Projection Bias in Divorce

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Preliminary

Abstract

Projection bias is a well-known cognitive bias (Loewenstein, O'Donoghue, and Rabin, 2003). In this paper, we examine projection bias in divorce decision, which is potentially one of the most important lifetime decisions. The enforcement of a compulsory waiting period between divorce filing and a complete change in status in Korea provides us with a unique opportunity to test for projection bias in divorce. The data allow us to infer how many divorce filers reverse their initial intention to divorce after a "cooling off" period. Our quasi-natural experimental findings show that even this crucial decision making can be erroneous due to projection bias. About 4.7% of divorces arise impulsively.

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I. Introduction

Projection bias is one of the most well-known cognitive biases. People predict future utility on the basis of being systematically biased toward current utility, even if the latter is irrelevant to the former. Many experiments on the psychological and medical domains have found evidence for the phenomenon of projection bias (for a review, refer to Section II of Loewenstein, O'Donoghue, and Rabin, 2003). Empirical evidence regarding economic behaviors from the field is not as ample, but is nevertheless documented over a wide range of domains, such as purchasing (Conlin, O'Donoghue, and Vogelsang. 2007), college choice (Simonsohn, 2009), and investors' behavior in the stock market (Kliger and Levy, 2008).

How about divorce decision? In the standard economic theory of divorce à la Becker (1977), couples will divorce if the gains from marriage are less than the expected opportunities outside the marriage. Since couples sort into marriage, small unanticipated shocks to marital quality, if they decrease current utility within the marriage temporarily, should not lead to divorce (Weiss and Willis, 1997). Nevertheless, in reality, divorce no less than often arises impulsively.

This paper examines the extent to which divorce decisions are impulsively made due to projection bias.[1] The enforcement of a compulsory time delay between filing and complete change in status in Korea, called the divorce deliberation or cooling-off period, provides us with a unique opportunity to investigate this issue. First, as the cooling-off mandate is determined at the individual local court level, adoption of the mandate varies both temporally and geographically.[2] This gives us a quasi-natural experimental setting in which we can estimate the causal effect of the policy intervention. Our findings have direct policy implications.

Second, the availability of data on both the actual divorce rate and the divorce filing rate enables us to examine not only how the adoption of the cooling-off period affects the actual divorce rate, but also the reason for this effect investigating the filing rate. There are three possible explanations. First, the mandate increases the costs of divorce because it forces couples to wait for longer than they want to. Under this hypothesis, we expect that both the actual divorce rate and the filing rate will drop since the increase in the costs is anticipated. Furthermore, we should see the filing rate increase prior to the mandate because some couples try to avoid the extra waiting costs. Second, new information can be generated during the cooling-off period. In this case, we should see that, if the new information is ex ante not expected, the filing rate should

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[1] Projection bias in divorce can also affect household bargaining within marriages. For example, a household bargaining model of divorce threat assumes that spouses' alternative utility outside the marriage (or, at least, its distribution) is common knowledge.

[2] Judges in each court or branch independently decided whether to implement the cooling-off period before the mandate became nationwide in 2008. We will examine the potential endogeneity of the mandate.

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not change, while the divorce rate should drop since the information is likely to be positive. Lastly, the cooling-off period might provide an opportunity for couples to correct their prediction about the future utility within the marriage, which is distorted due to projection bias. Under this hypothesis, we expect that the filing rate should not change while the actual divorce rate must drop.[3] In this paper, we aim to test these three explanations.

Our empirical findings using data from 54 district courts and branches from 2003 to 2008 show that the actual divorce rate dropped significantly after the adoption of the compulsory cooling-off period. The immediate effect was large and quite persistent. On the other hand, there is no significant effect on the filing rate, although it increased slightly one month prior to the mandate. The findings are overall consistent with the hypothesis of projection bias, while they are only partially supportive of the cost-based hypothesis. Furthermore, the information-based hypothesis is not strongly supported. The findings from our robustness check evidence some seasonality in the effect of the mandate. Interestingly, the effect is significant and large in summer, but non-existent in winter. The effect on the filing rate is not significant for all twelve months. It is reasonable to assume that whereas the amount of the new information generated during the cooling-off period does not vary seasonally, the impulsivity of divorce might do so. Then, the seasonality implies that the mandate affects the divorce rate because some couples decide to divorce rather impulsively. We find that about 5.6 percent of divorces are impulsive.

II. Institutional Background

Divorce rates in Korea have recently increased.[4] The crude divorce rate, which is the number of divorces per 1,000 persons, increased from 1.5 in 1995 to a peak of 3.5 in 2003, which was higher than that of the U.S. at the time. Although the divorce rate has slightly decreased since then, policy makers, legislators, and politicians have become concerned about the high divorce rates and searched for policy instruments that might reverse the trends. Consequently, judges in the Seoul family court, which is the largest court for divorce, adopted a compulsory cooling-off period for the first time in the country on March 2, 2005.[5] It was initially set at one week but

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[3] The second and third hypotheses have qualitatively identical predictions. We will discuss this problem later.

[4] There are two types of divorce, mutual consent divorce and judicial divorce. For the second type, one party is required to prove the spouse's fault in the court. In 2002, judicial divorce accounted for 22.1 percent.

[5] In fact, Loewenstein *et al*. (2003) highlighted mandatory time delays between filing for divorce and actual changes in status in states in the U.S. as an attempt to prevent impulsive divorces due to projection bias (see p. 1235). To the best of our knowledge, no study has investigated the effect of the cooling-off period mandate in the U.S., possibly because the mandate was usually introduced jointly with the no-fault divorce reform.

later extended to three weeks in 2006. Prior to the adoption, when both parties in a marriage agreed, they could officially divorce within a few hours after filing for divorce or by the next day at the longest. After this sensational move by the largest family court and following the recommendation from the Supreme Court, 46 out of 54 district courts had adopted a cooling-off period by May 2008. Finally, on June 22 2008, the cooling-off period mandate became effective nationwide by the Family Law Amendment Act 2008.[6]

Before the uniform cooling-off period was implemented nationally, the length of the cooling-off period differed across individual courts. Generally, the courts set a waiting period from filing to complete change in status. Many courts provide a free professional counseling service, the use of which can shorten the mandated cooling-off period. Some courts required three weeks without taking counseling or one week with it. Other courts were less strict and required only one week. Thus, we classify individual courts into two groups according to whether the cooling-off period is set in a "strong" form, i.e., the waiting period without taking divorce counseling is as long as 3 weeks, and estimate the impact of the cooling-off policy separately by the criterion. Thirty-three courts out of 46 started with a cooling-off period in the strong form.[7] Another 7 courts started with a shorter cooling-off period and later extended it to three weeks. The remaining 8 courts had not adopted the mandate until the policy became national.

The cooling-off period was significantly extended by the national mandate.[8] Under the new laws that became effective in July 2008, couples have been required to wait for three months after their filing for divorce if they have non-adult children and for one month otherwise. The waiting period can be reduced or exempted in special cases such as those related to domestic violence or other emergent cases, at the judges' discretion.

III. Data and Empirical Analysis

A. Data

We use two sources of data. First, we obtain the number of divorce filings at each of district courts and branches from *Monthly Court Statistics* issued by the Supreme Court. The statistics are available every month since 1989. Since the first adoption of the cooling-off period was in 2005, we collect the data from January 2003 to control for pre-existing time trends. In addition, the divorce rate peaked in 2003. The data are available until December 2008.

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[6] The amendment was announced on December 21, 2007.
[7] Table 1 shows that the cooling-off period initially set by Ulsan district court was 3 weeks without counseling, but the policy was applied only if couples volunteered to participate in the cooling-off period policy. The court mandated it about one year later.
[8] Two district courts (Wonju branch, which adopted in October 2007, and Pohang branch, which did in September 2006) had a cooling-off period as long as three months.

Among the 54 individual courts in Korea dealing with divorce cases, 5 are family courts and 13 district courts. Some district courts have branches if the districts are large. There are 37 branches. As shown in Table 1, many branch courts made independent decisions regarding the adoption of the cooling-off period mandate, while a few implemented it at the same time as their district court did. Appendix Figure 1 presents a map of the regions, broadly showing the individual court locations.

Our second data source is the raw data from *Annual Report on Vital Statistics* constructed by the National Statistical Office of Korea. The data are from administrative divorce records and includes information about divorced spouses, such as age, education, jobs, number of children, marriage duration, and reasons for divorce. They also include both spouses' current addresses as well as their legal domiciles. Since the address is reported by a smaller geographical unit than the unit of court districts, we create the merged data of divorce filings and actual divorces at the individual court level. One problem here is that we do not know at which court couples file their divorce since they can choose which court to use. They can either use the district court (or its branch) governing their current address or they can file for divorce at the court (or its branch) governing the husband's or the wife's legal domicile. In Korea, everyone has his or her legal domicile that might be different from the current address. Thus, there are, at maximum, six courts (or branches) where they can submit their divorce file and, correspondingly, six alternative ways of matching the data sets. In the current paper, we report the results using the husband's current address, but the results are robust to alternative ways of matching.

B. Empirical Analysis

Under the assumption that the adoption of the cooling-off period mandate is exogenous after controlling for the time trends, we exploit the variation in the timing of the adoption within individual courts and estimate the following equation:

$$D_{it} = \alpha_i + \beta C_{it} + \delta_{1i}t + \delta_{2i}t^2 + \delta_{3i}t^3 + \varepsilon_{it}$$

where the dependent variable D_{it} is the filing rate or the actual divorce rate in court i at time t. The unit of time is a month. Both rates are defined as the number of the events per 1,000 persons. For all of our regressions, observations are weighted by the total number of persons residing in each district. The treatment variable is C_{it}, which indicates the cooling-off period mandate. In the above baseline model, β captures the average effect of the mandate.

We include not only individual court fixed effects, α_i, but also monthly cubic trends to remove time trends.[9] Specifically, following Wolfers (2006), who estimated the effect of unilateral divorce laws using state-level panel data of the U.S., we allow that the time trends are individual court specific. Controlling for the court-specific time trends is supposed to separate out pre-existing trends from the effect of the mandate.

While the overall average effect is important, we also extend the equation to allow the effect to vary according to the length of the cooling-off period. As aforementioned, the length of the cooling-off period differs across courts. Ultimately, the length was unified, and extended up to three months by the national mandate. Besides the above basic equation, we also estimate the equation with two additional variables: 1) an indicator for whether the cooling-off period mandate was adopted or revised in a "strong" form (S_{it}) and 2) an indicator for the national mandate (N_{it}).[10] Alternatively, we use a continuous measure of the length of the cooling-off period. Before the national mandate, about 15 percent of courts set the cooling-off period at three weeks. Thus, we separately estimate the effect according to whether the length is shorter than three weeks, exactly three weeks, or longer.

The baseline equation is static. However, as it may take time for the laws to become fully effective, we follow Wolfers (2006) in estimating the dynamic effects of the mandate by using the following equation:

$$D_{it} = \alpha_i + \beta_{-2}1[1 \le \tau_i - t \le 2] + \beta_0 1[\tau_i = t] + \beta_6 1[1 \le t - \tau_i \le 6]$$
$$+\beta_7 1[t - \tau_i \ge 7] + \delta_{1i}t + \delta_{2i}t^2 + \delta_{3i}t^3 + \varepsilon_{it}$$

where τ_i is the time when court i adopted the mandate.[11] The coefficient β_{-2} captures the effect of the mandate which is expected to be effective within two months. If potential divorcees are forewarned of the incoming mandate (and they should have been), it is possible that they might file for divorce earlier in order to avoid the cooling-off period requirement. The coefficient β_0 captures the immediate effect of the mandate, and β_6 captures the average effect for six months

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[9] To determine the order of polynomials in nonlinear time trends, we estimated monthly fixed effects. Since our data are court-level monthly panel data, we cannot include court-specific time fixed effects.

[10] The divorce filing data are collected for the period before the national mandate was introduced, so it is not possible to include the second indicator.

[11] A fuller specification would allow interactions between the dynamic effect terms and the two indicators, S_{it} and N_{it}, but we simplify the estimation equation given the limited size of our sample.

after the implementation month. The coefficient β_7 captures the average long-term effect of the mandate after seven months.[12]

A crucial assumption for identification in the above estimations is that the adoption of the cooling-off mandate is exogenous. Although controlling for court-specific time trends should purge out pre-existing trends, as a robustness check for the endogeneity issue, we exploit the introduction of the national mandate in July 2008.[13] Eight courts did not voluntarily mandate the cooling-off period until that time. It is reasonable to assume that the mandate was exogenous at least for these eight courts.

C. Results and Implications

Table 2 presents the results for the filing rate. Court-specific fixed effects are included in all the six columns. The effect of the mandate on the filing rate is neither statistically nor economically significant regardless of time trend and dynamic specifications, except in column (1), where we do not control for any time trends. The significant effect in column (1) reflects the decrease in the filing rate since 2003 and the beginning of the cooling-off period adoption in 2005.

An interesting finding is that the filing rate increased for two months, by about 0.0095, immediately prior to the mandate. The sample average of the filing rates is 0.25, which equates to an annual rate of 3.1. This "effect" of the mandate *prior to* the mandate is significant only for the previous two months. We also checked for the previous two months, that is, by including an additional time indicator, $1[3 \leq \tau_i - t \leq 4]$, but this prior effect was statistically insignificant and minimal in magnitude, at about 0.001.

The significant effect is predicted by the cost-based hypothesis. Since couples can expect that the costs of divorce will increase, some move earlier.[14] However, the findings in Table 2 do not support the hypothesis. According to the cost-based hypothesis, the filing rate should have decreased after the mandate.

Table 3 presents the results for the actual divorce rate. Here the results are considerably different than those for the filing rate. The effect of the cooling-off period mandate is significant on the divorce rate. The estimates from static models range from -0.047 in column (1) without any time trends to -0.012 in column (3) with court-specific cubic time trends. The sample average

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[12] The structure of the dynamic effect can be specified differently. The results below are robust to different dynamic specifications.

[13] For example, it is conceivable that judges in those courts where the divorce rate is higher or rising faster are more likely to adopt the mandate earlier.

[14] The mandate was publicly announced before it had become effective.

of the actual divorce rate is 0.22, indicating that the mandate decreased the divorce rate by about 4.7 percent if we use the most conservative point estimate in column (2).

The results in column (4) where we allow for dynamic effects evidence three patterns. First, the effect was the largest in the first month when the divorce rate immediately dropped by 0.024. Second, the effect has decreased but persisted over time. Lastly, unlike the filing rate, the actual divorce rate did not change prior to the mandate. Although the effect is positive, it is not statistically significant. This is somewhat surprising because the rise in the filing rate prior to the mandate means that couples tried to avoid the increased cost of divorce due to the mandate. Since it took only one day for a divorce case to be processed before the introduction of the cooling-off policy, we expected that the actual divorce rate would increase by the same size as the filing rate increased. The result may have been caused by the imperfect matching between the filing and actual divorce data.

Table 4 presents the results when we estimate the effect of the cooling-off period mandate on the filing and divorce rates according to the length of the waiting period. Again, we find that the cooling-off policy did not significantly decrease the filing rate, while the actual divorce rate dropped after the introduction of the policy. We find a marginally statistically significant effect of the number of mandated waiting days on the filing rate, but the magnitude of the effect seems to be much smaller than that of the effect on the divorce rate. The results on the actual divorce rate confirm the importance of the length of the cooling-off period. The effect is positively correlated with the cooling-off period. The national mandate which increased the period up to 3 months decreased the divorce rate by about 20 percent.

As mentioned earlier, the potential endogeneity of treatment is always a difficult problem in any quasi-natural experimental study. In considering some factors related divorce rates, courts may choose to adopt the cooling-off period mandate. We believe that the endogeneity bias, if any, should be minimized in the above results since our court-specific time trends purge out any pre-existing trends.[15] Furthermore, if present, the endogeneity bias is likely to act against our findings because it is reasonable to assume that those courts where the divorce rate is increasing are more likely to adopt the policy earlier. Yet, to address the endogeneity issue further, we estimate the effect of the national mandate for those courts that had not adopted it until it was nationalized in 2008. As mentioned earlier, there are eight courts, so the sample size shrinks to 584 for the filing

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[15] The bias can be in both directions. On the one hand, if those courts with higher divorce rates (or higher filing rates) tend to adopt the mandate, our estimates will be overestimated. In this case, the estimated effect of the mandate is the lower bound in the absolute sense. On the other hand, if courts adopt the mandate when they experience unusually higher divorce rates, our estimates will be underestimated. In other words, our estimates are confounded with the reversion-toward-mean trends.

rate and 576 for the divorce rate. It is reasonable to assume that the mandate is exogenous at least to these eight courts. Due to the limited time period of our sample (the data are available until January 2009), it is not possible to estimate our dynamic model. Table 4 presents the results. In fact, we find that the mandate significantly decreased the divorce rate by 0.046, while there is no significant effect on the filing rate.

The results so far seem to support the presence of impulsive divorce arising due to projection bias. Theoretically, the cooling-off mandate can affect both the filing and actual divorce rate. First, the mandate increases the time cost of divorce. Since the increase in the cost can be expected, this implies that both filing and actual divorce rates should drop. The finding of no significant effect on the filing rate implies a negligible increase in the cost of divorce due to the mandate. On the other hand, the temporary rise of the filing rate just prior to the mandate implies that at least for some couples, the increase in the divorce cost is large enough to make them file earlier and so avoid the extra cost. Second, the mandate can prevent impulsive divorces. Projection bias causes excessive divorces because couples underestimate their future utility within their marriages when they experience some bad moments, although those moments are just temporary. This kind of prediction error can be fixed during the cooling-off period. Projection bias also predicts that the filing rate should not be affected by the mandate because simply expecting the waiting period cannot fix the bias. Therefore, our findings that the filing rate does not change while the divorce rate drops are consistent with the phenomenon of projection bias.

However our findings could also be explained in the framework of standard economic theory. Suppose that new information about marital quality is generated during the cooling-off period. As intended by the mandate, spouses may find some hidden value of their marriage, perhaps with the assistance of professional counselors or, during the period of separation, some may realize that they overestimated the utility outside the marriage. The empirical findings in this subsection are also consistent with the predictions of this standard economic theory.

To tackle the alternative explanation, we estimate the effect of the mandate separately by month. This exercise is initially planned as a robustness check but becomes useful for distinguishing the projection bias hypothesis from the information-based hypothesis. If the mandate is effective in deterring impulsive divorces, its effect is likely to be larger in summer, arguably when people are more emotionally vulnerable.[16] On the other hand, the amount and quality of new information generated during the cooling-off period do not vary by season. The results are presented in Table 6. The top and bottom panels show the results for the filing and

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[16] For example, Hirshleifer and Shumway (2003) find that sunshine is significantly correlated with stock returns.

actual divorce rate, respectively. The results are consistent with our prior expectation. For the filing rate, the effect turns out to be insignificant over all the twelve months. On the other hand, for the actual divorce rate, the effect of the mandate is the largest in August and the second largest in September. There is no significant effect in winter from November to March. August in Korea is the most uncomfortable month. Figure 1 shows how the effect of the cooling-off policy is related to the so-called discomfort index. The index measures the impact of heat stress, defined as 2*temperature + (humidity/100)*temperature + 24. If it is over 90, it is highly uncomfortable. Figure 1 shows that the effect of the cooling-off mandate is strongly correlated with the discomfort index.

IV. Conclusions

Human decisions are subject to many errors. Almost every day, we make some minor mistakes. This does not mean that we are not rational; rather we are behaving rationally by remaining somewhat careless when the stakes are small relative to the effort costs required for a rational decision. However, our present study findings show that people make possibly regrettable decisions even when the stakes are very high, as in divorce decisions.

In this paper, by exploiting a quasi-natural experiment in Korea in which individual courts mandated a compulsory cooling-off period for divorce at different times, we estimated the causal effect of the mandate on the divorce filing and actual divorce rates. The actual divorce rate was significantly decreased by the introduction of the cooling-off period mandate. About 5 percent of divorce decisions were impulsively made. Furthermore, the effect remained strong over time. The policy implication is clear. An arbitrary delay from filing to actual divorce decree can significantly reduce the number of divorces.

The research conducted in this paper is in line with the studies examining the role of a compulsory time delay between the initiation of action and the final decision in different contexts, such as collective bargaining and ultimatum game experiments (Cramton, Gunderson, and Tracy, 1999; Oechessler, Roider, and Schmitz, 2008). In economics, it is important to understand the rationality of human decision-making. How we can institutionally improve human rationality is an interesting topic for future research.

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Table 1. Adoption of Mandatory Cooling-off Period by District and Branch
(4 Family Courts, 13 District Courts, and 37 Branches)

Region	District Court or Branch	Starting Date Waiting time w/o & w/ counseling	Revision Date Waiting time w/o & w/ counseling
North West	Seoul Family Court	March 2, 2005 1 week/1 day	March 2, 2006 3 weeks/1 week
	Seoul Eastern District Court	May 1, 2006 1 week	May 1, 2007 3 weeks/1 week
	Seoul Southern District Court	**Adopted by national mandate**	
	Seoul Northern District Court	June 26, 2006 1 week	August 1, 2006 3 weeks
	Seoul Western District Court	September 9, 2007 3 weeks/1-2 days	
	Incheon District Court	December 1, 2006 3 weeks/1 week	
	*Bucheon Branch	November 1, 2006 3 weeks/1 week	
	Suwon District Court	March, 2006 3 weeks/1 week	
	*Seongnam Branch	September 1, 2006 2 weeks	
	*Yeoju Branch	September 1, 2006 1 week	February, 2007 3 weeks/1 week
	*Pyungtaek Branch	September 1, 2006 1 week	
	*Ansan Branch	September 1, 2006 1 week	July, 2007 2 weeks/1 week
	Uijeongbu District Court	August 16, 2006 3 weeks/2 weeks	
	*Goyang Branch	September 1, 2007 3 weeks/2 weeks	
North East	Chooncheon District Court	July, 2007 3 weeks	
	*Gangneung Branch	April, 2008 3 weeks/1 week	
	*Wonju Branch	October 10, 2007 3 months with children or 4 weeks	
	*Sokcho Branch	April, 2008 1 month	
	*Yeongweol Branch	**Adopted by national mandate**	
Central West	Daejeon District Court	March, 2005 3 weeks/1 week	
	*Hongseong Branch	February 12, 2007 20 days/10 days	
	*Gongju Branch	**Adopted by national mandate**	
	*Nonsan Branch	**Adopted by national mandate**	
	*Seosan Branch	May, 2006 3 weeks/1 week	
	*Cheonan Branch	February, 2007 3 weeks	
	Cheongju District Court	October 1, 2006	

		4 weeks	
	*Choongju Branch	October 11, 2007 4 weeks/1 day	
	*Jecheon Branch	March, 2004 2 weeks/1 day	
	*Yeongdong Branch	April, 2005 2 weeks/1 day	
Central East	Daegu Family Court	September, 2006 3 weeks/1 week	
	*Andong Branch	September, 2006 3 weeks/1 week	
	*Gyeongju Branch	May, 2006 3 weeks	
	*Pohang Branch	September, 2006 3 months/0 day	
	*Gimcheon Branch	January, 2007 4 weeks/0 day	
	*Sangju Branch	**Adopted by national mandate**	
	*Uiseong Branch	June, 2007 3 weeks/1 week	
	*Yeongdeok Branch	January, 2007 4 weeks/0 day	
Southeast	Busan Family Court	August, 2006 4 weeks/1 week	
	Ulsan District Court	September 1, 2006 (volunteers only) 3 weeks/reduced but unknown	August 13, 2007 3 weeks/reduced but unknown
	Changwon District Court	October 1, 2006 3 weeks/2 weeks	
	*Jinju Branch	October 1, 2006 3 weeks/2 weeks	
	*Tongyeong Branch	October 1, 2006 3 weeks/2 weeks	
	*Milyang Branch	October 1, 2006 3 weeks/2 weeks	
	*Geochang Branch	October 1, 2006 3 weeks/2 weeks	
Southwest	Gwangju Family Court	August 1, 2005 2 weeks/0 day	July 1, 2006 3 weeks/1 day
	*Mokpo Branch	May 1, 2007 4 weeks	
	*Jangheung Branch	August, 2006 3 weeks/1 week	
	*Suncheon Branch	August 1, 2005 2 weeks/0 day	July 1, 2006 3 weeks/1 day
	*Haenam Branch	August 1, 2005 2 weeks	July 1, 2006 2 weeks/1 week
	Jeonju District Court	April 1, 2008 1 month	
	*Gunsan Branch	**Adopted by national mandate**	
	*Jeongeup Branch	**Adopted by national mandate**	
	*Namwon Branch	**Adopted by national mandate**	

	*Jeju Branch	October 16, 2006 3 weeks/1 week	

Notes: All the information in this table was provided by each individual court under the Freedom of Information Act or obtained from telephone interviews, except four branches: Seongnam, Yeoju, Pyungtaek, and Ansan, for which information was gathered from various local newspapers. For two branches, Hongseong and Seosan, information on the length of the cooling-off period was not provided, so we also had to find it from local newspapers. When the exact date was not provided, we assumed that the mandate started on the first day of the month. When the mandate started on a day later than 15th, we specified that the mandate became effective in the next month.

Table 2. Number of Divorce Filings per 1000 Persons

	(1)	(2)	(3)	(4)
Cooling-off period adopted	-0.0204***	0.0005	-0.0052	
	(0.0027)	(0.0034)	(0.0039)	
Two months prior to adoption				0.0095*
				(0.0049)
Month of adoption				0.0024
				(0.0080)
Six months after adoption				-0.0026
				(0.0037)
After six months				-0.0042
				(0.0050)
Monthly trend dummies	No	Yes	No	No
Location-specific cubic time trends	No	No	Yes	Yes
Observations	3,940	3,940	3,940	3,940
R-squared	0.2635	0.4610	0.4664	0.4669

*Notes: There are 54 individual courts and branches. The sample period is from January 2003 to January 2009. There are 2 missing observations. Robust standard errors, clustered by courts and branches, are presented in parentheses. *** means that the estimate is significant at the 1% level, ** at the 5% level, and * at the 10% level.

Table 3. Number of Actual Divorces per 1000 Persons

	(1)	(2)	(3)	(4)
Cooling-off period adopted	-0.0469***	-0.0103***	-0.0120***	
	(0.0027)	(0.0029)	(0.0028)	
Two months prior to adoption				0.0013
				(0.0031)
Month of adoption				-0.0239***
				(0.0073)
Six months after adoption				-0.0092***
				(0.0030)
After six months				-0.0062**
				(0.0028)
Monthly trend dummies	No	Yes	No	No
Location-specific cubic time trends	No	No	Yes	Yes
Observations	3,888	3,888	3,888	3,888
R-squared	0.4923	0.8233	0.7517	0.7529

*Notes: There are 54 individual courts and branches. The sample period is from January 2003 to December 2008. Robust standard errors, clustered by courts and branches, are presented in parentheses. *** means that the estimate is significant at the 1% level, ** at the 5% level, and * at the 10% level.

Table 4. Results by Cooling-off Days

	Filing rate			Divorce rate		
	(1)	(2)	(3)	(1)	(2)	(3)
Cooling-off period adopted	-0.0022			-0.0046		
	(0.0038)			(0.0034)		
At least 3 weeks w/o counseling	-0.0045			-0.0127***		
	(0.0037)			(0.0033)		
National mandate	-0.0047			-0.0451***		
	(0.0032)			(0.0032)		
Days of cooling-off period		-0.0001*			-0.0006***	
		(0.0000)			(0.0000)	
Shorter than 3 weeks			0.0001			-0.0014
			(0.0031)			(0.0037)
3 weeks			-0.0072			-0.0084**
			(0.0046)			(0.0038)
Longer than 3 weeks			-0.0084*			-0.0455***
			(0.0043)			(0.0062)
Location-specific cubic time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,940	3,940	3,940	3,888	3,888	3,888
R-squared	0.4666	0.4664	0.4666	0.7702	0.7688	0.7650

*Notes: The length of the cooling-off period without counseling is used. It is three months under the national mandate. Robust standard errors, clustered by courts and branches, are presented in parentheses. *** means that the estimate is significant at the 1% level, ** at the 5% level, and * at the 10% level.

Table 5. Impact of National Mandate

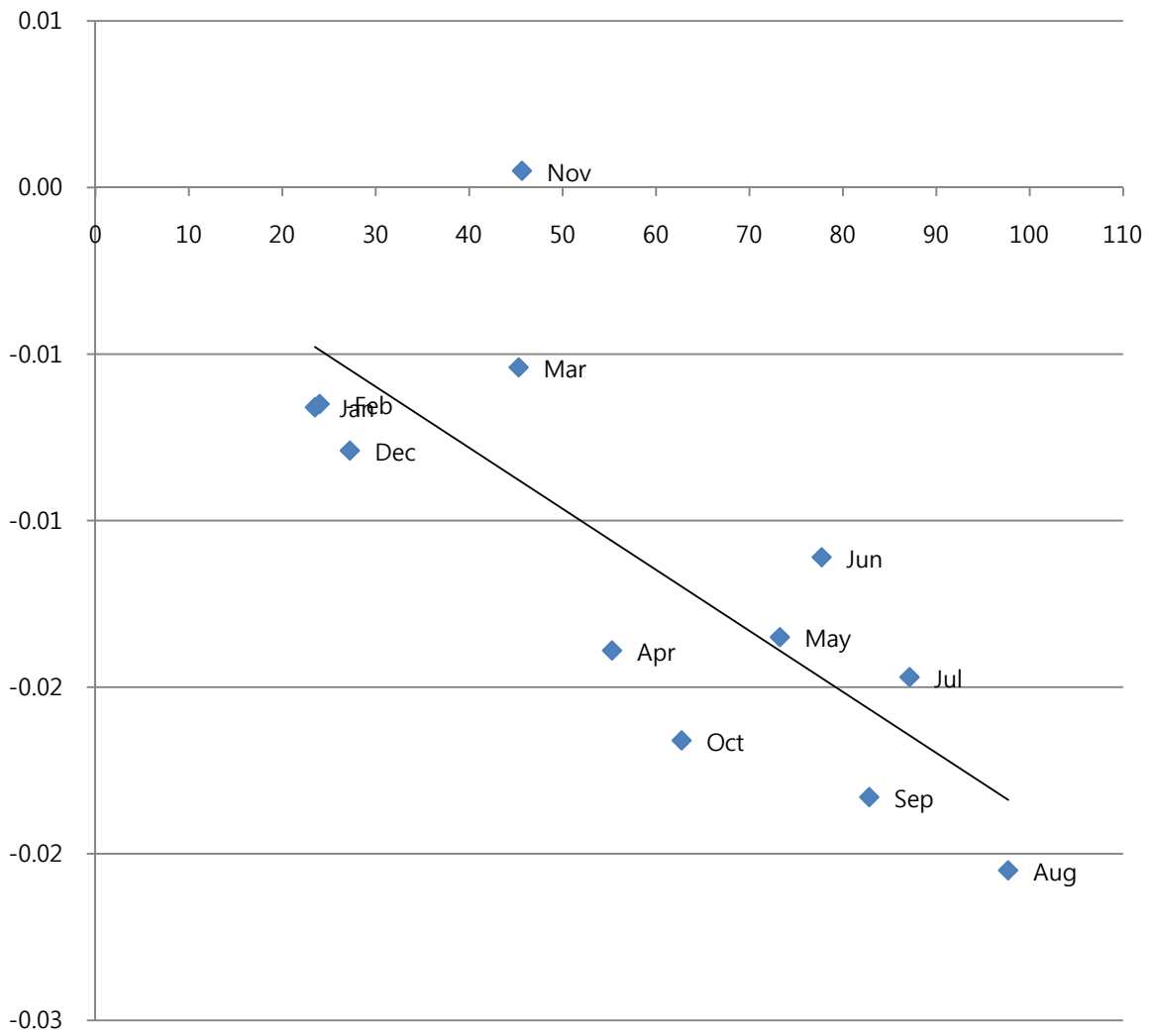|	(1)	(2)
	Filing rate	**Divorce rate**
National mandate	-0.0026	-0.0457***
	(0.0108)	(0.0116)
Location-specific cubic time trends	Yes	Yes
Observations	584	576
R-squared	0.6958	0.6129

*Notes: The sample is restricted to those eight courts and branches that had not adopted the cooling-off period mandate before the national mandate starting to be effective in July 2008. Robust standard errors, clustered by courts and branches, are presented in parentheses. *** means that the estimate is significant at the 1% level, ** at the 5% level, and * at the 10% level.

Table 6. Effect of Cooling-off Mandate by Month

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Filing rate	0.0070	-0.0042	0.0035	-0.0006	-0.0039	-0.0092	0.0003	-0.0008	-0.0148	0.0025	0.0065	-0.0026
	(0.0058)	(0.0070)	(0.0070)	(0.0056)	(0.0050)	(0.0088)	(0.0058)	(0.0065)	(0.0096)	(0.0068)	(0.0082)	(0.0064)
Cubic time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	377	323	324	324	324	324	324	324	324	324	324	324
R-squared	0.7772	0.7656	0.7660	0.8620	0.8239	0.8284	0.8060	0.7617	0.5850	0.8304	0.7146	0.1957
Divorce rate	-0.0066	-0.0065	-0.0054	-0.0139**	-0.0135***	-0.0111**	-0.0147***	-0.0205**	-0.0183***	-0.0166***	0.0005	-0.0079
	(0.0067)	(0.0049)	(0.0052)	(0.0058)	(0.0051)	(0.0051)	(0.0047)	(0.0088)	(0.0058)	(0.0056)	(0.0049)	(0.0071)
Cubic time trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	324	324	324	324	324	324	324	324	324	324	324	324
R-squared	0.7680	0.8325	0.8390	0.8125	0.8347	0.8324	0.8772	0.8485	0.8305	0.7908	0.7497	0.7616

*Notes: Robust standard errors, clustered by courts and branches, are presented in parentheses. *** means that the estimate is significant at the 1% level, ** at the 5% level, and * at the 10% level.

Figure 1. Effect of Cooling-off Period and Discomfort Index

Notes: The discomfort index is calculated by the formula 2(monthly average temperature) + (monthly average relative humidity100)*(monthly average temperature) + 24. We use the weather data for Seoul.

Appendix Figure 1. Court Districts in South Korea by Region