limited. This explanation derives from Härkönen and Dronkers's (2006)

finding that, contrary to theoretical expectations, welfare state generosity (measured as the proportion of GDP devoted to social expenditures) was associated with a positive educational gradient in divorce. Härkönen and Dronkers posited that this relationship may reflect the role of limited welfare state support in increasing less educated couples' vulnerability to marital stress associated with economic insecurity. The inverse relationship between educational attainment and marital instability implied in this scenario may be particularly relevant in Japan (and other east Asian countries, including Korea), where public expenditures on families are low. In Korea, public expenditure on families as a percentage of GDP was only 0.1% in 2001, the lowest level among OECD countries and more than 30 times lower than the corresponding percentages in Denmark, Norway, and Sweden (OECD, 2004).

Second, Raymo et al. (2012) suggested that the difficulty of balancing work and family responsibilities may be an especially salient reason for marital dissolution among women with lower levels of education in relatively gender-inegalitarian settings. In countries like Japan (and Korea), where the relationship between women's education and their economic independence is weak (or perhaps negative) and where husbands' participation in domestic work is very limited, women at the lower end of the educational spectrum may experience more marital strain associated with the "second shift" (i.e., substantial domestic responsibilities in addition to employment) and may also have less to lose from divorce (in relative economic terms) than their more highly educated counterparts.

Third, Raymo et al. (2012) speculated that the costs of divorce may be relatively high among the more highly educated in "shame cultures" like Japan (and Korea) where family reputation and "face" are particularly salient. This potentially important hypothesis derives from Goode's (1966) earlier theorization about the positive relationships between family socioeconomic status, the social and reputational costs of divorce, and the degree of social control exerted by kin and social networks in patriarchal societies. It is possible that economic vulnerability, the inequalitarian gender division of labor, and social stigma are particularly relevant for understanding educational differences in the cost of marriage for women, but the high degree of educational homogamy in Korea (H. Park & Smits, 2005) suggests that the implications of these relationships are likely to be similar for men and women.

The fact that Raymo et al. (2012) found little empirical support for any of these hypotheses suggests that researchers may need to look elsewhere for an explanation of the theoretically unexpected negative educational gradient in divorce in Japan. It is also important, however, to consider the possibility that data limitations, especially the underrepresentation of divorced individuals in sample surveys (Mitchell, 2010) and the difficulty of measuring concepts like work – family stress or "face," may have hindered their ability to adequately evaluate the three hypotheses. There is thus great value in examining trends in the relationship between educational attainment and divorce in Korea, a society that resembles Japan not only with respect to the high social and economic costs of divorce but also with respect to the factors emphasized as possible explanations for the negative educational gradient. On the one hand, finding a positive educational gradient in divorce in Korea, as predicted by theories of modernization and family change, would suggest that Japan may indeed be an anomalous case and that explanations for the theoretically unexpected patterns observed in that country may not indicate a need for broader contextual modification of standard theoretical frameworks. On the other hand, finding a negative educational gradient in Korea would highlight the value of further exploring common features of these two east Asian societies in order to understand the unexpected concentration of divorce among individuals with lower levels of education.

The Asian Economic Crisis

The Asian economic crisis of 1997 – 1999 also makes Korea an important setting in which to examine the role of macroeconomic shocks in shaping educational differences in divorce. Theories of modernization and family change primarily emphasize processes of behavioral diffusion and associated changes in norms to suggest a weakening of the positive educational gradient in divorce. These theories typically do not consider the impact of significant, temporary macroeconomic shocks and their implications for economic well-being at the individual and couple level, however, despite their emphasis on linkages between educational attainment, economic strain, and divorce. As noted above, this is a potentially important limitation in the Japanese context, where the long recession has disproportionately affected the economic well-being of individuals at the lower end of the educational spectrum (Kosugi, 2004). Raymo et al. (2012) found no evidence of an increasingly negative educational gradient in divorce, but this may reflect the fact that most of the marriages in their study occurred after, or just prior to, the onset of the long economic downturn.

As shown in Figure 1, the Korean CDR increased rapidly following the onset of the economic crisis in 1997. Although the Korean economy has subsequently recovered, the economic crisis had far-reaching, long-lasting consequences, including substantial growth in income inequality and poverty (Cheong, 2001; Hyun & Lim, 2005). Systematic assessments of linkages between economic pressure and divorce in Korea are rare, but significant relationships between financial strain and marital conflict have been documented, especially in the period following the economic crisis (Kwon, Rueter, Lee, Koh, & Ok, 2003). Finding that the Asian economic crisis contributed to an increase in the relative risk of divorce among Korean men and women with lower levels of education would constitute compelling evidence of one scenario in which a negative educational gradient in divorce may emerge even in settings where the economic and social costs of divorce remain high. It would also suggest an important contextual modification to current theorization about family change in general, and trends in divorce in particular, that may be particularly salient in the context of growing macroeconomic volatility around the world.

Limitations of Past Research and Contributions of This Study

Previous analyses of educational differences in divorce in Korea are few in number and shed little light on the nature of the educational gradient, how it has changed over time, and how it may have been affected by the Asian economic crisis. Studies that consider educational differences in divorce have provided little more than tabulations of current marital status by educational attainment (Oh, 1995) or the number of divorces per 1,000 married persons, by gender and education (K. A. Park, 2000). With no direct information on the risk of divorce, these studies are of limited value for understanding the educational gradient in divorce in Korea. In one of the only studies to use nationally representative individual-level data, Lee (2006) found that university graduates had a significantly lower risk of divorce relative to primary school graduates, but differences among other groups were small. These results suggest that Korea may also be characterized by the theoretically unexpected negative educational gradient observed in Japan. The strength of Lee's (2006) findings is limited, however, by the fact that only 176 women in her analytic sample of 4,827 had experienced divorce or separation.

By using data on all marriages and divorces registered over a 16-year period, we are able to address these limitations. In doing so, we provide a comprehensive summary of divorce trends in Korea and evaluate the generality of the theoretically unexpected negative educational gradient in divorce observed in Japan. We also examine the extent to which one major macroeconomic shock influenced the relationship between education and divorce in a

society where the social and economic costs of divorce remain high. The results shed light on the role of family change in shaping processes of stratification in Korea and, more broadly, on the ways in which widely referenced theories of family change may need to be modified to account for local context. Our descriptive analyses cannot identify the mechanisms underlying educational differences in divorce (and change therein), but they do provide an essential empirical basis for subsequent research on explanations for observed patterns and their role in broader theorization about family change.

Method

Our analyses are based on vital statistics data provided by the Korean National Statistics Office. For all marriages and divorces registered between 1991 and 2006, these data provide information on the month and year that the event occurred, the month and year that the event was registered, and husband's and wife's educational attainment at the time of registration. We proceed in three steps. We first describe cross-cohort change in the cumulative probability of marital dissolution by marital duration. Because previous analyses of trends in divorce are limited to simple summaries of change in crude or refined divorce rates, our construction of cumulative divorce probabilities provides a more intuitively meaningful summary of the changes that have taken place. We then examine educational differences in the probability of divorce within the first 4 and 8 years of marriage. Finally, we examine the extent to which the overall level of divorce and educational differences in divorce changed across the time periods prior to, during, and after the Asian economic crisis.

Estimating Yearly Counts of Marriage

Because we are interested in documenting trends in marital dissolution across marriage cohorts, it is necessary to first establish the number of marriages that occurred in a given calendar year. We begin by recognizing that our data include three types of marriages: (a) those that were registered in the year in which they occurred, (b) those that were registered after the year in which they occurred but before 2007, and (c) those that were registered after the year in which they occurred but were (will be) registered in 2007 or later. Because we have data only through 2006, we do not observe marriages that occurred in 1991–2006 but were registered in 2007 or later. For instance, marriages that actually occurred in 1992 but were registered in 2007 (15 years late) are not observed in our data. We thus need to impute marriages that are registered after 2006 and allocate them back to their actual year of occurrence. In doing so, we assume that all marriages occurring in a given year are registered within 15 years of marriage, which is equivalent to assuming that our data contain information on all marriages that took place in 1991. This means that we need to estimate the number of marriages that occurred in 1992 but were registered in 2007 for the 1992 marriage cohort; the number of marriages that occurred in 1993 but were registered in 2007 or 2008; the number of marriages that occurred in 1994 but were registered in 2007, 2008, or 2009, and so on. For the most recent marriage cohort of 2006, we need to estimate marriages that were (will be) registered for the next 15 years. Reallocation of all late-registered marriages (both observed and unobserved) is conducted separately for each education group. In Appendix A, we provide a detailed discussion of the procedures used to allocate late-registered events back to the year of occurrence and the imputation and allocation of events that occurred between 1991 and 2006 but were not observed because they were registered after 2006.

Estimating Yearly Counts of Divorce by Marital Duration

Having estimated the number of marriages occurring in each year between 1991 and 2006, we next need to calculate the number of divorces that occurred in each year for a given marriage cohort and education level. The first step is to reallocate late-registered divorces

back to the year in which they actually occurred using the same procedure applied to the marriage data. One additional consideration is the fact that we need to allocate divorces not only to the calendar year in which they occurred but also to the appropriate combination of marriage cohort and marital duration. This process is complicated by the fact that divorces experienced by a given marriage cohort in a given calendar year occur at different marital durations. Some occur at marriage duration (year of divorce – year of marriage) and others occur at marriage duration (year of divorce – year of marriage – 1). For example, divorces involving members of the 1991 marriage cohort that occurred in 1992 include some at less than 1 year of duration and some at more than 1 year of duration, depending on the month of marriage and month of divorce. Because we are interested in calculating duration-specific risks of divorce for each marriage cohort and educational category, we must first reallocate divorces back to the year in which they occurred, then allocate divorces in each calendar year to the appropriate marriage cohorts, and finally allocate divorces within each year – cohort combination to the appropriate marital duration. In Appendix B, we provide a detailed description of this reallocation procedure and explain why it is necessary to limit our focus to divorces that occurred between 1991 and 2005 (rather than 2006). In Appendix B we also summarize the results of tests we conducted to evaluate the sensitivity of results to the inclusion of imputed marriages and divorces.

Educational Differentials in the Risk of Divorce

Our analyses of educational differences in the risk of divorce (and changes therein) are facilitated by the fact that the marriage and divorce records contain information on completed education for both husband and wife at the time the event was registered. The fact that educational attainment was measured when the event was registered rather than when it occurred is a limitation, but not one that is likely to influence results. In addition to the fact that most marriages and divorces are registered in the year in which they occur, postmarital educational upgrading is relatively uncommon in Korea (Choi, Kim, Lee, Kim, & Chang, 2007). We calculate duration-specific risks of divorce for three categories of highest completed level of education: (a) less than high school, (b) high school, and (c) tertiary education (junior college or university). Because the data do not allow us to distinguish high school graduates from those who did not complete high school prior to 1993, we exclude records for the 1991 and 1992 marriage cohorts from our analyses of educational differentials in divorce.

Impact of the Economic Crisis

One way to examine changing educational differences in the risk of divorce before, during, and after the economic crisis would be to restructure our analyses of educational differences in divorce so that differences are calculated across calendar years rather than marriage cohorts. We chose instead to estimate survival models for the time to divorce that provide intuitive, single-coefficient summaries of the extent to which the risk of divorce, and educational differences therein, changed across time periods. By merging information on the month and year of marriage and divorce in the vital statistics data, we first constructed records that identify duration of exposure to the risk of divorce and the timing of divorce or censoring for hypothetical individuals. We then split this data set into three periods, allowing for estimation of change in educational differences (a) before (1993 – 1996), (b) during (1997 – 1999), and (c) after (2000 – 2004) the economic crisis. Because the imputation procedures described above result in events classified only by year of occurrence rather than by both month and year, we limit these analyses to marriages and divorces that took place between January 1993 and December 2004 and were registered within 2 years of occurrence. All events included in these models are thus observed in the vital registration data for 1993 – 2006. We present results of log-normal models that effectively represent the rapid rise and subsequent decline in the hazard of divorce across marital duration. Results

were very similar when we estimated alternative parametric specifications of duration dependence, including log-logistic and generalized Gamma models (Cleves, Gould, & Gutierrez, 2004) and when we estimated discrete-time event-history models using logistic regression.

Results

Overall Trends

Cumulative probabilities of divorce across marriage duration for single-year marriage cohorts from 1991 to 2005 are presented in Figure 2. To simplify the presentation and interpretation of trends, we present figures only for marriage cohorts in odd-numbered years. We also present cumulative divorce probabilities for a synthetic marriage cohort based on the duration-specific divorce probabilities observed in 2003 (broken line). We use 2003 data for two reasons. First, as shown in Figure 1, the CDR in Korea reached its peak in 2003. Second, this limits the potential biases associated with the use of estimated counts of late-registered marriages and divorces (see Appendixes A and B) given that the vast majority of marriages and divorces are registered within 2 years of their occurrence.

Figure 2 clearly demonstrates the steady increase in divorce in Korea. The proportion of marriages dissolving within 5 years of marriage doubled from 5% for the 1991 marriage cohort to 12% for the 2001 marriage cohort. The time required for 12% of the 1991 marriage cohort to divorce was twice as long (10 years) as for the 2001 cohort. The synthetic cohort estimates for 2003 show that about 25% of new marriages are expected to end in divorce within 13 years of marriage, a figure that is 1.5 times higher than that observed for the 1991 marriage cohort (16%). The synthetic cohort estimates also indicate that divorce in Korea is relatively high in comparative perspective. A comparison of our figures with Andersson and Philipov's (2001) estimates, which are based on earlier European data, reveals that the probability of divorce within 10 years of marriage in Korea (21%) is similar to that in Sweden (21%) and somewhat higher than the levels in France (15%) and Finland (18%). It is also very similar to the figure of 22% for Japan calculated by Raymo et al. (2004).

Educational Differentials in Divorce

We now turn to our primary outcome of interest: educational differences in the risk of divorce and the extent to which they have changed over time. As mentioned above, we have excluded the 1991 and 1992 marriage cohorts due to a change in the way that educational attainment was categorized in the vital statistics. To maximize the range of marriage cohorts considered, and to examine marriages of differing duration, we present two sets of results. We first describe the education-specific proportions of divorces within 4 years of marriage for the 1993 – 2002 marriage cohorts. We then describe the corresponding proportion of marriages ending within 8 years for the 1991 – 1998 marriage cohorts.

Figures 3 and 4 indicate that educational differences in the risk of divorce among women have increased over time. Figure 3 shows that, for the 1993 marriage cohort, the percentage divorced within 4 years of marriage was 2.6% for women with tertiary education (college/university graduates) and 11.1% for women who did not graduate from high school. The corresponding figures for the 2002 marriage cohort were 4.6% and 23.5%. The difference in the cumulative probability of divorce for women with the highest and the lowest levels of education thus increased from 8.5 percentage points for the 1993 marriage cohort to 18.9 percentage points for the 2002 marriage cohort. Alternatively, these figures show that the probability of divorce within 4 years of marriage for the lowest educational group was 4.3 times higher than for the highest educational group for the 1993 marriage cohort but 5.1 times higher for the 2002 marriage cohort. Corresponding figures for the difference between

tertiary education and high school are similar in direction but smaller in magnitude. The patterns of change are similar for husbands, with the difference in the percentage of men in the highest and lowest educational categories who were divorced within 4 years of marriage increasing from 8.4 percentage points for the 1993 marriage cohort to 20.0 percentage points for the 2002 marriage cohort. Stated differently, the probability of divorce within 4 years of marriage for men in the lowest educational group relative to those in the highest education group was 4.5 times higher in the 1993 marriage cohort and 5.3 times higher in the 2002 cohort.

Figure 4 shows a similar pattern for the probability of divorce among women within 8 years of marriage. In the 1993 marriage cohort, the percentage divorced within 8 years of marriage was 21.1% for women with less than high school education and 5.9% for college graduates. These figures increased to 32.4% and 8.2%, respectively, in the 1998 marriage cohort. The difference between the two groups thus increased from 15.2 percentage points to 24.2 percentage points, and the ratio of values for the lowest and highest educational groups increased from 3.6 to 4.0. Again, difference in the relative risk of divorce for women in the two highest educational categories increased in the same direction, but to a lesser degree. As with results for divorce within 4 years of marriage, the pattern of change for men's probability of divorce within 8 years is very similar to the pattern for women described in Figure 4 (results for husbands are available on request).

Impact of the Economic Crisis

The results of log-normal survival time models are presented in Table 1. In these models, we estimate temporal differences in the risk of divorce by distinguishing the precrisis period (1993 – 1996) from the crisis period (1997 – 1999) and the postcrisis period (2000 – 2004). These categorical measures are not only substantively meaningful but also allow us to avoid the problem of collinearity between marriage cohort, marriage duration, and calendar year (Yang & Land, 2006). To assess the extent to which the economic crisis was associated with changes in educational differences in divorce, we allow the coefficients for educational attainment to vary across the three time periods. Because coefficients from log-normal models are in accelerated survival (failure)-time form, positive coefficients indicate longer survival time and thus a lower risk of divorce (Cleves et al., 2004).

The results of three models are presented in Table 1. Because these models are estimated on the basis of data from the full population of marriages and divorces that occurred during the period of observation, we report estimated coefficients but not their standard errors. Given the similarity of models for husbands and wives, we again present only results for women. Results of the first model, which does not consider the impact of the economic crisis, show that, as in Figures 2 through 4, the survival time to divorce is positively associated with educational attainment and decreases linearly across marriage cohorts. Equivalently, the risk of divorce is inversely related to educational attainment and increases linearly across marriage cohorts. The interaction between high school graduation and marriage cohort is positive, and the interaction between tertiary education and cohort is also positive and twice as large as that for high school. Consistent with the evidence presented in Figures 3 and 4, this model thus indicates an increasingly negative educational gradient in the risk of divorce.

Model 2 shows that the survival time to divorce was higher in both pre- and postcrisis period than in the crisis period (omitted category). In other words, the risk of divorce was higher during the economic crisis than it was before or after the crisis. Our primary interest is in the interaction between educational attainment and period, estimated in Model 3. These coefficients show that educational differentials in the survival time did indeed change before, during, and after economic crisis, but not in the way that we hypothesized. In contrast to expectations that increased economic strain should result in a greater

concentration of divorce among less educated individuals, the economic crisis is associated with some reduction in the difference between high school graduates and those who did not complete high school. The estimated difference in coefficients changes from .341 in the precrisis period to .310 during the crisis and shrinks further, to .197, in the postcrisis period. The difference between women with tertiary education and those with less than a high school degree changes little during the crisis (the difference increases slightly, from .457 to .463) but declines in the postcrisis period (to .380). Differences between individuals with tertiary education and high school graduates change less dramatically and in the opposite direction (the differences in coefficients are .117, .153, and .183 in the three periods, respectively). Overall, the trends in educational differentials across pre-, mid-, and postcrisis periods as seen in Table 1 do not provide strong support for the hypothesized strengthening of the negative educational gradient.

Discussion

In this study, we have provided the most complete description to date of recent trends and educational differences in divorce in Korea. By using vital statistics records for all marriages and divorces registered between 1991 and 2006, we have substantially improved on the information available from previous studies that either did not measure the duration-specific risk of divorce or based conclusions on a very small number of divorces (Lee, 2006; Oh, 1995; K. A. Park, 2000). Calculation of cumulative probabilities of divorce across successive marriage cohorts clearly shows that the level of divorce has increased rapidly in Korea over the last 15 years and is now comparable to that in many Western countries and in Japan. Although classic theories of family change suggest that such a pronounced increase in the prevalence of divorce should reduce its social and economic costs, we have discussed several reasons to believe that the costs of divorce remain quite high in the Korean context. Chief among these are the limited opportunities for women's economic independence and strong normative sanctions against "deviant" family behaviors, including divorce.

These similarities to the Japanese experience motivated our focus on change in the educational gradient of divorce. Despite strong theoretical reasons to expect a positive educational gradient in divorce in Korea, we found that, as in Japan, divorce is increasingly concentrated at the lower end of the educational spectrum. Divorce has increased at all levels of education, but this change is more pronounced among men and women with a high school education or less. Our finding of a negative educational gradient in divorce in Korea is generally consistent with Lee's (2006) results, which were based on much more limited data, but the difference we found between high school graduates and individuals who did not complete high school was not apparent in her study. Our study is also the first to examine change over time in the relationship between educational attainment and divorce.

Vital statistics are ideal for our purposes in this article but are limited in some important ways. Because they are registration data, the vital statistics records do not include information about marriagelike unions (e.g., common-law marriage) or long-term marital separations that are never officially registered. They also contain little information on other socioeconomic characteristics of interest, such as income or social background, that might allow for the evaluation of specific hypotheses regarding the mechanisms underlying the increasingly negative educational gradient in divorce. Such questions may be best answered via cross-national, comparative research based on rich survey data from a large number of countries that vary with respect to the social and economic costs of divorce, public policies, the gendered division of labor, and other theoretically relevant factors that may moderate the relationship between the costs of divorce and the educational gradient in divorce. Härkönen and Dronkers's (2006) article is an excellent example of such research, but broader

geographic coverage is necessary to understand the distinctive pattern of divorce in east Asia.

The primary contribution of this study is thus its comprehensive description of trends in divorce in Korea. Of particular importance is evidence that the distinctive and theoretically unexpected pattern of divorce in Japan is also observed in Korea, a country that resembles Japan in many important ways. By adding to the accumulating evidence of a distinctive pattern of divorce in east Asian countries, our findings provide a powerful impetus for further efforts to identify the contextual factors that contribute to a negative relationship between educational attainment and divorce even in societies where the costs of divorce remain substantial.

In addition to demonstrating that educational differentials in divorce have changed across marriage cohorts, we have also compared educational differences in divorce before, during, and after the Asian economic crisis of 1997 – 1999. Contrary to expectations, we did not find strong evidence that the economic crisis contributed to an increase in the negative educational gradient in divorce; instead, we found that the difference between high school graduates and individuals who did not complete high school declined during the crisis and then declined further in the postcrisis period. The difference between those in the highest and lowest education groups changed little across the pre- and midcrisis periods before shrinking in the postcrisis period. The lack of change during the crisis period is not consistent with expectations that increased economic strain at the lower end of the educational spectrum during (and after) the crisis should result in a more pronounced negative educational gradient in divorce. We are not able to explain these unexpected findings, but we speculate that the rapid increase in divorce during the economic crisis may have reduced normative and cultural barriers to divorce that may be more prevalent among individuals with a high school education or more in Korea, thus contributing to some convergence with those in the lowest educational category. Systematic evaluation of the ways in which an economic crisis shapes educational differences in divorce in settings like Korea, where the costs of divorce remain high, is a potentially fruitful avenue for subsequent research.

Our use of vital statistics data precludes evaluation of possible explanations for the observed negative educational gradient in divorce in Korea and its growth across marriage cohorts, but our findings do provide a valuable basis for theorization and subsequent empirical research on the role of social and economic context. For example, the changing relationship between education and divorce may be related to rapid increases in educational attainment in Korea. Focusing on the relatively narrow time period covered by our data, the proportion of women who completed tertiary education doubled from 27% for the 1993 marriage cohort to 53% for the 2004 cohort. The corresponding decrease in the proportion of women with a high school degree was from 63% to 39%. These trends in educational attainment, combined with evidence that the tendency to marry later (or never marry) is more pronounced among highly educated Korean women (Woo, 2009), suggest that more recent marriage cohorts may differ from earlier cohorts in terms of selection. If highly educated women who do marry are increasingly selected on the basis of factors such as relationship quality or commitment to marriage, this could contribute to an increasingly negative relationship between women's (and men's) education and divorce. Other related possibilities include educational differences in the speed and magnitude of changes in attitudes toward marriage (and divorce) or in gender relationships within marriage. For example, our results could be consistent with scenarios in which acceptance of divorce, or a more egalitarian division of labor within marriage, emerges more rapidly among less educated individuals in settings like Korea, where the social costs of divorce and other nonnormative family arrangements

remain high. These speculative possibilities deserve further attention in efforts to understand the ways in which context shapes relationships between socioeconomic status and divorce.

In addition to their theoretical implications, our results also have potentially important implications for understanding linkages between family change and inequality in Korea. In conservative welfare regimes like Korea, rising levels of divorce, in particular among parents with lower education, may have serious implications for educational and economic inequality. Studies conducted in the United States and other Western societies have consistently found educational disadvantages associated with single parenthood, particularly due to divorce (Borgers, Dronkers, & Van Praag, 1996; Kiernan, 1992; McLanahan & Sandefur, 1994). Because the rapid increase in divorce in Korea is very recent, research on relationships between single parenthood and children's education is limited; however, there is some evidence that, as in the United States, single parenthood has a strong negative association with children's educational outcomes in Korea (H. Park 2007a, 2008). This evidence, combined with our results showing that divorce is increasingly concentrated at the lower end of the educational spectrum, points to the potentially important implications of changing family behavior in Korea for social stratification and the reproduction of disadvantage.

At the same time, it is important to recognize that strong family ties or extended family networks in Korea have long played an important role in assisting economically disadvantaged family members (Goh, Kang, & Sawada, 2005; I. H. Park & Cho, 1995). It is thus possible that intergenerational support may limit the implications of divorce and dampen the impact of growing educational differences in divorce on inequality. This possibility has been suggested in earlier studies of educational outcomes in Korea (H. Park, 2007a) and in recent studies of the well-being of single-parent families in Japan (Raymo, Park, & Iwasawa, 2009; Raymo & Zhou, 2009). At the same time, however, the rise of single-person households, delayed marriages, and very low fertility suggest that strong-family norms may be substantially weaker than in the past (Quah, 2008). Subsequent research should examine the extent to which traditional "strong" family ties continue to be an important resource for single-parent families that limit the implications of divorce for women and children in Korea.

Acknowledgments

The authors are listed in alphabetical order. Hyunjoon Park acknowledges financial support of an Abe Fellowship granted by the Japan Foundation Center for Global Partnership, Social Science Research Council, and the American Council of Learned Societies. James M. Raymo was supported by a grant from the National Institute of Child Health and Human Development (R03-HD049567). Hyunjoon Park and James Raymo also acknowledge support from the Population Studies Center at the University of Pennsylvania and the Center for Demography and Ecology at the University of Wisconsin — Madison, which are supported by Center Grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R24 HD 044964 and R24 HD047873, respectively). Mathew Creighton and Jaesung Choi provided valuable help with data analysis.

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Appendix A. Procedure for Reallocating Late-Registered Marriages

The majority of marriages are registered in the year in which they actually occur, and nothing needs to be done in this case. For example, the earliest marriage cohort in our data is composed largely of marriages that occurred in 1991 and were also registered in 1991; however, the vital statistics data also contain a nontrivial number of marriages that occurred in 1991 but were registered over the next 15 years (1992 – 2006). In fact, 28% of all 1991 marriages were registered between 1992 and 2006, with the vast majority (97%) being registered within the first 2 years of marriage (1991 – 1993). Because we have data through 2006, reallocating marriages that occurred in 1991 but were registered between 1992 and 2006 back to the 1991 marriage cohort is straightforward. This reallocation procedure assumes that all late-registered marriages occurring in a given year are registered within a period of 15 years.

This assumption implies, however, that some late-registered marriages for post-1991 marriage cohorts will not be included in our data. For example, marriages that occurred in 1992 but were registered 15 years later (in 2007) are not observed and thus need to be estimated. In general, we need to estimate annual counts of all late-registered marriages for which the year of registration is greater than 2006 and the value of (year of registration – year of marriage) is less than or equal to 15. The proportion of marriages that needs to be estimated thus becomes progressively larger for more recent marriage cohorts. Our strategy for estimating counts of these late-registered marriages is based on the assumption that the pattern of late registration has remained stable over the period we observe.

Beginning with the 1992 marriage cohort, we assume that the ratio of marriages registered in 2007 (unobserved) to marriages registered on time in 1992 is the same as the ratio of 1991 marriages registered in 2006 (observed) to marriages registered on time in 1991. Multiplying the number of 1992 marriages that were registered in 1992 by this ratio provides an estimated number of 1992 marriages registered in 2007 (i.e., registered with a 15-year delay). We follow this same procedure to estimate late-registered marriages for subsequent marriage cohorts, each of which requires one additional year of estimation. In general, this

estimation procedure can be expressed as: $m_{t,n}^* = m_{t,0} * \left(\frac{m_{2006-n,n}}{m_{2006-n,0}} \right)$, where $m_{t,n}^*$ is the estimated number of marriages registered with an n -year delay for marriage cohort t when $t + n > 2006$, $m_{t,0}$ is the number of marriages registered on time (i.e., in year t) for marriage

cohort t , and $\left(\frac{m_{2006-n,n}}{m_{2006-n,0}} \right)$ is the ratio of marriages registered with an n -year delay to marriages registered on time for marriage cohort $2006 - n$. This means that the value for the 1991 cohort will be used to estimate all marriages registered with a 15-year delay (the

assumed maximum delay), the value for the 1992 cohort will be used to estimate all marriages registered with a 14-year delay, and so on. In the end, we have a total of (real and imputed) 5,734,577 marriages that occurred between 1991 and 2006 and were (or will be) registered in the next 15 years. This is the same strategy used by Raymo et al. (2004) in their study of divorce in Japan, and we cannot think of any reason to view it as inappropriate in the Korean context.

It is important to note that our strategy for estimating counts of late-registered marriages is based on the assumption that the pattern of late registration has remained stable over the period we observed. We found that the proportion of late registration (as indicated by the proportion of marriages registered in $t + 1$ and $t + 2$ over the total marriages registered in t , $t + 1$, and $t + 2$) given a calendar year shows no clear trend across cohorts.

To examine trends in educational differentials in divorce, we repeat the procedure of reallocation of late-registration marriages into appropriate marriage cohorts for women of each educational level. Here our assumption is that the pattern of late registration does not significantly differ by educational attainment and the pattern has not changed over time. Our inspection of marriage data indicates that the proportion of late registration (number of marriages registered in $t + 1$ and $t + 2$ /number of marriage registered in t , $t + 1$, and $t + 2$) is only modestly higher among women with less than high school than among those with higher education. The education-specific proportions of late-registered events have also remained stable over time, with the exception of some recent (2003 – 2004) decline observed among the least-educated group.

Appendix B. Procedure for Reallocating Late-Registered Divorces

Because we are interested in calculating duration-specific risks of divorce for each marriage cohort, we must first reallocate divorces back to the year in which they occurred, then allocate divorces in each calendar year to the appropriate marriage cohorts, and finally allocate divorces within each year – cohort combination to the appropriate marital duration. These steps are straightforward for divorces that were registered by 2006 (and thus observed), because divorce records in the vital statistics provide the information needed to calculate marital duration at the time of divorce (i.e., year and month of both marriage and divorce). It is more complicated, however, for divorces registered in 2007 and beyond. To estimate unobserved counts of divorces by marriage cohort, year of registration, and marital duration, we use a modified version of the procedure for estimating unobserved marriages. Beginning with the 1992 marriage cohort, we assume that the ratios of divorces registered in 2007 at durations 0 and 1 (unobserved) to divorces registered on time in 1992 are the same as the corresponding ratios for the 1991 marriage cohort in 2006 (observed). We repeat this calculation for all combinations of marriage cohort, year of registration (beyond 2006), and marital duration for which year of registration minus year of divorce is less than or equal to 15. The assumption underlying this estimation procedure is that the duration-specific ratios of late-registered divorces to divorces registered on time has remained stable.

Another consequence of the fact that divorces in a given calendar year are experienced by two different marriage cohorts is that our data underrepresent divorces that occurred in the final year for which have data (2006). Consider, for example, divorces experienced by the 1991 marriage cohort in the year 2006. Depending on the month of marriage and the month of divorce, some of these divorces will occur at a marital duration of 15 years, whereas others will occur at a duration of 16 years. Similarly, (unobserved) divorces in 2007 for this cohort will occur at marital durations of 16 and 17 years. In the absence of data on divorces occurring in 2007, the number of divorces at marital duration 16 for the marriage 1991 cohort will be understated. This will be true for all marriage cohorts (t) at duration 2006 – t .

We circumvent this problem by calculating the risk of divorce at marital durations 1 through 15 years (rather than 16 years).

To evaluate the robustness of our results to the inclusion of imputed marriages and divorces, we compared the results presented above with those based on two different assumptions about late registration. First, we assumed no late registration by examining only marriages and divorces that were registered on time — excluding all events that were registered late. Second, we assumed that all registration of events was completed within 2 years of occurrence by including only those marriages and divorces that were registered on time in year t and those registered in years $t + 1$ and $t + 2$. This assumption is based on evidence that the large majority of marriages and divorces are registered within 2 years of occurrence. As pointed out earlier, 97% of marriages that occurred in 1991 were registered in 1991, 1992, or 1993. The results (not shown) based on these two different assumptions of late registration were very similar to the results presented above.

Figure 1.

Korean Crude Divorce Rate, 1970 – 2006

Note: Sources are Statistics Korea (1970 – 2006), Lanzieri (2006), U.S. Census Bureau (2008), National Institute of Population and Social Security Research (2006).

Figure 2.
Cumulative Probability of Divorce, by Marriage Duration and Marriage Cohort.

Figure 3.
Proportion of Marriages Ending Within 4 Years of Marriage, by Marriage Cohort and Educational Attainment (Women).

Figure 4.
Proportion of Marriages Ending Within 8 Years of Marriage, by Marriage Cohort and Educational Attainment (women).

Table 1

Parametric (Log-Normal) Model of Survival Time to Divorce Women (N = 8,125,494 Observations).

Variables	Coefficients		
	Model 1	Model 2	Model 3
Education (ref.: less than high school)			
High school	0.291	0.299	0.310
Tertiary	0.441	0.454	0.463
Marriage cohort (linear specification)	−0.046	−0.046	−0.054
Education × marriage cohort			
High school × marriage cohort	0.020	0.021	0.031
Tertiary × marriage cohort	0.043	0.043	0.050
Period (ref.: economic crisis)			
Before economic crisis		0.039	0.020
After economic crisis		0.017	0.113
Education × period			
High school × before economic crisis			0.031
High school × after economic crisis			0.113
Tertiary × before economic crisis			0.006
Tertiary × after economic crisis			0.083
Constant	6.371	6.350	6.338
sigma	0.438	0.445	0.441

Note: The coefficients are presented in the accelerated survival (failure)-time form. Because the analysis deals with population, standard errors are not reported. ref. = reference.