Domestic Violence and Divorce Law:
When Divorce Threats Become Credible[*]

Pablo Brassiolo[†]

Universitat Pompeu Fabra

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Abstract

This paper investigates whether lowering the cost of divorce can reduce domestic violence. The cost of divorce influences the bargaining position of spouses, and thus, their behavior within the marriage. This study takes advantage of a large and unexpected reform of the divorce regime in Spain, which allowed for unilateral and no-fault divorce, and eliminated the pre-existing 1-year mandatory separation period, to estimate the causal effects. This reform dramatically reduced the cost of exiting a partnership for married couples, but not for unmarried ones, which favors a difference-in-differences identification strategy. This study analyzes several measures of spousal conflict, ranging from self-reported spousal abuse and technical definitions of spousal violence based on recorded behavior, to more extreme measures of well-being such as partner homicide. Results suggest a decline of 27-36 percent in spousal conflict and around 30 percent in extreme partner violence as a consequence of the reform. Moreover, spousal violence has been found to decrease among couples who remain married after the legal modification, which suggests an important role for changes in bargaining within the marriage when divorce becomes a more credible (cheaper) option. The results are not driven by selection and are robust to a variety of checks.

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[†]Contact info: Department of Economics and Business, Universitat Pompeu Fabra, Ramon Trias Fargas 25-27, 08005, Barcelona, Spain. Email: pablo.brassiolo@upf.edu

1 Introduction

Domestic violence is an important concern for many societies and policymakers worldwide. Statistics available for European countries show that between 20 and 25 percent of women have been victims of physical abuse at least once during their adult lives, and around 10 percent have suffered sexual abuse involving the use of force (CAHVIO, 2011). Estimates for the U.S. from the National Violence Against Women Survey show similar numbers: 1 out of 3 women surveyed reported having been raped or physically assaulted since the age of 18 years (Tjaden and Thoennes, 2000). Moreover, in most of the cases of violence against women, the crime is committed by the intimate partner. In this context, it is natural to ask about the relationship between domestic violence and family policies, and specifically, the rules governing the dissolution of marriages. In recent decades, many countries have adopted reforms aiming at simplifying the dissolution of marriage when one of the spouses wants to end the relationship. Since the early 1970s, many states in the U.S. removed fault as a ground for divorce, and almost all of them allowed one of the spouses to file a petition for divorce without the consent of the other. Many European countries have followed similar paths during the past 50 years.

Making divorce easier can affect the incidence of domestic violence, either by facilitating the dissolution of abusive relationships or by making the threat of leaving more credible, thus improving the situation of the victim within the marriage. Economic theories of household bargaining suggest that policies that affect spouses' well-being outside the marriage may also affect within-household distribution through changes in their relative bargaining position (McElroy and Horney, 1981; Lundberg and Pollak, 1993; Chiappori, 1988, 1992). In spite of the important link between domestic abuse and divorce legislation, the available empirical evidence in the economic literature is scarce and shows conflicting results (Dee, 2003; Stevenson and Wolfers, 2006). The relationship between divorce and domestic abuse has also captured the attention of the sociology and criminology literature. However, although alternative theories have been proposed to explain this relationship, empirical research in these fields has, in general, failed to provide credible causal estimates.

This paper studies how divorce law affects domestic violence. It begins by outlining a simple model of bargaining within the marriage to provide a framework for understanding the mechanisms through which easier divorce influences the incidence of spousal violence. The main prediction of the model is that a reduction in the cost

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of divorce improves the bargaining position of abused spouses by increasing their threat point (i.e. the minimum utility level required from the marriage to continue married), and this leads to a lower equilibrium level of spousal violence among intact couples.

To identify the causal effects, this paper exploits an unexpected and comprehensive reform of divorce legislation that took place in Spain in 2005. This reform allowed one spouse to file for divorce unilaterally and without the other spouse having committed fault, and eliminated the requirement of mandatory legal separation before divorce, thus reducing the length of time needed to effectively dissolve a marriage. The response of the divorce rate was immediate: In the first year after the reform, the number of divorces grew by 170 percent, and although this increase was partially compensated by the reduction in the number of judicial separations, the evidence points to an important rise in marital dissolution rates, at least in the short run. The empirical strategy takes advantage of the fact that the legal change suddenly and substantially reduced the cost of marital dissolution among the already-married couples, but did not affect the cost of terminating the relationship for unmarried partners, which provides an ideal setting for a difference-in-differences approach. Moreover, the fact that the effective reduction in the cost of divorce varies according to specific characteristics of couples offers additional sources of variation that strengthens the identification of causal effects. In particular, the effective decline in the length of the dissolution process, and consequently, in the cost of divorce, is limited by the presence of young children, in which case, there are decisions regarding custody and maintenance, which require more time.

This study considers a variety of measures of spousal conflict, ranging from self-reported spousal abuse in surveys and technical definitions of spousal violence based on recorded behavior, to more extreme measures of well-being such as partner homicide. The analysis of the impact on non-extreme measures of violence benefits from a large and rich survey on violence against women conducted in Spain, both before and after the legal change. Besides providing different measures of spousal conflict, these data have allowed knowing the respondent's marital status at the time of the legal change, avoiding concerns about selection issues. To study the impact on extreme spousal violence, data on female homicide by intimate partner between 2000 and 2010 have been used.

The main empirical findings point to a significant decline in spousal violence following the introduction of easier divorce. Self-reported abuse from intimate partner

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has fallen by about 27-36 percent among married couples, with respect to unmarried ones, as a consequence of the legal change. Similarly, technical definitions of intimate partner abuse based on recorded behavior have evidenced a reduction of about 31 percent. Moreover, the incidence of spousal violence has decreased among couples who remain married after the reform, which suggests an important role for changes in bargaining within the marriage when divorce becomes a more credible option. The evidence also suggests that there are important heterogeneous impacts arising from the reform. This study has found that married women without young children gain the most from the reduction in divorce costs, while the level of spousal abuse for mothers of young children has not changed significantly. Having young children seems to prevent women either from leaving an abusive relationship or from credibly threatening to do so. This study has also explored how the effects of the legal change vary with the value of opportunities outside marriage. The theoretical framework suggests that there is a level of the outside option at which a woman would be indifferent between filing for divorce and continuing in an abusive marriage, and that the impact of the reform should be larger around this margin.[1] When using education as an indicator of the outside option, this study has observed larger impacts for women at the center-bottom part of the skill distribution, which indicates that the woman at the margin of indifference has relatively low education.

The results also show a decline in extreme spousal violence, which can be attributed to the legal change. Intimate partner homicides of married women have fallen by around 30 percent after the reduction in the cost of divorce. Moreover, a relevant fraction of this decline is explained by a reduction in violence between spouses who are amid a process of marital dissolution. As other social sciences consider marital dissolution as a key determinant of conflict between separating spouses,[2] and as both the theoretical framework and evidence point to an increase in the share of conflicting divorces (i.e. cases in which one spouse prefers the continuation of the marriage), this result has important implications for the role of the duration of the divorce process. In particular, these findings provide evidence in favor of a negative association between the length of the divorce process and the incidence of ex-spouse victimization.

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[1] The intuition is straightforward. Women with very poor alternatives outside marriage cannot take advantage of the lower cost of exiting the relationship, while women with very good outside option have a high and credible threat point, independent of the cost of divorce.

[2] See, for instance, Stolzenberg and D'Alessio (2007); Gillis (1996); Campbell (1992); Dugan, Nagin, and Rosenfeld (1999, 2003); Wilson and Daly (1992).

The literature on the effect of divorce law has focused on a variety of outcomes, such as divorce rates (Peters, 1986; Allen, 1992; Friedberg, 1998; Wolfers, 2006; González and Viitanen, 2009), marriage rates (Rasul, 2006), female labor supply (Gray, 1998; Stevenson, 2008), marriage-specific investments (Stevenson, 2007), fertility decisions (Drewianka, 2008; Alesina and Giuliano, 2006), and children's outcomes (Gruber, 2004). Less attention has been paid to the effects of unilateral divorce on spousal violence. One exception is the study by Dee (2003), which exploited the variation stemming from the different timing of divorce law reform across states in the U.S. to assess the impact of unilateral divorce on the prevalence of lethal spousal violence. Using state-based panel data from 1968 to 1978, Dee found a small and statistically insignificant effect on the number of wives killed by their husbands, and large and statistically significant positive effects - of around 21 percent - on the number of husbands killed by their wives.[3] These results were revisited by Stevenson and Wolfers (2006), who, using the same data source but with a longer panel (1968-1994), found opposite effects on spousal homicide: No impacts on male homicide and a 10-percent decrease in female homicide. Beyond these discrepancies, other concerns made the findings of Stevenson and Wolfers (2006) less than definitive. One is the timing of the effects. As the authors acknowledge, the decline in female homicide predates the legal change to an extent that may undermine their results.[4] Moreover, those results are not robust to control for the changes in female homicide committed in unmarried partnerships, which should not be directly affected by the law change.[5]

In addition, an identification strategy based on variation across time and states could be problematic if both the legal definitions of divorce regimes and reforms introduced vary from one state to another (Mechoulan, 2005; Allen and Gallagher, 2007; Allen, 2007).[6] For instance, while many states passed unilateral and no-fault divorce law, some of them require a separation period, while others do not. Also, those separation requirements may go from a few months to 2 years. In other states, changes in the grounds for divorce were accompanied by changes in property division,

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[3]Dee (2003) noticed that this effect is driven by states where the treatment of marital property favored husbands.

[4]Figure II (p. 285) of their paper clearly shows that the downward trend in female homicide started between 7 and 8 years before the adoption of unilateral divorce law.

[5]Using the same database and a similar specification, this study has found a 13-percent reduction in intimate partner female homicides among unmarried couples. These results are available upon request.

[6]Other potential problems of this identification strategy is the potential endogeneity in the timing of the adoption of reforms by different states, and the issue of "migratory divorce" - i.e. people choosing where to file a petition for divorce -(Allen and Gallagher, 2007).

alimony, and custody rules. These differences matter. In fact, different coding of divorce regimes is one of the sources of the conflicting findings reached by previous empirical studies.

Stevenson and Wolfers (2006) also studied the impact on non-extreme domestic violence, and found that unilateral divorce law caused a reduction in around 30 percent in both female- and male-initiated conflict. Nevertheless, the unfortunate timing of the surveys that they used made their results less than convincing. The first wave of their data was from 1976, when 31 states had already changed their divorce law, while the second wave was from 1985, when 6 more states had passed that reform. They considered these 37 states as treated and used two alternative control groups - the 9 states that already allowed unilateral divorce in their preexisting regime, and the 5 states that had not passed these reforms by 1985. Thus, their identification strategy relied on a differential evolution in domestic violence between the treatment and control groups, which was then attributed to the reforms. The main problem with this approach is that it may confound potentially different pre-existing trends in domestic violence between treatment and control states with the true effect of the policy change.[7]

Research in the sociology and criminology literature has also investigated the relationship between divorce and spousal violence. Some scholars support an "exposure reduction" approach, by which any mechanism that facilitates the dissolution of dysfunctional marriages should alleviate spousal violence by reducing the exposure of the victim to the offender (Dugan, Nagin, and Rosenfeld, 1999, 2003). Another line of research, however, states that a change towards less effective marital contracts may be ineffective to reduce domestic abuse if it continues between ex-spouses (Campbell, 1992), or even worse, it may intensify it if the abuser feels his or her dominant position is at stake (Wilson and Daly, 1992). Empirical research from these fields, in general, fails to prove causal relationships. For instance, Stolzenberg and D'Alessio (2007), by examining the cross-sectional relationship between divorce rates and domestic abuse in main U.S. cities, found that cities with higher divorce rates have higher levels of domestic crime between both spouses and ex-spouses. They argued that easier divorce does little to reduce the amount of domestic violence that occurs in a society, because after divorce, abuse continues between ex-spouses. However, they did not

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[7]Other problems with these results are that 15 states were not sampled in the 1976 survey, and that the survey universe consisted only of intact marriages, which makes it impossible to disentangle the effect on domestic violence that occurs through a change in divorce propensity from the one related to changes in bargaining in intact relationships.

consider the potential reverse causality from domestic abuse to divorce rates. In a related study, Gillis (1996) used time-series data from 1852 to 1909 from France, and found a strong negative correlation between the rate of marital dissolution and female homicide. However, potential omitted variable bias prevented the author from claiming causation.

The present study's contribution to this literature is threefold. First, this study has employed a methodology that overcomes some of the shortcomings of previous research. This study has exploited an unexpected, large, and clearly defined change in divorce rules in Spain, where family law is mainly defined at the national level. Furthermore, other potentially relevant changes over the same time period have been accounted by using individuals not directly affected by the legal change (unmarried couples), to estimate the evolution in domestic violence in the absence of the reform. Second, the analysis of the impact on non-extreme violence is based on data from a large survey on violence against women conducted in Spain both before (1999 and 2002) and after (2006) the legal change. In addition, given that the survey universe consisted of all adult women living in Spain, independent of their marital status, this study could directly disentangle the two main channels through which easier divorce could affect domestic violence. Moreover, the richness of the individual-level data allowed us to go one step further than the previous research, by considering the potential heterogeneous impacts of the reform. The cost of divorce faced by an individual not only depends on the legal regime in place, but also on individual characteristics such as education and the presence of children, among the others. Third, in the analysis of the impact on extreme violence, this study has distinguished female homicide committed by spouses from those crimes involving ex-spouses. This distinction, so far neglected in the economics literature, is important because easier divorce could affect married and separated couples differently. The results obtained can be interpreted as supportive of an "exposure reduction" approach, because they point out the importance of the shortening of the length of the dissolution process as a key factor explaining the decline in lethal violence against ex-spouses. In this sense, this study also adds to the sociology and criminology literature.

The rest of the paper is structured as follows. Section 2 presents a simple theoretical framework for understanding the interaction between divorce law and spousal violence. Section 3 describes the main institutional context and the identification strategy. The data sources are described in Section 4. Section 5 presents the main empirical results and, finally, Section 6 provides the conclusion.

2 Theoretical Framework: Why easier divorce can affect domestic abuse.

This section presents a simple theoretical framework that attempts to shed light on the interaction between spousal violence and divorce costs. In this model, a marriage is seen as an institution that produces a valuable output which is distributed between spouses according to some predetermined shares.[8] After the marriage has taken place, spouses get to know the utility level they would obtain in case of divorce.[9] Utility upon divorce is considered as a threat point, since the continuation of the marriage will require that both spouses receive an utility level within marriage at least as high as what they would receive in case of divorce. A key assumption in this model is that those outside options remain private information for each spouse.[10] The model has two stages. In the first stage, each spouse observes the value of his or her own utility outside of marriage, and decides whether to continue married or to file for divorce. In absence of mutual consent for dissolution, the spouse seeking divorce has to pay a cost. In the second stage, conditional on the continuation of the marriage, they (re)negotiate about how to distribute the gains of the marriage. A bargaining process is explicitly modeled in this stage, which may involve the use of violence from the husband and may have divorce as a response from the wife.

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[8]The marriage market is not explicitly modeled in this setup. Individuals are assumed to make their marriage decision on the base of the gains from the union and a certain distribution of those gains between them. They marry if their share of marriage gains is enough to compensate their utility from being single, otherwise they remain single. That distribution is based on some shares that may reflect their bargaining power in the marriage market. Factors such as sex ratios (Angrist, 2002) or legislation regarding property division after divorce (Chiappori, Fortin, and Lacroix, 2002) may influence individual's bargaining power in the marriage market. To make the marriage market endogenous to changes in divorce legislation is an important task left for future research.

[9]The assumption of ex-post information about the value of opportunities outside the relationship has been motivated in the literature by the arrival of new information during the marriage, such as the value of a potential new relationship or changes in the value of market opportunities (Becker, Landes, and Michael, 1977; Peters, 1986; Weiss and Willis, 1997).

[10]Zhylyevskyy (2008) and Friedberg and Stern (2010) provide empirical evidence coming from the National Survey of Family and Households supporting this assumption. They show that spouses have incorrect beliefs about the happiness or unhappiness of the other partner outside of marriage.

2.1 A simple model

2.1.1 Stage 1: Realization of payoffs and negotiation to continue the marriage

Individuals make their marriage decision on the base of the expected gains from the union, which are distributed between the partners according to some predetermined shares. Let us denote the utilities within the marriage as u_h and u_w for the husband and the wife, respectively. Once the marriage has taken place, each spouse observes his or her own outside opportunity, denoted by O_w and O_h, but they do not observe the outside opportunity of their partner. Then, each spouse compares the utility levels he or she would receive in each of the states (marriage or divorce), and decides whether to propose the continuation of the marriage or to stand for divorce. When considering the possibility of divorce, each spouse takes into account that the lack of mutual consent for the termination of the marriage implies to pay a certain cost of divorce C.[11] On the contrary, if both spouses agree to a divorce, they do not have to pay any divorce cost.[12] As a result of individual assessments of utilities in each state, we would have three possible situations:

1. Both spouses prefer divorce: $u_w < O_w - C$ and $u_h < O_h - C$. Although they consider the divorce cost when making the decision, they get mutual consent for divorce and do not have to pay that cost.

2. Both want to continue married: $u_w > O_w$ and $u_h > O_h$. There is no conflict of interest and the marriage continues. Note that in this case the marriage yields a surplus $S = u_w + u_h - (O_w + O_h)$.[13]

3. Only one spouse wants to leave the marriage. Assume that the one wanting to

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[11]There is no distinction in the model between mutual consent and unilateral divorce. The regime can be thought as unilateral since any spouse can make the decision of leaving the marriage without having the consent of the other, but incurring in a cost which is not present when there is mutual consent for termination. This setup is motivated in the actual divorce regime in Spain, which allows for unilateral separation based on certain grounds. These grounds include the usual considerations of fault or "de facto" separation, in which case, effective cessation of marital life for a period of 3 years is required. Having to prove fault in court or getting "de facto" separation is the cost that the spouse who wants to leave the marriage unilaterally has to pay.

[12]Notice that a condition for standing for divorce is to be able to afford it, that is: $u_i < O_i - C$. Otherwise, if $O_i - C < u_i < O_i$, the person would prefer to continue married. There will be of course cases in which both would like to get divorced but could not afford it if having to pay C. We can assume with no loss of generality that they would reach an agreement for mutual consent divorce.

[13]Cases in which only one spouse would like to leave the marriage but cannot pay the cost of divorce (i.e. $O_i - C < u_i < O_i$) are included here.

get divorce is the wife.[14] Two possibilities arise:

(a) She wants to leave and can afford it, but her husband can compensate her to stay together: $u_w < O_w - C$ and $u_h - O_h > O_w - C - u_w$. I assume that if compensation is possible, whatever the scheme of this compensation is, the compensation takes place and the marriage continues.[15]

(b) She wants to leave and can afford it, and her husband cannot compensate her to stay together: $u_w < O_w - C$ and $u_h - O_h < O_w - C - u_w$. Compensation is not feasible and there is divorce. Note that the husband would prefer to continue married but can not convince her to stay. The dissolution is unavoidable and conflict may arise with the decision of the wife of leaving the relationship.

2.1.2 Stage 2: (Re)negotiation of the distribution of gains of marriage

Conditional on the continuation of the marriage, spouses may (re)negotiate the distribution of the marital surplus. Marriages that survive the first stage are: (i) those in which both spouses want to stay married, (ii) those in which one spouse wanted to leave but was compensated by the other to stay together. To simplify, assume that renegotiation only takes place in case (i). Note that the surplus S is not known with certainty, since the outside option of the other partner is not observable.

Assume now that the husband can force a renegotiation of the distribution of the surplus in order to maximize his value of the marriage, and this renegotiation requires the use of violence. He can either choose violence (V) to claim a transfer $(T(V) = T)$ from his wife, or choose no violence (NV) and remain with his original share of the surplus (that is, $T(NV) = 0$).[16] If he chooses violence and there is no divorce, his utility becomes $u_h + T$.[17]

The wife responds by deciding whether to stay in the marriage, accepting a lower share of the surplus (because of the transfer and the disutility from violence), or to file for divorce. If she stays, her utility is $u_w - T - V_w$, where V_w is the disutility from violence. If she divorces, her utility is given by $O_w - C$.

Wives differ in their outside option, such that $O_w \sim [O_w^{min}, O_w^{max}]$. We can

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[14]The case in which it is the husband instead, is completely symmetric.

[15]Note that the existence of divorce costs may imply that some inefficient marriages do not end up in divorce. This would be the case if $O_w + O_h - C < u_w + u_h < O_w + O_h$.

[16]This transfer should be interpreted as any redistribution of the gains of the union in favor of the husband.

[17]This would imply that violence is "instrumental", in the sense that it is used as a means to get a higher share of S.

interpret this as their labor market potential after divorce or their remarrying probabilities.[18] The husband does not know the true value of O_w, but only the distribution in the population.

The solution for the second stage of the game can be found by backward induction. The wife will choose between staying and leaving, given the decision of her husband. In the absence of violence her best strategy is to stay, given that $u_w > O_w - C$ for all women in this stage. If there is violence, she will divorce if and only if $O_w - C > u_w - V_w - T$. Otherwise, she will stay in the marriage and suffer violence from her husband.[19] The husband makes his decision about violence knowing only the probability that she will divorce if her utility inside marriage falls below the value of her outside option. To simplify the notation, let us call p the probability that she will divorce as a consequence of violence.[20] Then, he compares the extra utility he would receive if violence is accepted with the probability that she divorces and he is being left with his outside option. A condition for choosing violence, therefore, is that $(u_h + T)(1 - p) + O_h p > u_h$. If this inequality holds, the husband will choose violence; and the wife will stay in an abusive marriage with probability $1 - p = F_{Ow}[u_w - V_w - T + C]$, and divorce with probability $p = 1 - F_{Ow}[u_w - V_w - T + C]$.

2.2 Comparative Statics and Implications

This simple model yields clear and intuitive predictions on the impact of a reduction in divorce costs on domestic abuse. The probability of domestic violence is: $F_{Ow}[u_w - V_w - T + C]$. This is increasing in the cost of divorce, C, which leads to the following proposition:

Proposition 1 *The prevalence of domestic abuse among married couples decreases after the reduction in the cost of divorce.*

It is important to notice that the reduction in domestic violence comes not only from the increase in dissolutions of abusive marriages, but also from a reduction in

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[18]In order to have that some wives would divorce in case of violence and others do not, we need to impose some restrictions to the distribution of O_w, such as: $O_w^{max} - C > u_w - V_w - T$ and $O_w^{min} - C < u_w - V_w - T$.

[19]Given the interpretation of the cost of divorce in the first stage, a natural question here would be why the wife has to pay a cost to get divorced, given that the husband has committed fault (violence). Nevertheless, we can think of C as the cost of having to prove violence in court, plus the period of mandatory separation that still should be incurred.

[20]A wife will leave an abusive marriage if she has a good enough outside option, that is: $p = Pr(O_w - C > u_w - V_w - T) = 1 - F_{Ow}[u_w - V_w - T + C]$, where F_{Ow} is the c.d.f. of Ow.

the incentives of husbands to choose violence. To see this more clearly, the condition for the husband to choose violence can be rewritten like this:

$$T(1 - p) > (u_h - O_h)p$$

If the reform changes the probability p, it also changes the incentives to choose violence in order to force a renegotiation of the surplus. The reform, therefore, reduces the equilibrium level of domestic violence through an improvement of the bargaining position of the wife.

The model has also implications for the distribution of the effects in terms of individual characteristics. One of the main sources of heterogeneous responses to changes in divorce law is the presence and age of children. This argument can be rationalized at least in two ways. First, the reduction in the cost of divorce is larger for women without children under age 18. Having young children lengthen the divorce process since decisions about custody and maintenance payments have to be made. Second, the presence of young children has been found an important determinant of individual-specific cost of divorce (Del Boca and Flinn, 1995; Weiss and Willis, 1997). For instance, mothers of young children are likely to face higher emotional and economic costs of marital dissolution than non-mothers or mothers of older children. A simple extension of the model would be to assume that the cost of divorce for a certain woman, C_w, depends not only on the divorce cost determined by the current legal regime, say $\overline{C}$, but also on individual characteristics, c_w. While the reform in divorce law affects the general component of the cost of divorce, the presence of an specific component will lead to differences in the intensity of the treatment.

Corollary 1 *The reduction in the incidence of abuse is larger for women more affected by the reduction in divorce cost.*

A second source of heterogeneous responses to the law change are differences in women's outside option. The following corollary shows this:

Corollary 2 *The reduction in the incidence of abuse is larger for women with better outside options.*

Moreover, the assumption of a continuous distribution for women's outside opportunities leads to an interesting testable prediction: the reduction in domestic abuse should come not from women at the top end of that distribution, but from women with better outside of marriage prospects among those suffering abuse in the

old regime. Figure 1 illustrates this point.

In this model, divorce happens in equilibrium not only as a response to spousal violence in the second stage but also as a consequence of realizations of outside options (net of divorce cost) in the first stage. The reduction in the cost of divorce, then, will affect the probability of divorce. In particular, it will increase the frequency of divorces in which one spouse prefers the continuation of the marriage.[21]

Proposition 2 *The rate of non-mutual consent divorce increases after the reform in divorce law.*

How is this related to spousal violence? As the sociology and criminology literature show, partner violence -and in particular, extreme violence- often occurs around important events in a relationship such as a unilateral breakup decision (Stolzenberg and D'Alessio, 2007; Wilson and Daly, 1992; Campbell, 1992). The reduction in the cost of divorce would lead to a higher demand for divorce and, in particular, a higher share of unilateral breakups, which could potentially lead to more conflict between separating spouses. At the same time, the legal change shortens the length of the whole dissolution process, from the decision to divorce until divorce is effectively obtained. Therefore, assuming that the highest risk of spousal violence occurs during the dissolution process, whether we should expect more or less violence between separating spouses would depend on which effect predominates: the increase in the number of spouses involved in conflicting dissolution or the reduction in the length of time required to dissolve the marriage. For instance, if N is the number of couples, d is the probability of divorce, h is the probability that a divorce ends in partner homicide during the divorce process (per unit of time at conflict), and t is the duration of that process, the number of partner homicides between separating spouses is: $N * d * t * h$. Suppose now that a reform of divorce law makes: $d_1 > d_0$ and $t_1 < t_0$, where 0 and 1 denote the pre- and post-reform period, respectively. Suppose also that N and h are unchanged by the reform.[22] Then, at a certain point in time during the new regime, the number of people at risk of spousal homicide will be lower if and only if $d_1/d_0 < t_0/t_1$.

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[21]The reduction in the cost of divorce makes it more difficult for the spouse who values the marriage more to compensate the other partner to stay.

[22]Since h is the probability of spousal homicide during the divorce process per unit of time at conflict, it can be assumed as unchanged by the reform.

3   Empirical Strategy

3.1   The Reform of Divorce Legislation in Spain in 2005

In July 2005, the Spanish parliament approved a comprehensive reform of the rules governing marital dissolution in Spain.[23] This reform included two key modifications that substantially lowered the barriers to divorce. First, it eliminated the mandatory 1-year legal separation period before divorce.[24]   Second, it allowed for unilateral and no-fault divorce.[25] As a consequence of these legal changes, the divorce regime suddenly went from one with fault and mandatory separation period to another with easy, unilateral, and no-fault divorce, dramatically reducing both the economic and emotional costs of marital dissolution.

The old regime, which was in place since 1981, was mainly characterized by a two-step process to deal with marital breakdown. The couple who wanted to dissolve the marriage generally had to resort to a period of separation before being able to file for divorce.[26]   Once the petition for legal separation had been filed, at least 1 year had to pass before filing for divorce. Separation, in turn, could be obtained by mutual consent or unilaterally, but based on a legal ground. The legal grounds for separation established in the Spanish Civil Code included the usual considerations of fault - unjustified abandonment of the family house, being sentenced, alcoholism, drugs addiction, etc. - or the effective cessation of marital life for a period of 3 years.[27]

The combination of unilateral and no-fault divorce with the possibility of filing for divorce directly, without legal separation as a necessary step, implied a substantial reduction in the length of time needed to obtain a divorce. Quantifying this time reduction is not an easy task, because it may depend on whether there was mutual consent for separation or not, and on the ground on which separation was based. A

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[23]Act 15/2005 of July 8th, modifying the Spanish Civil Code and the Civil Procedure Rules on matters of separation and divorce.

[24]Legal separation is left as an option for those not wanting to resort to divorce.

[25]Other modifications included the reduction of the waiting period after which it is possible to dissolve a union from 1 year to only 3 months since the celebration of the marriage, and the introduction of the notion of shared custody of children after divorce.

[26]There is one exception in which it is possible to directly file for divorce, which corresponds to the case in which there is risk of violence against the spouse or the children. For a more detailed description of the grounds for divorce in Spain before the reform of 2005 see Boele-Woelki, Braat, and Sumner (2003)

[27]This length corresponds to the case in which the cessation of marital life is not consented by both the spouses; otherwise, it would be reduced to only 6 months. However, this shorter period is somehow redundant, because mutual consent is a sufficient condition to file a petition for legal separation.

lower bound for this shortening of the process can be determined in 1 year, the period established in the old regime between the separation petition and the possibility of initiating the divorce process. Nevertheless, in some cases, this period can be much longer, particularly in those relationships in which there was no mutual consent for termination. The old regime made separation particularly difficult for a spouse who was unhappy in a relationship and wanted to leave without having the consent of the other partner. A person like this usually faced two alternatives. One was to go to court and claim separation on the base of fault, in case it existed, which may involve a lengthy and expensive legal battle with the other partner. A second alternative consisted of stopping marital life for a period of 3 years, and then claim legal separation on the base of *de facto* separation. In such a case, the change to unilateral and direct divorce may imply a reduction to the dissolution process of about 4 years (3 years to file for legal separation on the ground of *de facto* separation plus 1 year before being able to file for divorce).[28]

As a consequence of the relaxation of the requirements to obtain a divorce, there was a huge increase in the number of divorce proceedings petitioned. Figure 2 shows the evolution of marital dissolution in Spain between 1975 and 2010. In the first year after the reform, the number of divorce petitions that entered into local courts increased by 170 percent. This was only partially compensated by a decline in separations, which can be explained by the fact that legal separations remain only as an option for those who do not want to opt for divorce directly.

Besides this increase in the number of marital dissolutions, the law change may have had a differential effect on women and men. For instance, in the old regime, women were more constrained than men to exit a relationship due to high costs of obtaining a divorce. The analysis of who is the spouse filing a petition for the dissolution of the marriage points to this direction. A separation or a divorce can be petitioned by one of the spouses or by both. 3 shows the evolution of separations in which only one spouse has filed the petition, while 4 shows the same for divorce proceedings.[29] In both cases, it is possible to observe an increase in the proportion of

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[28]It is important to note that this is only an upper bound and, probably, in many cases, it would not be reached, even if it is not possible to prove that the other spouse has incurred any of the typified grounds for separation. This is because in those cases, courts usually refer to the so-called "lack of *affectio-maritalis*" as a valid ground for separation (Boele-Woelki, Braat, and Sumner, 2003).

[29]Both pictures are needed because during the old regime, marital ruptures were initiated with a demand for separation, while after the new regime, most of the dissolutions are obtained directly through divorce.

dissolutions initiated by wives after the reform, which provides evidence supporting the hypothesis that women are more benefited by the reduction in divorce costs.

3.1.1 Other legal changes regarding domestic violence in Spain

During the period covered by this study, two integral plans and one main law aimed at preventing and combating domestic abuse were implemented. The First Action Plan against Gender Violence (1998-2001) and the Second Integral against Domestic Violence (2002-2004) were elaborated and implemented by the Spanish Women's Institute. Those plans mainly included measures aimed at fostering awareness and prevention for potential victims, increasing the availability of resources for victims, and augmenting sanctions for aggressors. A major landmark in the fight against domestic violence, though, was the introduction in December 2004 of an integral law providing comprehensive protection measures against gender-based violence.[30] These measures can be grouped into three broad areas of intervention. The first consists of awareness-raising and prevention measures on the one hand, and education and training activities on the other hand. The main measures involve informational campaigns, raising-awareness advertising in the media, reinforcing the notion of equality of rights and opportunities between men and women in school curricula at all levels, training of healthcare professionals in detecting and preventing violence, and training of legal protection and support professionals. A second group includes penal and judicial measures such as increased penalties for gender-based offenses and the establishment of specialized courts to deal with this kind of crimes. Finally, the third group of measures aims at increasing protection for victims of gender violence.

3.2 Identification Strategy

The identification strategy is essentially based on the reform in divorce legislation that took place in Spain in 2005, which can be considered as a source of exogenous variation in the rules of the game regarding marriage dissolution. As such, this reform constitutes a natural experiment and then provides a unique opportunity to identify the causal effect of easier divorce on domestic violence.

Two basic conditions should fulfill this legal change to constitute a valid natural experiment: being unanticipated and exogenous to the evolution of domestic violence. There are reasons to believe that these conditions are guaranteed. With respect to the

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[30]Organic Law 1/2004 of 28 December.

first point, the reform in divorce legislation was part of a series of legislative measures concerning family law introduced by the Socialist Party right after winning the general elections in March 2004. The reason why these legal changes can be considered unexpected is that the election results themselves were totally unexpected. Until shortly before the national elections to the Spanish parliament were to take place, the incumbent party held a majority of public support according to available forecasts.[31] But a large-scale terrorist attack that hit the commuter train system in Madrid just 3 days before the date of the election suddenly changed the election outcome and resulted in a surprising victory of the opposition Socialist Party (Montalvo, 2010; Bali, 2007; Colomer, 2005; Chari, 2004).

With regard to the exogeneity of the legal change with respect to domestic violence, the stated purpose of the law was to give to the spouses the freedom to decide whether they want to continue married or not, and to eliminate the double procedure (fist separation and then divorce) usually needed to end a marriage, reducing both economic and emotional costs of marital disruption.

Then, the identification strategy used in this paper relies on a difference-in-differences approach (Angrist and Krueger, 1999; Heckman, Lalonde, and Smith, 1999), using married couples as the treatment group and cohabiting partners and individuals in a relationship but not legally married as a control group. That is, I compare the change in spousal violence for married women before and after the reform in divorce law, to the change in spousal violence for women not directly affected by the legal change (i.e. those in a relationship but not legally married). In this way, this empirical framework allows to control for systematic differences in the level of domestic violence both between married and unmarried women and between before and after the law change.

More formally, if Y_1 denotes the outcome of interest with treatment and Y_0 without, t' and t denote the pre- and post-treatment periods, and D is a binary indicator of program participation, the difference-in-differences estimator can be written as follows:[32]

$$\Delta^{DiD} = [Y_{1t} - Y_{0t'}|D = 1] - [Y_{0t} - Y_{0t'}|D = 0] \tag{1}$$

Since it is not possible to observe Y_1 and Y_0 for the same individual at the same time, this estimator relies on the following identifying assumption:

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[31]See for instance Center for Sociological Research (2004), Study 2559, April.

[32]Following the notation of Heckman, Lalonde, and Smith (1999)

$$E[Y_{0t} - Y_{0t'}|D = 1] = E[Y_{0t} - Y_{0t'}|D = 0] \tag{2}$$

which is known as the common-trends assumption and requires that both the treatment and the control groups would have followed the same trend in the outcome variable, absent any reform. Under this assumption, it is possible to use the evolution of the population average difference over time in the control group as a benchmark to estimate the treatment effects. In terms of married and unmarried populations, this implies that the mean effect of the reform on spousal violence can be obtained as follows:

$$\Delta^{ATT} = [E(Y_{it}|Married) - E(Y_{it'}|Married)] - [E(Y_{it}|Unmarried) - E(Y_{it'}|Unmarried)] \tag{3}$$

where Y denotes some measure of spousal violence.

Although there is no formal test to check the assumption of common trends between the treatment and control group, there are different ways to investigate its validity. The most straightforward is by graphically examining the data and comparing the trends of both groups in the pre-treatment period. An alternative test is to add controls for potentially different group-specific trends in the regressions and investigate whether there is enough evidence to reject the equal trends assumption. Both tests are carried out in the empirical analysis.

One potential threat to the validity of this assumption comes from aggregated shocks that have a differential impact across treatment and control groups. This may happen if the unobserved differences between both groups are correlated with those shocks. A potential candidate to constitute such a shock is the approval of the Law Against Gender Violence at the end of 2004. Nonetheless, most of the measures for protection against gender violence are aimed at all women, regardless of marital status. The only exception is given by measures aimed at facilitating separation and divorce procedures in cases in which domestic violence is alleged.[33] But even in the case that these measures have a differential impact between married and unmarried

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[33]The Law Against Gender Violence of 2004 created specialized courtrooms to deal with gender violence crimes. When a criminal process is under the jurisdiction of these courts, they have also competence in civil law matters related to that process. This implies that separation or divorce procedures in which the women alleged spousal abuse are heard by these courts. Since 2005, when these specialized courts were created, around 4 percent of the total number of separations and divorces decreed in Spain fell under their jurisdiction.

women, this effect would be intrinsically related to the main purpose of this paper, which is to assess the impact of easier divorce on the level of domestic violence.

Another key assumption of the difference-in-differences estimator is that there are no changes in the composition of the groups as a consequence of the reform. Otherwise, coefficients would be biased. To test the validity of this assumption, I use microdata from the census of marriages to evaluate two potential concerns in relation to the reform in divorce legislation. First, I test whether there is evidence of a structural break in the time-series of marriages. Second, I check for potential changes in the composition of those who marry after the reform.

3.3 Specifications

3.3.1 Non-extreme violence

The difference-in-differences approach translates into the following specification, in order to estimate the impact of easier divorce on non-extreme spousal violence:

$$DV_{igt} = \beta_0 + \beta_1 Married_g + \beta_2(Married_g * Post_t) + \sum_t \lambda_t Year_t + X'_{igt}\gamma + \mu_{igt} \quad (4)$$

where DV_{igt} is a measure of domestic violence for individual i, marital group g, and year t, $Married_g$ is an indicator of the treatment group, $Post_t$ is a binary indicator for the post reform period and therefore β_2 is the difference-in-differences estimator.

Individuals affected by the legal change are those who were married or legally separated, but not yet divorced, when the law was passed. Given that the post-reform data were collected one year later, the definition of the treatment group should take into account potential transitions among marital states during this period, in order to avoid changes in the composition of groups. Available information about the duration of the relationship for intact marriages, and about elapsed time since the breakup for those who terminated, makes it possible to identify this group with precision. Then, the treatment group includes women who have been married for at least one year, or who are legally separated, or who have divorced during the previous year. Also, to ensure the comparability of the treatment group over time, the same definition is used for years 1999 and 2002.

There are two main measures of non-extreme domestic violence to be used as dependent variable. The first is a measure of self-reported abuse and is based on the

interviewee's perception of having been victim of abuse from her intimate partner. The variable is defined as a binary indicator which takes value 1 if the woman reports abuse from intimate partner during the previous year. The second measure is called "technical abuse", since it is based on a series of 13 questions referred to behaviors or situations which are considered by experts as strong indicators of mistreatment. The survey contains information about the frequency with which these situations occur (i.e. frequently, sometimes, rarely, never) and about who is the offender. "Technical abuse" is a binary variable that takes value 1 if any of these 13 indicators occurs "frequently" or "sometimes" and the offender is the intimate partner of the victim. Also, this second measure can be disaggregated into four additional measures of abuse -physical, sexual, psychological in the form of control, and psychological in the form of emotional mistreatment, according to a classification elaborated by Alberdi and Matas (2002). In the tables below I consider these definitions of violence as alternative outcomes. The details of the construction of these measures as well as the description of the 13 indicators of abuse and the corresponding sampling frequencies are reported in Table A.1.

These different measures of abuse lead to different sample definitions. On the one hand, when the dependent variable is self-reported abuse, since this information is available for all surveyed women, the sample includes all women who were in a relationship during the previous year. On the other hand, when the dependent variable is a measure of technical abuse, since that information is only available for women who are in a relationship at the moment of the survey, the sample is restricted to women who fulfil that condition.

Finally, the vector X_{igt} includes a rich set of control variables that can affect the level of domestic violence and also be correlated with marital status. It includes control variables for woman's age, education, labor market status, presence and number of children, religion beliefs, urban-rural residence, and region fixed effects. In some specifications, this vector also contains controls for education and labor market status of the partner.

3.3.2 Extreme violence

I estimate the following equation to capture the impact of the law change on female homicide:

$$FH_{gqt} = \beta_0 + \beta_1 Married_{gqt} + \beta_2(Married_{gqt} * Post_{qt}) +$$
$$\sum_q \gamma_q Quarter_q + \sum_t \lambda_t Year_t + \mu_{gqt} \tag{5}$$

where FH_{gqt} refers to female homicides by intimate partner for group g, quarter q, and year t. In a first stage, the treatment group includes married and separated women, while the control is conformed of unmarried women. The reason to include both spouses and ex-spouses in the treatment group is that we are interested in the effect of easier divorce on spousal violence and we want to be sure that a potential effect on still married couples is not the consequence of the displacement of violence from married to separated couples.[34] In a second stage, I decompose the treatment group into two subgroups: Those victims who were still married and those who were already separated:

$$FH_{gqt} = \beta_0 + \beta_1 Stillmarried_{gqt} + \beta_2 Separated_{gqt} +$$
$$\beta_3(Stillmarried_{gqt} * Post_{qt}) + \beta_4(Separated_{gqt} * Post_{qt}) +$$
$$\sum_q \gamma_q Quarter_q + \sum_t \lambda_t Year_t + \mu_{gqt} \tag{6}$$

The dependent variable is a measure of female homicides committed by intimate partner. It can be defined in at least three alternative ways, which lead to different econometric specifications. The first alternative, and probably the most natural, is to define it as a count. I use the aggregate number of intimate partner female homicides by marital status and quarter, for the period between 2000 and 2010. When the dependent variable is defined as a count, it is natural to assume it follows a Poisson process. Then, following the conventional parametrization of this kind of model, this implies that $ln(\lambda_{gqt}) = X'_{gqt}\beta$, where X'_{gqt} is a vector of explanatory variables and λ_{gqt} is the conditional mean of the number of homicides per group and period.[35]

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[34]An example may help to clarify this point. Suppose that the reduction in the length of time to obtain a divorce derived from the reform makes that an homicide, that otherwise would have occurred while the couple was still married, happens when they are already separated. In that case there is no reduction in spousal violence, but a displacement of violence from married to separated couples.

[35]This specification assumes that the number of homicides per group g and period of time given by q and t, FH_{gqt}, has a probability mass function equal to: $pr(FH_{gqt}) = \lambda_{gqt}^{FH_{gqt}} exp(\lambda_{gqt})/FH_{gqt}!$,

An interesting property of Poisson regression models is that we can use individual or grouped data, with equivalent results. The only practical implication when using grouped data is that we need to include the logarithm of the population size for each group among the explanatory variables. On the other hand, one well-known limitation of Poisson models is the equidispersion property, by which the mean is equal to the variance (i.e. $E(FH_{gqt}) = var(FH_{gqt}) = \lambda_{gqt}$). This means that the usual assumption of homoscedasticity is not appropriate. The simplest way in which this concern can be addressed is by obtaining a robust estimate of the variance-covariance matrix of the estimator. Alternatively, the Negative Binomial regression model can be used, since it allows for overdispersed data (Cameron and Trivedi, 2005).

A second alternative is to convert the count into a rate, by dividing the number of homicides by the corresponding group population size estimate, and estimate the model by OLS.[36] The choice of the functional form is not trivial. In fact, one of the reasons behind the conflicting results of past empirical studies is the use of different functional form. Then, investigating the stability of the results under different specifications is a way of assessing the robustness of those results.

The third alternative for the definition of the dependent variable consists of using the logarithm (instead of the level) of the homicide rate, in which case OLS is an appropriate model as well. The reason for this is that the homicide rate is always positive and therefore a linear model for the logarithm of the homicide rate is a more natural alternative (Lee and Solon, 2011).[37]

The main coefficient of interest is that of the interaction between the indicator of the treatment group and the dummy for the post reform period. This coefficient gives the average change over the post reform period in intimate partner homicide attributable to the law change.

In all cases I run the regressions with year and quarter fixed effects. In some cases, I also include linear group-specific time trends, in order to investigate the robustness of the results to the possibility that the common trends assumption fails.

Finally, there are two possibilities to define the beginning of the post reform period: to consider the date of announcement or the date of enactment. The law was approved by the Spanish parliament in July 2005 and was in force since that

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for $\lambda > 0$.

[36]Population sizes for different marital groups can be obtained from the Spanish Labor Force Survey on a quarterly basis.

[37]Another possible alternative would be, given that the homicide rate is a fraction, to use linear models for the logit of the rate. See for instance Lee and Solon (2011) for a discussion on these issues applied to the impact of unilateral divorce on divorce rates.

date, but was announced around 10 months earlier, when the first bill was approved by the Council of Ministers and submitted to the Congress.[38] Since individuals may react to the introduction of new divorce regime right after its announcement, the post-reform dummy $Post_{qt}$ is set equal to 1 since the third quarter of 2004.[39] The empirical results shown in section 5, however, are robust to using either date as the beginning of the post reform period.

3.3.3 Marital dissolution

Easier divorce can affect the incidence of domestic abuse by easing the dissolution of abusive relationships. Therefore, to complete the empirical analysis we need to assess the impact of the law change on marital dissolution. Evaluating this by looking at divorce rates directly is problematic, since the nature of the reform makes the before-after comparison meaningless.[40] To overcome this, I assess the impact of the reform on marital dissolution indirectly, by looking at the evolution of the stock of divorcees. The share of divorcees in the population at a point in time depends on both the propensity to divorce (the flow into divorce state) and the probability of remarrying (the flow out from divorce state). Then, abstracting from changes in remarriage rates, the evolution of the stock of divorced individuals can shed light on the impact of the reform on divorce probability.

To perform the analysis, I rely on data from the Spanish Labor Force Survey, which allows to construct fairly precise estimates of population size by marital status, on a quarterly basis. I use the stock of separated and divorced individuals -for

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[38]The whole process of approval of the legal change was actively followed by the media. To the best of my knowledge, the first newspaper article anticipating the reform to be introduced appeared on August 17th, 2004, in *El Mundo* newspaper (http://www.elmundo.es/elmundo/2004/08/17/espana/1092742690.html). After the Council of Ministers passed the first bill, it was first approved by the Congress of Deputies in April 2005, and later by the Senate in June 2005. The final enactment day was July 8th, 2005.

[39]The hypothesis that individuals became aware of the new policy around its announcement -is supported by evidence provided by the search intensity on the internet for information about the legal change. This is shown by Figure A.2, which depicts the evolution of the search intensity for the query *divorcio* -the Spanish word for divorce- in the search engine Google. There were two peaks in the search intensity for this query, coinciding with the announcement and enactment dates of the legal change. These data can be obtained at http://www.google.com/insights/search.

[40]Comparing divorce rates before and after would be misleading if we want to extract conclusions about the level of marital dissolution since some divorces after the reform simply substitute what otherwise would have been a separation. Comparing the total number of dissolutions (separation plus divorces) does not help either, since before the reform both were (in most of the cases) required to dissolve a unique marriage, while afterwards they could represent two different dissolution processes.

simplicity I refer to this group as to divorcees- to estimate the following equation:[41]

$$
\begin{aligned}
divorcee_{it} \;=\; & \beta_0 + \beta_1 time_t + \beta_2 post_t^{2005} + \beta_3 timepost_t + \\
& X'_{it}\gamma + \sum_q \lambda_q Quarter_q + \mu_{it}
\end{aligned} \tag{7}
$$

where $divorcee_{it}$ is a dummy variable set equal to 1 if individual i is separated or divorced at time t, $time$ is a continuous variable indicating time in quarters from the start of the observation period, $post^{2005}$ is a dummy that equals 1 since the third quarter of 2005, when the reform in divorce legislation became effective, and $timepost$ is a continuous variable counting the number of periods after the law change. This flexible specification allows the stock of divorcees to trend linearly with potentially different slopes before and after the reform, and to have a change in level that can be attributed to the reform. That is, β_2 estimates the level change in the stock of divorcees immediately after the reform, while β_3 estimates the change in the trend in the mean number of divorcees after the reform. The vector of control variables, X'_{it}, includes dummies for age and education groups, and also a dummy for gender when both men and women are included in the sample. Since I use quarterly data, quarter fixed effects are also added to control for seasonality.

3.3.4 Marital formation

The validity of the difference-in-differences approach proposed to estimate the impact of easier divorce on domestic violence requires that the reform neither affected the propensity to marry in the population nor the composition of those who marry. I test to what extent these two assumptions are supported by the data by using data on marriage records.

First, to investigate the possibility of a structural break in the series of marriages after the reform in divorce law, I estimate the following model using monthly data:

$$
marriages_t \;=\; \beta_0 + \beta_1 time_t + \beta_2 post_t^{2005} + \beta_3 timepost_t +
$$

---

[41] The survey does not distinguish between separated and divorced individuals, but this is not a problem, since both are a measure of marital dissolution. The main difference between the two cases is that divorce implies the termination of the marriage, while separation does not, since during this period reconciliation is still possible.

$$\beta_4 marriages_{t-1} + \beta_5 GDPgrowth_{t-12} + \sum_t \lambda_t month_t + \mu_t \quad (8)$$

where the dependent variable, $marriages_t$, is the number of new marriages in month t, $time$ is a continuous variable indexing the month; $post^{2005}$ is the usual indicator for the post-reform period, and $timepost$ is a continuous variable indicating time since the introduction of the reform. Variables $marriages_{t-1}$ and $GDPgrowth_{t-12}$ are included to control for autocorrelation and for the influence of economic conditions on the propensity to marry.[42]

Second, to investigate potential changes in the composition of new couples, I estimate the following equation:

$$char_{it} = \beta_0 + \beta_1 time_t + \beta_2 post_t^{2005} + \beta_3 timepost_t + \sum_t \lambda_t month_t + \mu_{it} \quad (9)$$

where $char_{it}$ is a dummy variable that takes the value 1 if the individual i who gets married in month t has a particular observable characteristic and 0 otherwise, and $post2005_t$ is set equal to 1 since July 2005. The observable characteristics considered are spouses' main occupation, age at marriage, and previous legal civil status. As before, $time$ and $timepost$ are two continuous variables indicating time in months at time t, the first counting from the start of the observation period and the second from the enactment of the reform.

4 Data and Descriptives

4.1 Databases

I employ two main databases to conduct the empirical analysis: a nationally representative survey on violence against women, and the official registry of female homicides by intimate partners.

4.1.1 Survey on Violence Against Women

To study the effects on non-extreme violence, I rely on microdata from the Survey on Violence Against Women conducted by the Spanish Women's Institute in 1999,

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[42]Including other lags of these two variables does not change the results significantly.

2002, and 2006. This survey is representative of all adult women (age 18 or older) living in Spain, irrespective of whether they are in a relationship or not.

The survey contains specific questions on abuse which make it possible to construct the measures of self-reported as well as technical abuse mentioned before. Respondents to the survey were queried about whether they think they have been victims of abuse from their intimate partner during the previous year and at any time in their adult life. They were also asked detailed questions about a series of situations considered indicators of violence, the frequency of this happening, and their relationship to the perpetrator.

The questionnaire also included detailed questions regarding the partnership status of the respondent, which allows to distinguish up to seven different marital groups: married, cohabiting, legally separated, divorced, widow, dating, and single. There is also information on the duration of the relationship. In addition, the survey also provides information -both for the woman and for her partner in case she has one- on demographic characteristics, labor market status, educational background, and household composition.

4.1.2 Data on female homicide by intimate partner

To study the impact of the reform on lethal spousal violence, I use data on female homicides by their intimate partner for the period between 2000 and 2010. Intimate partners include current and former husbands, opposite-sex cohabiting partners, boyfriends, and dates. There are two different sources for these data. The Spanish Women's Institute, an autonomous body attached to the Ministry of Health, Social Policy, and Equality; provides information on the annual number of fatal victims of intimate partner violence, disaggregated by victim-perpetrator relationship.[43] The Queen Sofia Center (QSC hereafter), a non-governmental institution devoted to the study of violence, provides similar information but on a monthly basis and with more details about the crime.[44] Besides knowing the victim-perpetrator relationship, QSC's data provide information about age for both of them, place of residence of the victim, place where the crime was committed, and the motherhood status of the victim. For women who were legally married at the moment of the homicide, there is also information on whether the they had initiated the procedure to obtain legal

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[43]Their sources of data are the media and the Ministry of the Interior for 2000-2005, and the Government Office on Gender-based Violence for 2006-2010.

[44]Data come from the Ministry of the Interior, the media, and the courts responsible for handling cases.

separation. Because of the more detailed information and the possibility of defining the pre- and post-reform period with precision given the availability of data on a monthly basis, most of the empirical analysis below is based on QSC's information.

One limitation of both databases is that they do not distinguish between legally separated and already divorced victims in cases in which the perpetrator is the former spouse. In those cases, the victim-perpetrator relationship is coded as "ex-spouse". The importance of that differentiation is that while separated partners are affected by the legal reform (i.e. their dissolution process is subject to the new regime), those already divorced are not. This shortcoming of the data, however, appears to have little practical relevance. Both information contained in cases' description in QSC's data and anecdotal evidence seem to point to a majority of those cases corresponding to parters amid a process of separation and, therefore, not yet legally divorced.

4.1.3 Other sources of data

Besides these two main sources of data, I also employ other datasets to supplement the analysis. I use administrative data from Judiciary Statistics to study the evolution of the annual number of separations and divorces. Also, I employ microdata from marriage records provided by the Spanish Institute of Statistics to analyze the potential impact of the reform on both the quantity and the composition of new married couples. Finally, I use the Spanish Labor Force Survey, also conducted by the Spanish Institute of Statistics, to study the effect of the reform on the size and composition of the stock of divorcees. Population data employed to construct homicide rates is also obtained from this survey.

4.2 Sample Definition and Descriptive Statistics

This section presents the basic features of the data used in the empirical analysis.

4.2.1 Non-Extreme Violence: Self-reported and Technical Abuse

The sample for the analysis of the impact of divorce law on non-extreme abuse consists of the waves of 1999, 2002, and 2006 of the Survey of Violence Against Women. Table 1 presents the main descriptives statistics of the data. The number of observations is 20.552 in 1999, 20.652 in 2002, and 32.426 in 2006. Important for the validity of the difference-in-differences approach with repeated cross-sectional data is that samples come from the same population. This seems to be the case when we observe the

sample composition in terms of the main observed characteristics (Table 1).

It is interesting to see how the different measures of intimate partner abuse relate to each other. As expected, all correlation coefficients are positive and statistically significant. The coefficient for the correlation between self-reported and technical abuse is 0.326. Moreover, according to the correlation between self-reported abuse and the four types of violence in which technical abuse can be decomposed, it is possible to deduce that women who declare to be victims of abuse tend to associate this situation to physical abuse ($\rho = 0.464$), more than to psychological (emotional) abuse ($\rho = 0.374$), psychological abuse in the form of control ($\rho = 0.322$), or sexual abuse ($\rho = 0.153$).

The key assumption for the validity of the identification strategy (i.e. common trends) can be investigated by observation of the data. Figure 5 shows the proportion of married and unmarried women who reported to have been victims of abuse from intimate partner during the previous year in 1999, 2002, and 2006. Meanwhile, Figure 6 depicts the evolution of technical abuse by marital relationship during the same years. Although having only two data points during the pre-treatment period may be insufficient to convincingly prove the validity of the common trend assumption, the evidence available points in that direction.

4.2.2 Extreme Violence: Female Homicide

The sample for the analysis of extreme violence includes all 703 female homicides committed by intimate partners between 2000 and 2010 in Spain. During this period, the average number of female homicides per quarter is 16, with a minimum of 10 and a maximum of 24 (Table 2). In terms of the female population in Spain between 2000 and 2010, this translates into a quarterly prevalence of 0.88 female homicides per million women, or equivalently, 3.5 female homicides per million women and year.

According to the victim-offender relationship, in a typical quarter between 2000 and 2010, were killed in Spain 7.8 unmarried women, 6.1 married women, and 2.1 separated women.[45]

Figure 7 provides some evidence in favor of the common trends assumption for the difference-in-differences approach employed here. It shows the evolution of the number of intimate partner female homicides by marital group for the period

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[45]As mentioned in section 4, it is not possible to distinguish between separated and already divorced victims, since in both cases the victim-perpetrator relationship code is the same (i.e. "ex-spouse"). From now on, then, I refer to those cases as "separated" victims.

between 2000 and 2010. Both the level and the year-to-year variation of the number of homicides are relatively similar for both treatment and control group, particularly in the years close to the legal change (2002-2004).

5 Empirical Results

5.1 Non-Extreme Violence

Table 3 shows the results of equation 4 when the dependent variable is the dummy for self-reported abuse. Column 1 presents the results for a specification with no controls beyond the treatment indicator and year dummies. The difference-in-differences coefficient suggests a decline in self-reported abuse for the treatment group in comparison with the control group after the reform in divorce law by 0.75 percentage points. In column 2, I add individual-level controls -age, education, labor market status, legal civil status, presence and number of children, immigration status, and religion beliefs, while in column 3 I also include region fixed effects and a dummy for urban residence. After controlling for individual characteristics and aggregated variables, the estimated coefficient remains negative and statistically significant. In the preferred specification (column 3), easier divorce reduces self-reported abuse by 0.65 percentage points (29 percent of the sample mean). If we want to control for partner's education and labor market status, we need to restrict the sample to women with a partner at the moment of the interview.[46] This is reported in column 4, which shows that self-reported abuse decreases by 0.59 percentage points (27 percent of the sample average).

The estimate reported in column 3 reflects the impact of easier divorce on domestic violence through the two possible channels: the dissolution of abusive marriages and the decrease in violence among intact households. In order to capture the change in domestic violence explained by a change in wife's bargaining position within the household, column 6 reports the results when the treatment group is restricted to women who were already married when the law was passed and continued married at the moment of the survey. The coefficient not only remains negative and precisely estimated, but is also larger (equivalent to a reduction of 36 percent of the sample mean) than the estimate for the total effect of the legal change. This implies that

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[46]While self-reported abuse refers to previous year, partner's information is only available for those women who declare to have a partner at the moment of the survey.

the bulk of the decline in domestic abuse when the obstacles to divorce are lowered is explained by a decreasing propensity towards partner abuse within intact households. Lowering the barriers to divorce seems to act as a strong deterrent to spousal violence.

Finally, to test the robustness of these results, column 7 reports the results of a placebo test. In this case, the dependent variable is a dummy set equal to 1 if the person declares to have been victim of abuse at any point in life before -but not during- the last 12 months. This is a measure of self-reported abuse in a period that precedes the legal change and, consequently, should be unaffected by the reform. The result confirms this hypothesis. The coefficient is statistically insignificant and relatively low in magnitude, basically indicating no effect of the legal change on past abuse, as we would have expected.

The second measure of non-extreme violence is the indicator technical abuse as defined in section 3.3.1. These results are shown in the first three columns of Table 4, which differ in terms of the control variables included in the regressions. The preferred specification, presented in column 3, controls for individual characteristics of the woman and her partner, year and region fixed effects, and urban-rural residence. The difference-in-differences coefficient indicates a reduction of 3.26 percentage points in the incidence of technical abuse (about 31 percent of the sample mean) since the introduction of easier divorce. The remaining columns show the results for the four different categories of abuse in which technical abuse can be disaggregated, according to Alberdi and Matas (2002). These results provide evidence confirming the main conclusion of a negative impact of easier divorce on domestic violence. In almost all cases the difference-in-differences coefficient is negative and precisely estimated.[47]

To test the robustness of these findings, Table 5 reports the results of using alternative definitions of technical abuse. So far, a person is considered technically abused if any of the 13 indicators of abuse available in the survey is present. Alternatively, all these indicators can be combined into one variable which reflects not only the existence of spousal violence but also its intensity. The first two columns of this table report the results of using this alternative measure as dependent variable. In column 2 the model is fitted by OLS, while in column 3 the count nature of the variable is taken into account and a poisson regression model is used to derive the results. In both cases the estimated coefficient is negative and statistically significant.

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[47]The exception is the case of psychological abuse in the form of control, which is only statistically different from zero at a significance level of 12 percent or higher.

In columns 3-7, the dependent variable becomes a binary indicator again, but now reflects different levels of spousal conflict. It is defined as a dummy that takes the value 1 if at least a certain number n of indicators of abuse are present, for $n = 2, ..., 6$. In all cases the estimated effect remains negative and strongly significant, confirming the decline in spousal violence after the introduction of easier divorce found before.

In sum, the evolution of the main measures of abuse over time and across groups points to both a statistically significant and economically relevant decline in domestic violence after the introduction of easier divorce.

5.2   Heterogeneity of Impacts

The availability of individual-level data allows me to go one step further and test whether the effects of the reform vary across different types of women. I consider two sources of heterogeneous impacts of the legal change on non-extreme violence: the presence of young children, and education level of the woman.

5.2.1   The presence of young children and the intensity of the treatment

There are at least two reasons why we expect the effects of the reduction in the cost of divorce to vary across women depending on their motherhood status. First, the effective reduction in the length of time needed to dissolve a marriage is smaller when there are children below the age of majority (18 years), since decisions about child custody and maintenance payments slow the process. Second, the cost of divorce depends on individual-specific factors, besides the legal environment. The literature on family economics has identified the number and age of children as one of the main determinants of the cost of divorce among married couples (Becker, Landes, and Michael, 1977; Weiss and Willis, 1997). Parents of young children, for instance, may suffer more after divorce if it results in under-investment on their children (Del Boca and Flinn, 1995; Weiss and Willis, 1997). This implies that the intensity of the treatment varies across women and this can be used to test the consistency of the results obtained when looking at the average effect. If the reduction in the cost of divorce is less important for mothers of young children than for either non-mothers or mothers of older children, we would expect smaller reductions in domestic violence for the former than for the latter.

I consider the presence of children under 18 years of age who leave in the parental house as one of the mains sources of differences in treatment intensity. The results

of this exercise are reported in Table 6. Panel A of the table shows the results when the sample is restricted to women with young children, while Panel B does the same for women either without children or with older children not living with them. These results clearly show that the decline in domestic violence, measured both in terms of self-reported and technical abuse, is driven by the effects on women without young children at home. Difference-in-differences estimates for mothers of young children are not statistically different from zero in any of the measures of abuse considered in the analysis. On the contrary, those estimates are almost always negative and precisely calculated in the case of women without young children at home. Not having young children, then, seems to be a necessary condition to take advantage of the reform in divorce legislation.

To test the robustness of these results, Table 7 presents an analysis based on a different identification strategy. Instead of using unmarried women as a benchmark for the no policy evolution of domestic abuse, this specification focuses on treated individuals and exploits differences in the intensity of the treatment. The sample consists of women who were married when the new divorce law became effective, and the differential effect of the reform on women without young children is captured by an interaction term between a dummy variable that takes the value 1 for those women without young children and the post-reform indicator. The parameter estimate for this interaction term is negative and statistically significant, independently of the measure of abuse considered, which suggests that the level of violence decreases more after the legal change among married women without young children. These results confirm the previous findings of a larger effect of the reduction in divorce cost on married women who did not have young children when the legal change was enacted.

5.2.2 Education as a measure of wives' outside option

A second reason why the effects of the reform may vary across women is that they differ in the value of their outside opportunities. In principle, married women with good prospects outside of marriage are less likely to remain in abusive relationships, even when the cost of divorce is high. Then, a reduction in the cost of divorce would lead to little change in the incidence of violence among those women. Women with poor alternatives outside of marriage, on the other hand, are less likely to benefit from a decrease in the cost of divorce, since they still would be better off in an abusive relationship than with divorce. Therefore, we would expect the effects of the law change to be larger, the closer is an abused wife to the margin of indifference between

continuing in an abusive marriage or getting divorced.

One possible indicator of the value of the outside option for married women is their educational level. Table 8 presents the results when the total sample is disaggregated according to women's educational level. Panels A, B, and C, present the main coefficients for women with low (primary school or less), medium (high school), and high (university) education, while the dependent variables are self-reported abuse (column 1) and technical abuse (column 2). The parameter estimates indicate that the reduction in divorce cost is associated with a decrease in domestic violence among married women, with respect to unmarried women, although these coefficients are only estimated with precision in the cases of low and intermediate education groups. In other words, the level of domestic violence among married women, with respect to unmarried ones, only decreases toward the center and bottom part of the distribution of skills.

To test whether the effects are statistically different along those segments of the skill distribution, Table 9 reports the results for the full sample. The impact of the reform on low educated women, the omitted category, is captured by the interaction between variables *married* and *post*, while the differential effects on more educated women are captured by further interactions with binary indicators for intermediate and high education. For self-reported abuse (column 1), the parameter estimates suggest that the reform leads to a reduction in domestic violence that does not vary significantly across skills. For technical abuse (column 2), the effects of the reform are larger for low-skilled women than for intermediate- and high-skilled ones. Overall, these estimates suggest that the reduction in the cost of divorce results in a decline in domestic violence across all educational levels, and that this decline is larger for women at the bottom part of the distribution of skills, in particular when technical abuse is used as a measure of domestic violence.

Again, to test the robustness of these results, we can investigate how the impact of the reform varies among married women with different educational levels. Table 10 reports the results of a regression on the sub-sample of women who were married at the time of approval of the legal change. The post-reform variable captures the change in the level of violence for a married women with low educational level, while the interactions with the binary indicators for the other skill levels capture the differential effects for women with those skills. In columns 1 and 2, the sample includes married women of all ages, and the results point to a similar conclusion to the one obtained when unmarried women were used as a control group: the incidence

on abuse decreases along the whole distribution of skills, and the reduction is larger among low-skilled women when the technical definition of abuse is used. In columns 3 and 4 of the same table, the sample is restricted to middle age women (i.e. between 30 and 50 years of age), to investigate the distribution of the impacts on a sub-group for which the education level may be a more appropriate measure of opportunities outside of marriage. Doing this exercise leads to a slightly different result. In the case of self-reported abuse (column 3), the only sub-group that benefits from the reduction in the cost of divorce is the one of women with intermediate education. Neither for low-skilled nor for high-skilled women there is a significant change in the incidence of spousal abuse. In the case of technical abuse (column 4), the estimated effects on domestic abuse is negative for women with low education, and although the impacts seems to be larger around the center of the skill distribution, the difference is not statistically significant.

5.3   Extreme Violence

This section presents the main findings for the impact of the reform in divorce legislation on female homicide. Column 1 of Table 11 shows the results for the estimation of equation 5 when the dependent variable is a count of all homicides committed by intimate partners per quarter. The coefficient of interest, the one of the interaction between the dummy variable for being married and the indicator for the post-reform period, is negative and statistically significant, indicating a negative effect on the probability of extreme violence. The magnitude of the coefficient reflects also a quantitatively relevant effect: a change of -0.326 in the log count translates into a reduction of 2.4 female homicides per quarter that can be attributed to the reform. With an average of 7.97 female homicides per quarter and group during the whole sample period, this is equivalent to a decline in spousal murder of about 30 percent.

Poisson models rely on the assumption of equidispersion (i.e. mean equal variance), which means that this model would not be appropriate had we found some signs of overdispersion. Nevertheless, several reasons justify the use of the poisson model. First, the distribution of the count of homicides does not show signs of overdispersion. The mean and the variance of the number of homicides per quarter and marital group are relatively similar: 7.97 and 6.36, respectively.[48] Second, the goodness-of-fit chi-squared test yields a statistics of 46.26 which leads to no rejection

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[48]The same conclusion is reached looking at the mean and variance of the total homicide count per quarter (i.e. without differentiation among marital groups), which is shown in Table 2.

of the poisson model. Third, the likelihood ratio test of $\alpha = 0$ shows that α is not significantly different from zero, reinforcing the validity of the poisson model.

Column 3 presents the results when the dependent variable is specified as a rate and the model is fitted by OLS. The difference-in-differences estimator is -0.526 and it is estimated with precision. Considering a female homicide rate of 1.364 every million women per quarter during the pre-reform period, this estimate implies a reduction of about 46 percent after the law.

Finally, column 5 shows the results for the logarithm of the quarterly homicide rate as dependent variable. The coefficient is again negative and statistically significant, reinforcing the conclusion that the reform in divorce law had a negative effect on female homicides of married women by intimate partners.

One key assumption of the difference-in-differences approach is that the trend in the outcome variable for both treatment and control groups would have been the same, had the reform not been passed. To test the validity of this assumption, I include a group-specific linear trend in the regressions. This allows me not only to analyze which is the effect on the coefficients of assuming different trends for treatment and control groups, but also to test whether there is enough evidence against the assumption of common trends. The results are shown in even columns of Table 11. With respect to the change in the coefficients, as a result of including group-specific linear trends, they are estimated with less precision and are between one-third and one-half smaller in magnitude. But those results bring evidence supporting the common trend assumption. As can be seen from the statistics provided at the bottom of the table, in none of the 3 specifications we can reject the hypothesis of common trends between the treatment and control group.

One contribution of this study is to distinguish between female homicides committed by spouses from those crimes involving ex-spouses. This aspect of the relationship between divorce law and domestic violence has not yet been treated in the economic literature, even though many studies from criminology and sociology have pointed out the importance of marital disruption itself as a determinant of domestic violence between separating spouses (Campbell, 1992; Wilson and Daly, 1992; Stolzenberg and D'Alessio, 2007). Easier access to divorce would be ineffective to reduce the incidence of domestic violence in a society if, after marital dissolution, violence continues between ex-spouses (Campbell, 1992) or, even worse, if it escalates after the victim seeks a separation (Wilson and Daly, 1992).

This theoretical possibility is contemplated in the simple model developed in

section 2. It not only predicts an increase in marital dissolution after a reduction in the barriers to obtain a divorce, but also an increase in the share of dissolutions in which one spouse is unhappy with the termination of the marriage. This prediction is supported by empirical evidence on the evolution of the share of adversarial dissolutions (Figure 8).

Results presented in Table 12 test this possibility. The definition of the treatment group distinguishes between victims who were still married and those already separated or in the process of separation at the moment of the homicide. The difference-in-differences coefficient for separated victims is always negative and strongly significant, and larger in magnitude than the estimate for still married women. These findings not only reject the hypothesis of increased or continued violence during or after dissolution, but also suggest that an important portion of the reduction in female homicide as a consequence of the reform in divorce law comes from the reduction in violence against women who are amid a process of marital dissolution.

The strong negative effect of the law change on violence against ex-spouses also suggests an important role for the duration of the dissolution process as a key factor behind the reduction in violence. To see this, we need to rely on a series of assumptions regarding the link between divorce and spousal violence. First, that there is a positive probability that a conflicting dissolution ends up in extreme partner violence, such as homicide. Second, that this probability falls substantially, say to zero, once the dissolution process finishes and the divorce decree is issued. Third, that this probability -per unit of time at conflict- is unchanged by the reform. Then, a decreasing propensity toward spousal homicide among separating couples, in combination with a larger population dissolving their marriages with some degree of conflict, can be explained by a reduction in the length of time that those potential victims are at risk of extreme violence, that more than compensates the increase in the size of this population at risk.

5.4 Effects on Marriage and Divorce

5.4.1 Divorce

Figure 9 shows the evolution over time of the stock of divorcees. Casual observation of the trends for both women and men indicates an acceleration of the growth rate of the stock after the reform in divorce law. Table 13 presents the results of fitting equation 7 by OLS, for the whole sample (column 1) and for women and men separately (column

2 and 3, respectively). In all cases the results of the modification in divorce law on the stock of divorcees follow a similar pattern. There is a statistically significant and positive impact on the population of divorcees immediately after the reform was in place, and a positive although statistically insignificant change in the trend. With regard to the magnitude of the impact, the rise in the number of divorcees was about 3.5 every 1000 people, when both women and men are included in the sample. With an average of 42 divorcees per thousand population before the approval of the reform, this impact translates to an immediate increase of about 7.6 percent that can be explained by the reform in divorce law. Similar conclusions can be derived for both women and men when they are considered separately. Besides this very short run impact, it interesting to analyze which is the absolute effect of the law change on the size of divorced population, some time after the reform. The estimate of the absolute effect of the law change can be calculated as $\hat{\beta}_2 + \hat{\beta}_3 * timepost$, where $timepost$ refers to the period of time since the reform.

This effect is shown in the bottom part of the table, for a period of 3 years after the reform in divorce law.[49] Three observations are worth noticing. First, the absolute impact on the stock of divorcees is positive and statistically significant both for women and men. Second, the magnitude of those impacts is relatively low if we consider the large increase in divorce rates shown in Figure 2. The size of the total effect is calculated with respect to the stock of divorcees after the law change, had the reform not been implemented.[50] This leads to an increase of about 2 percent in the stock of divorcees with respect to the counterfactual value had the reform not been implemented.[51] Third, the size of the increase is higher for men than for women (i.e. 3.3 percent versus 1 percent, respectively), which can be explained by the differential size of the stock of divorcees by gender (i.e. there are always fewer divorced men than women, as the propensity towards remarrying is higher for men).

I also test whether the legal change affected the composition of the stock of divorcees in terms of observable characteristics. Table A.2 shows the results of running the specification in equation 7, using an indicator for a certain age or education group

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[49]The period of 3 years is chosen to approximately fit the mid-point of the post-reform period in the estimation of the impact on female homicide.

[50]Given that the outcome of interest has an increasing trend, comparing the total effect after the reform to the mean value before the reform would lead to misleading results (i.e. we would be overestimating the true impact).

[51]Although we are not interested in explaining the determinants of the magnitude of these effects, two plausible explanations, possibly complementary to each other, are the possibility of leaving the state of divorcees because of remarrying, and the fact that we cannot distinguish in the data between separated and divorcee and then do not capture changes from the former to the later state.

as dependent variable. Panels A and B of the table show the results of this exercise for women and men, respectively. The general conclusion we can extract from this table is that there was an increase in the share of relatively older and less educated individuals in the pool of divorcees after the reform in divorce law. For both women and men, the group of those aged between 50 and 60 years gained share at expenses of those between 30 and 50 years.[52] A similar pattern can be found between less and more educated women and men. While the share of divorced individuals with primary education or less increased, the share of those with secondary education or more fell.

To sum up, the analysis of the implications of divorce law liberalization reveals a statistically significant increase in the size of divorced population, though relatively low in magnitude, and a change towards an older and less educated composition of that population, a few years after the reform.

5.4.2 Marriage

The empirical literature on the effect of unilateral divorce in the U.S. has found a negative association between liberalization of divorce law and marriage rates (Wolfers, 2006; Rasul, 2006). Rasul (2006) develops a theoretical model of search and learning in the marriage market that shows how a less effective marriage contract would lead to a lower marriage rate in equilibrium and to better quality matches. In what follows I show that there is no evidence of a change in the propensity to marry that can be attributed to the law change, and that although there is little evidence of the law affecting the selection into marriage (i.e. changes in the composition of new couples), the magnitude of these effects is small enough to guarantee almost no impact on the composition of the stock of married couples after the reform.

The evolution of the annual number of marriages for the period 1976-2009 is shown in Figure 10. To investigate whether there is a causal impact of the reform on the marriage rate, I estimate equation 8 using monthly data on marriages, and report the results in Table 14. Different columns correspond to different specifications for the trend -i.e. linear, quadratic, or cubic. The main conclusion is that there is no significant change in the propensity to marry that can be attributed to the legal change. The coefficient of the dummy for the post-reform period is always statistically indistinguishable from zero, and there is no significant change in the trend after the reform. The results of a Chow test, displayed at the bottom of the table, confirm that

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[52]The total effect is shown in the bottom part of each panel of the table.

we can not reject the hypothesis of no structural break in the series of marriages.

To test whether there was an effect on the composition of those couples formed after the legal change, I use data form the Census of Marriages. This data contain information on main occupation, age at marriage, and previous legal civil status of spouses, for all marriages that take place in Spain. Figures A.3 to A.6 show the evolution of marriages according to these observable characteristics. Visual inspection of these figures points to little or no evidence of a sudden change in the observed characteristics of spouses after the reform in divorce law.

Tables A.3 and A.4 show the results of estimating equation 9 for the five main occupations of husbands and wives, respectively. The interpretation of the coefficients is the same as before. Since the total effect of the reform depends not only on the level change immediately after the reform but also on the change in the trend, its size depends on the period of time after the reform used in the calculation. The bottom part of the table reports the total effect on the outcome of interest measured 3 years after the introduction of the reform, with its corresponding standard error. The results show statistically significant impacts for 4 occupational categories of husbands and for 2 of wives. To analyze the magnitude of the effect, let us take consider husband who work in manufacturing, which represents around 40 percent of total employment of husbands in the pre-reform period. The share of husbands working in manufacturing fell by 2.5 percentage points after the legal change, which in terms of the counterfactual share (i.e. what manufacturing would have represented if the reform had not been introduced) is equivalent to a reduction of 6.30 percent. Is this effect relevant in terms of the stock of the population married, to an extent that would rise concern on the validity of the difference-in-differences estimates? The following exercise helps to illustrate this point. On average, between 2005 and 2010 the stock of married couples in Spain is 10.75 million, while the annual number of marriages (flow) is about 192 thousand. This means that each year approximately 1.8 percent (i.e. 192/10750=0.0178) of the stock of married couples is renewed.[53] Then, with a stock changing at a pace of 1.8 percent per year, the estimated effect (for the first 3 years) of the reform implies a change in the share of manufacturing workers within the stock of married couples of $1.8\% * 3 years * (-6.30\%) = 0.34\%$. The same exercise can be performed for the rest of the major occupational groups and in no case is the final impact on the stock of married population above 1 percent. Then,

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[53]To simplify I assume that the number of married couples dying or divorcing each year is the same as the number of new marriages in that year, so the size of the stock remains constant.

we can conclude that there are no reasons to be concerned about the endogeneity of the treatment groups after the reform.

Table A.5 reports the results for age at marriage (columns 1 to 3) and for the share of already divorced spouses. These results confirm the previous conclusion. There are statistically significant changes in age at marriage and in remarriage rates, but the magnitude of these changes in the flow of new couples has little relevance in terms of the composition of married population.

Summarizing, the analysis of the impact of the law change on the marriage market shows no evidence of a change in the propensity to marry and little evidence of an effect on the composition of new couples in terms of observable characteristics of spouses. Nevertheless, both the size of the impacts and the low ratio of new marriages to already married couples make it safe to use a difference-in-differences approach to estimate the impact of easier divorce on domestic violence, using married and unmarried couples as treatment and comparison groups, respectively.

6   Conclusions

This study investigated whether easier access to divorce can reduce the incidence of spousal violence. To identify the causal effects, the study exploited exogenous variation in the cost of marital dissolution stemming from an unexpected reform of the divorce regime in Spain in 2005. This reform allowed for unilateral and no-fault divorce, and eliminated the 1-year mandatory separation period, reducing both economic and emotional costs of marital breakup. Furthermore, the study also took advantage of the fact that this change reduced the cost of terminating a relationship for couples who were legally married when the law became effective, but not for unmarried ones, and therefore, the empirical work follows a difference-in-differences methodology. The main findings point to a sizable decline in both non-extreme and extreme domestic abuse after the enactment of the new law.

The empirical analysis has revealed a decline in less extreme spousal conflict among married couples with respect to unmarried ones between 27 and 36 percent. Both self-reported spousal abuse and technical definitions of abuse based on recorded behavior confirm that the introduction of easier access to divorce has led to a decline in spousal conflict. These results are robust to the use of alternative definitions of domestic violence and are not driven by changes in the composition of the groups. Moreover, these findings are reinforced by the analysis of the heterogeneous responses

to the legal change on the base of differences in the intensity of the treatment. Married women with young children are less affected by the reduction in the cost of divorce than childless women, because the presence of young children limits the reduction in the length of the divorce process. The results show a larger reduction in domestic violence against women without young children.

Easier divorce can reduce domestic violence either by increasing the propensity towards dissolution of abusive relationships, or by decreasing the propensity towards abuse in intact marriages. To disentangle these two channels, this study focused on the effects on couples who were married when the law was enacted and continue married 1 year later, when the data were observed. The results suggest that the bulk of the reduction in violence can be explained by the improvement in the bargaining position of wives in marriages that remain intact. The availability of easier access to divorce thus seems to make the threat of leaving the marriage more credible, which is shown to be a strong deterrent of spousal violence.

This study also measured the effect of the reduction in divorce costs on the most extreme measure of spousal conflict, partner homicide, and observed a decline of around 30 percent among married women, which can be attributed to the legal change. An important part of this decline is explained by a reduction in lethal violence against spouses who were amid the process of marital dissolution. These results, taken together with an increase in the share of conflicting dissolutions after the reform, suggest an important role for the duration of the divorce process as a key factor behind the reduction in lethal violence.

This study also examined whether the legal change affected marital formation and dissolution patterns. Investigation of the potential effect on the marriage market is crucial to assess the extent to which the homicide results may be influenced by selection into marriage. The study tested whether the reform had an impact on either the propensity to marry or the composition characteristics of new marriages, and found no significant evidence of either of these effects, suggesting that selection into marriage effects is not an important concern. Examining the potential effect on marital dissolution is important to assess the channels through which easier divorce affects domestic violence. This study found that the stock of separated and divorced individuals in the post-reform period is around 2 percent higher because of the reform, suggesting that the dissolution channel may explain only a small part of the reduction in violence.

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Figures

Figure 1: Distribution of wive's outside opportunities and reduction in the cost of divorce.
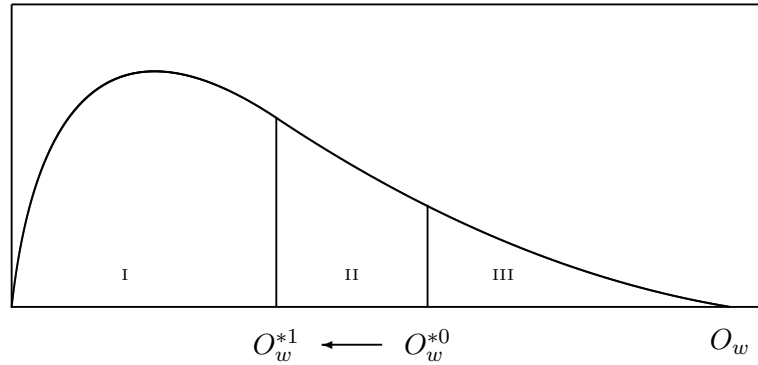
Notes: Before the reform, the marginal woman (i.e. the one that is indifferent between divorce and an abusive marriage) had an outside option given by O_w^*. When the cost of divorce falls to $C_w^1 < C_w^0$, the new marginal woman places to the left, say at O_w^{*1}. For those husbands whose wife's outside option lies in between these two values, it was optimal to be violent under the old regime but it is not after the reduction in the cost of divorce. Women located in sector II, therefore, will benefit from the reduction in divorce costs. For women in sector I the reduction in the cost of divorce is not enough for them to credibly threaten with divorce, while for women in sector III the reform has no relevant effects since they were not affected by domestic violence.

Figure 2: Marital dissolution in Spain, 1975-2010

Source: Judiciary statistics provided by the General Council of the Judiciary.

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Figure 3: Distribution of legal separations according to who is the petitioner
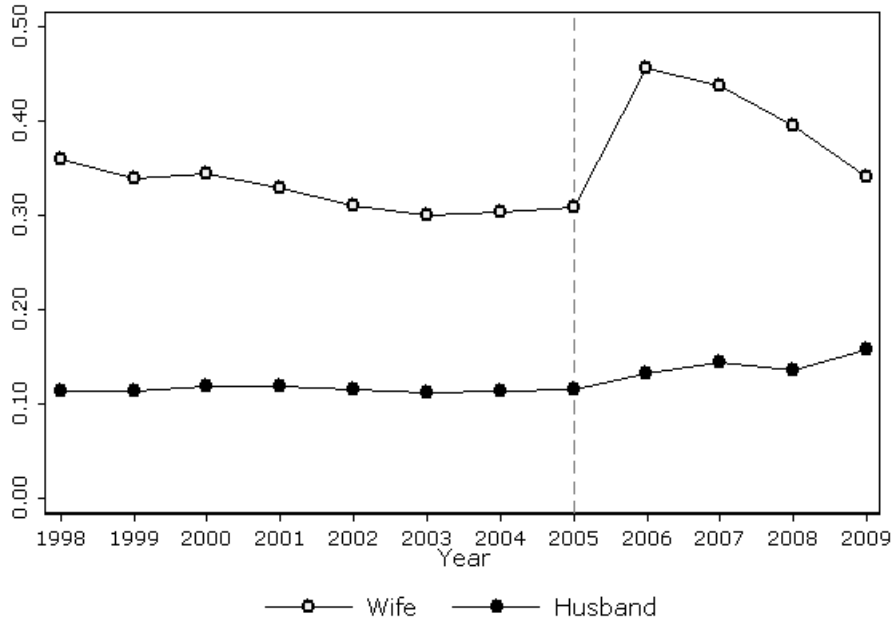
Figure 4: Distribution of divorces according to who is the petitioner

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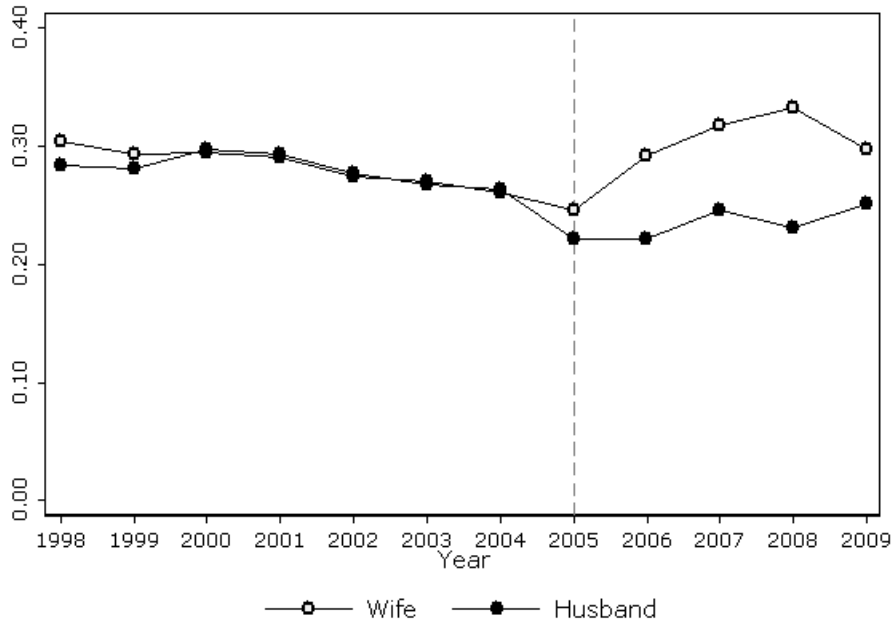
Figure 5: Self-Reported Abuse during previous year
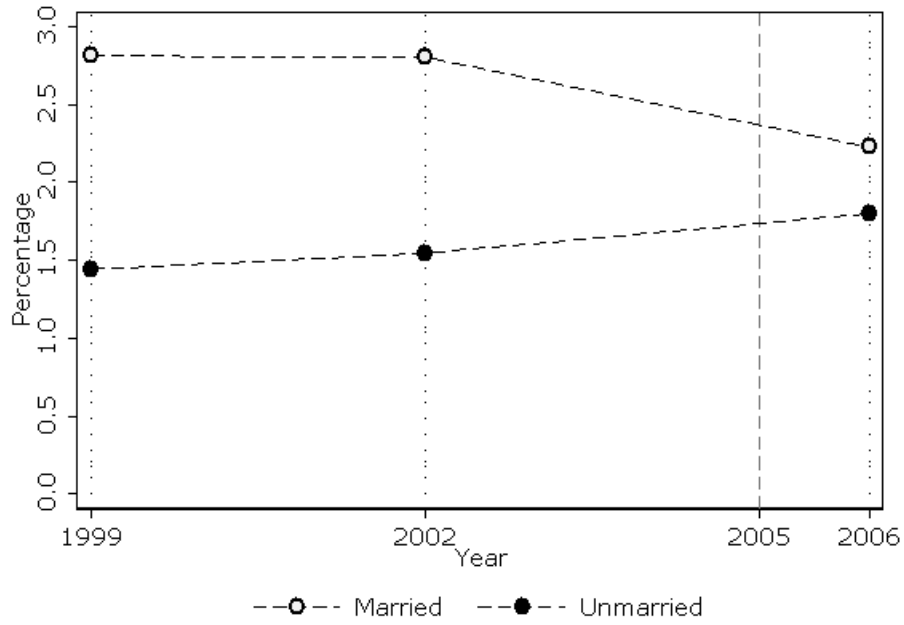
Figure 6: Technical Measure of Abuse.
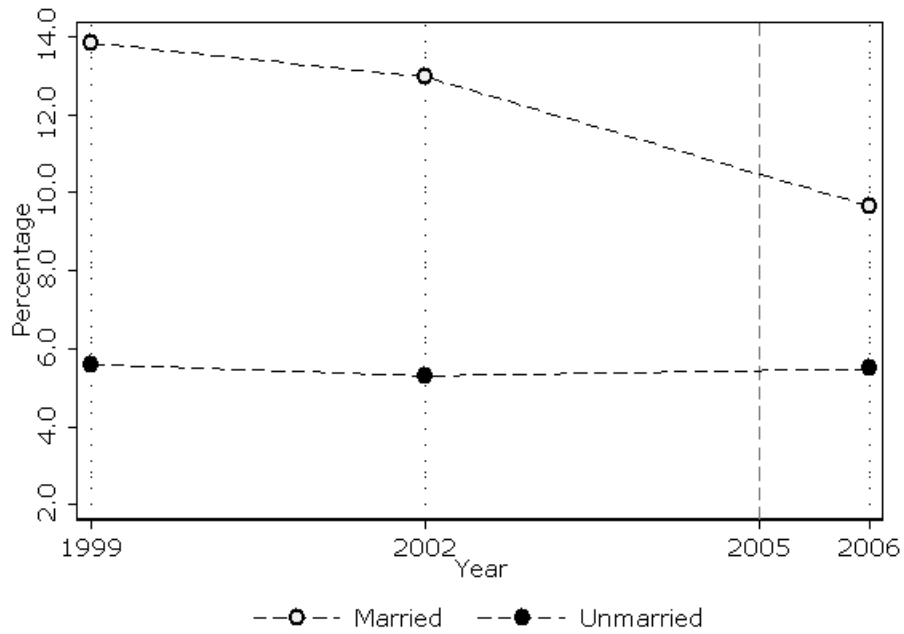
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Figure 7: Evolution of the annual number of intimate partner female homicides. Period 2000-2010
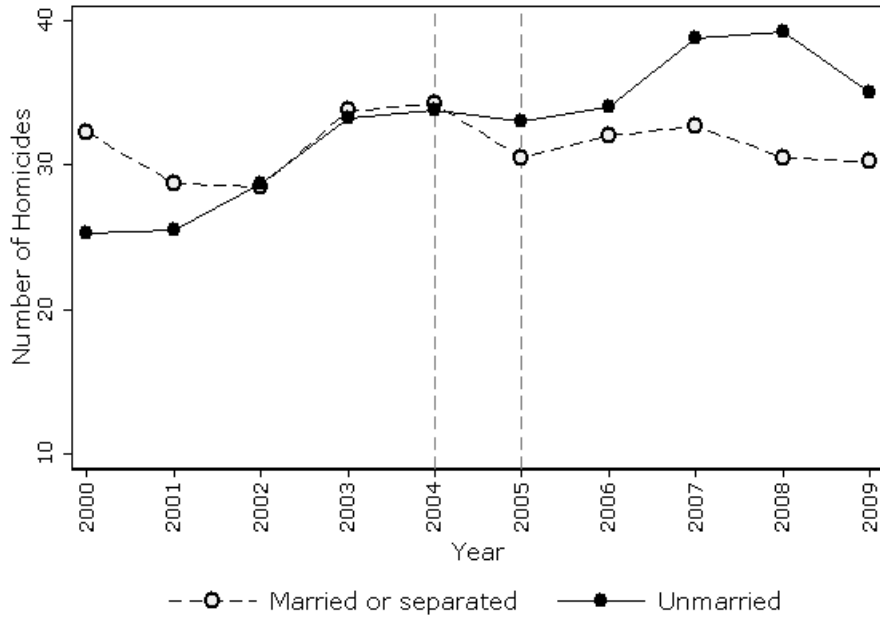
Source: Spanish Women's Institute. Moving average (centered - 2 years)

Figure 8: Share of Adversarial Dissolutions by Quarter.

Note: Share of adversarial dissolutions (separation and divorces) over total dissolutions. Source: Judiciary statistics provided by the General Council of the Judiciary.

Figure 9: Evolution of the Stock of legally separated and divorced people.

Figure 10: Evolution of total annual number of marriages

Tables

Table 1: Descriptive Statistics. Survey on Violence Against Women.

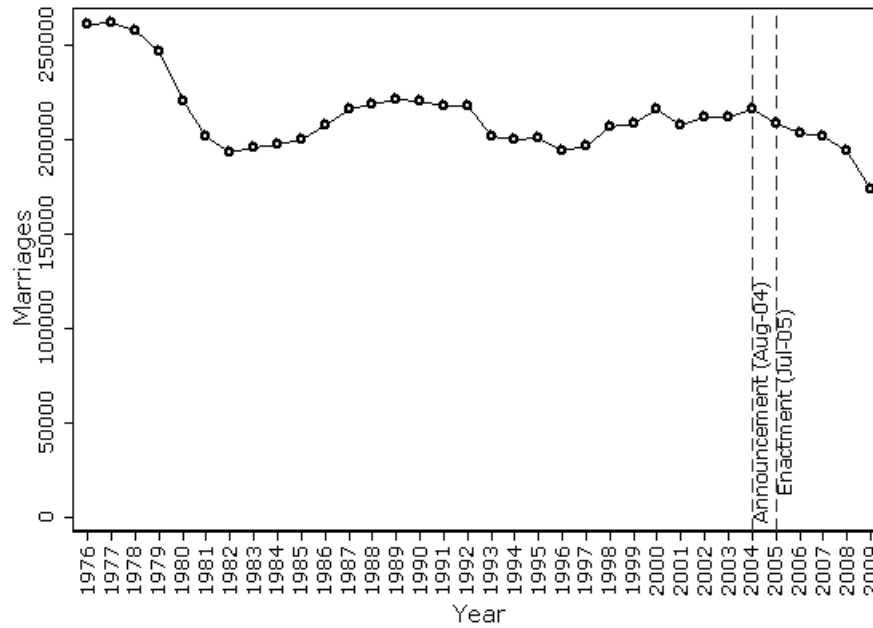|	Total sample		1999		2002		2006	
	Mean	St dev	Mean	St dev	Mean	St dev	Mean	St dev
Woman's age								
18-29	0.212	0.409	0.238	0.426	0.209	0.407	0.197	0.398
30-39	0.193	0.394	0.179	0.384	0.184	0.388	0.206	0.405
40-49	0.169	0.375	0.153	0.360	0.163	0.370	0.183	0.387
50-59	0.148	0.356	0.143	0.350	0.152	0.359	0.149	0.356
60 or older	0.278	0.448	0.286	0.452	0.291	0.454	0.264	0.441
Woman's education								
Primary or less	0.384	0.486	0.442	0.497	0.413	0.492	0.330	0.470
Lower High School	0.238	0.426	0.212	0.409	0.240	0.427	0.252	0.434
Upper High School	0.198	0.399	0.192	0.394	0.193	0.395	0.205	0.404
University	0.180	0.384	0.154	0.361	0.154	0.361	0.213	0.409
Woman's marital status								
Single	0.112	0.316	0.122	0.328	0.109	0.312	0.108	0.311
Dating	0.100	0.299	0.108	0.310	0.100	0.300	0.094	0.292
Cohabiting	0.029	0.168	0.018	0.133	0.024	0.154	0.039	0.194
Married	0.617	0.486	0.604	0.489	0.625	0.484	0.619	0.486
Separated	0.021	0.142	0.020	0.139	0.018	0.133	0.023	0.149
Divorced	0.014	0.118	0.011	0.104	0.014	0.116	0.017	0.128
Woman's labor market status								
Employed	0.347	0.476	0.301	0.459	0.308	0.461	0.402	0.490
Unemployed	0.078	0.268	0.079	0.270	0.079	0.270	0.076	0.265
Out of labor force	0.573	0.495	0.619	0.486	0.612	0.487	0.520	0.500
Woman's partnerships								
In a relationship	0.756	0.429	0.739	0.439	0.759	0.428	0.765	0.424
Duration current relationship	22.234	15.118	21.791	15.109	22.824	15.157	22.131	15.088
Children								
Children	0.709	0.454	0.694	0.461	0.714	0.452	0.714	0.452
Nº of children	1.659	1.442	1.685	1.512	1.689	1.457	1.623	1.386
Partner's age								
Age	51.526	14.635	51.477	14.840	51.958	14.583	51.282	14.539
Partner's education								
Primary or less	0.336	0.472	0.402	0.490	0.363	0.481	0.279	0.449
Lower High School	0.262	0.440	0.236	0.425	0.272	0.445	0.273	0.445
Upper High School	0.209	0.407	0.196	0.397	0.202	0.401	0.223	0.416
University	0.192	0.394	0.166	0.372	0.163	0.370	0.226	0.418
Partner's labor market status (during last year)								
Not employed	0.328	0.470	0.354	0.478	0.349	0.477	0.299	0.458
Part-time employment	0.028	0.165	0.030	0.171	0.034	0.181	0.023	0.151
Full-time employment	0.635	0.481	0.604	0.489	0.608	0.488	0.670	0.470
Religion								
Practicing Catholic	0.382	0.486	0.456	0.498	0.391	0.488	0.329	0.470
Not Practicing Catholic	0.481	0.500	0.443	0.497	0.487	0.500	0.501	0.500
Agnostic/Atheist	0.077	0.267	0.056	0.230	0.062	0.240	0.100	0.301
Other religion	0.024	0.153	0.019	0.135	0.022	0.146	0.029	0.167
None religion	0.036	0.187	0.027	0.163	0.039	0.194	0.040	0.197
Urban/Rural								
Urban (more than 10k pop)	0.772	0.420	0.755	0.430	0.749	0.433	0.797	0.402
Sample size	73630		20552		20652		32426	

Table 2: Descriptive Statistics. Female Homicides by Intimate Partner.

	Homicides per quarter				Homicides per quarter and marital status		
Year	mean	st dev	min	max	Unmarried	Married	Separated or divorced
2000	12.5	1.3	11	14	4.3	7.0	1.3
2001	11.5	2.4	10	15	4.8	4.0	2.8
2002	13.0	2.4	10	15	6.8	4.8	1.5
2003	17.5	2.4	14	19	8.8	6.0	2.8
2004	17.3	3.6	12	20	6.8	8.0	2.5
2005	15.8	1.0	15	17	9.5	5.3	1.0
2006	17.5	4.8	13	23	8.0	7.0	2.5
2007	18.0	2.9	14	21	9.0	6.3	2.8
2008	18.8	4.8	12	23	10.5	6.0	2.3
2009	15.3	3.3	12	19	8.0	5.3	2.0
2010	18.8	4.1	14	24	9.3	7.3	2.3
Total	16.0	3.8	10	24	7.8	6.1	2.1

Note: Marital status defined in terms of victim-offender relationship. Cases in which the victim was not legally married to the aggressor at the moment of the homicide nor before are classified as Unmarried. Married victims are those who were legally married to the aggressor. Separated victims include those victims who were previously married to the aggressor or who were still legally married but in process of separation or divorce. Source: Queen Sofia Center.

Table 3: Impact on Non-Extreme Violence: Self-Reported Abuse

	Dependent variable: Self-Reported Abuse (dummy)					
	Abuse during previous year					Abuse before previous year (placebo)
	(1)	(2)	(3)	(4)	(5)	(6)
$Married * Post$	-0.746***	-0.651***	-0.647***	-0.599**	-0.686***	0.078
	(0.212)	(0.212)	(0.212)	(0.295)	(0.205)	(0.211)
$Married$	1.720***	3.457***	3.450***	0.726	1.633***	-0.819
	(0.140)	(0.763)	(0.764)	(0.755)	(0.587)	(0.595)
Individual controls	No	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region controls	No	No	Yes	Yes	Yes	Yes
Partner controls	No	No	No	Yes	No	No
Adj. R^2	0.002	0.024	0.025	0.008	0.007	0.030
N	69895	69838	69838	54757	67895	69838
RMSE	14.682	14.515	14.512	14.473	13.507	12.910
Mean (depvar)	2.209	2.208	2.208	2.159	1.872	1.748

Notes: The sample includes adult females in 1999, 2002, and 2006, who had a partner during the year before the interview. The dependent variable is a binary indicator for self-reported abuse during the previous year (columns 1-5) or any time in life before the previous year (column 6). The treatment group includes women who were married at the moment of the reform in divorce legislation, independently of their current marital status, with the exception of column 5, which restricts the treatment group to women who were married when the reform was passed and continue married when the survey was conducted. The control group includes women with partner during the previous year but who are not legally married. Individual control variables include age group dummies, education dummies, labor market status, dummies for legal civil status, a dummy for the presence of children, the number of children, immigration status, and dummies for religion beliefs. Region controls include region fixed effects and a dummy for urban residence. Partner controls include dummies for education and labor market status of the partner. Since partner variables refer to the current partner, including these controls (column 4) implies restricting the sample to women with partner at the moment of the interview. All regressions include year dummies. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 4: Impact on Non-Extreme Violence: Technical Measures of Abuse

	Dependent variable: Measures of technical abuse (dummies)						
	Technical abuse			Physical abuse	Sexual abuse	Psych. abuse (control)	Psych. abuse (emotional)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
*Married * Post*	-4.206***	-3.278***	-3.258***	-0.592**	-1.472***	-0.487	-2.230***
	(0.543)	(0.541)	(0.546)	(0.233)	(0.311)	(0.306)	(0.444)
Married	8.126***	0.655	0.709	0.577	1.241*	-1.193	0.154
	(0.367)	(1.415)	(1.421)	(0.360)	(0.723)	(0.989)	(1.159)
Individual controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Partner controls	No	No	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.009	0.020	0.022	0.009	0.012	0.006	0.017
N	55535	55495	54757	54757	54757	54757	54757
RMSE	30.662	30.472	30.449	13.342	18.410	16.107	25.845
Mean (depvar)	10.613	10.601	10.605	1.830	3.556	2.681	7.334

Notes: The sample includes adult females in 1999, 2002, and 2006 who have a partner at the moment of the interview. The dependent variable are binary variables for technical abuse (columns 1-3), physical abuse (column 4), sexual abuse (column 5), psychological abuse in the form of control (column 6), and psychological abuse in the form of emotional mistreatment (column 7). The treatment group includes currently married women who were married at the moment of the reform in divorce legislation. The control group includes women with partner but who are not legally married. Individual control variables include age group dummies, education dummies, labor market status, dummies for legal civil status, a dummy for the presence of children, the number of children, dummies for religion beliefs. Region controls include region fixed effects and a dummy for urban residence. Partner controls include dummies for education and labor market status of the partner. All regressions include year dummies. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 5: Impact on Non-Extreme Violence: Alternative Definitions of Technical of Abuse

	Dependent variable: Measures of technical abuse						
	N of Indicators of abuse		Dummies for at least n indicators of abuse (n=2...6)				
	OLS	Poisson	+2 indicators	+3 indicators	+4 indicators	+5 indicators	+6 indicators
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
*Married * Post*	-0.074***	-0.323***	-1.342***	-0.771***	-0.711***	-0.438***	-0.386***
	(0.015)	(0.119)	(0.341)	(0.260)	(0.209)	(0.165)	(0.132)
Married	0.010	0.068	0.419	0.020	-0.183	0.118	0.084
	(0.036)	(0.266)	(0.832)	(0.628)	(0.538)	(0.331)	(0.323)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Partner controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.018		0.015	0.010	0.008	0.006	0.005
N	54757	54757	54757	54757	54757	54757	54757
RMSE	0.882		20.273	15.638	12.517	10.214	8.486
Mean (depvar)	0.221	0.221	4.361	2.535	1.605	1.061	0.729

Notes: The sample includes adult females in 1999, 2002, and 2006 who have a partner at the moment of the interview. In columns 1-2, the dependent variable is a continuous variable for the number of indicators of abuse present for each individual. In columns 3-7, the dependent variable is a dummy that takes the value 1 if at least n indicators of abuse are present (for n=2...6). The treatment group includes currently married women who were married at the moment of the reform in divorce legislation. The control group includes women with partner but who are not legally married. Individual control variables include age group dummies, education dummies, labor market status, dummies for legal civil status, a dummy for the presence of children, the number of children, dummies for religion beliefs. Region controls include region fixed effects and a dummy for urban residence. Partner controls include dummies for education and labor market status of the partner. All regressions include year dummies. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 6: Heterogeneous impact by presence of young children using unmarried women as control group.

	Dependent variable	
	Self-Reported Abuse (1)	Technical Abuse (2)
Panel A: Women with young children		
Married * Post	1.475	0.103
	(1.221)	(2.215)
Married	6.598**	-3.154*
	(3.203)	(1.755)
Post	-1.913	-2.688
	(1.215)	(2.211)
Panel B: Women without young children		
Married * Post	-0.854***	-4.123***
	(0.246)	(0.617)
Married	3.012***	2.959***
	(0.727)	(0.690)
Post	0.182	-0.173
	(0.166)	(0.525)

Notes: The sample is split between mothers of children under 18 years of age and women without young children, independently of whether they are mothers or not. Each sub-sample includes adult females in 1999, 2002, and 2006. Dependent variables are dummy variables for different measures of abuse. Self-reported abuse refers to the last 12 months, while all technical measures of abuse refers to current situation. The treatment group includes women who were married at the moment of the reform in divorce legislation, independently of their current marital status. The control group includes women with partner but who are not legally married. The control variables included in the regressions are: age group dummies, education dummies, age and education of the husband, number of children, region fixed effects and year fixed effects. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 7: Heterogeneous impact by presence of young children (Only married women).

	Dependent variable	
	Self-Reported Abuse (1)	Technical Abuse (2)
Without young children * Post	-0.621*	-1.298*
	(0.355)	(0.749)
Without young children	0.639*	-0.267
	(0.331)	(0.688)
Post	-0.495*	-2.706***
	(0.257)	(0.553)
Individual controls	Yes	Yes
Year dummies	Yes	Yes
Region controls	Yes	Yes
Partner controls	Yes	Yes
Adj. R^2	0.004	0.016
N	29812	29812

Notes: The sample includes married women between 30 and 60 years of age. The treatment group includes mothers of young children (under 18 years of age), while mother either without children or with children older than 18 years of age are left in the control group. Dependent variables are dummy variables for different measures of abuse. Self-reported abuse refers to the last 12 months, while technical abuse refers to current situation. The control variables included in the regressions are: age group dummies; education dummies; age, education, and labor market status of the husband; number of children; region fixed effects; and year fixed effects. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 8: Heterogeneous impacts by education level using unmarried women as a control group.

	Dependent variable	
	Self-Reported Abuse (1)	Technical Abuse (2)
Panel A: Women with low education level		
Married * Post	-0.753**	-8.842***
	(0.316)	(3.050)
Married	2.837***	3.662*
	(1.027)	(1.976)
Post	0.351	3.794
	(0.248)	(3.027)
Panel B: Women with intermediate education level		
Married * Post	-0.836**	-2.742***
	(0.347)	(0.748)
Married	3.826***	1.157
	(1.418)	(0.802)
Post	-0.108	-0.376
	(0.284)	(0.665)
Panel C: Women with high education level		
Married * Post	-0.324	-1.350
	(0.495)	(0.956)
Married	4.013**	1.164
	(1.628)	(0.987)
Post	-0.252	-0.966
	(0.351)	(0.825)

Notes: The sample is split by education level of women. Low education includes women with primary school or less, medium education accounts for women with high school, while high education accounts for women with a university degree. Each sub-sample includes adult females in 1999, 2002, and 2006. Dependent variables are dummy variables for different measures of abuse. Self-reported abuse refers to the last 12 months, while all technical measures of abuse refers to current situation. The treatment group includes women who were married at the moment of the reform in divorce legislation, independently of their current marital status. The control variables included in the regressions are: age group dummies, age and education of the husband, presence of young children at home, number of children, a dummy for urban-rural residence, region fixed effects, year fixed effects, immigration status, and religion beliefs. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 9: Heterogeneous impacts by education level using unmarried women as a control group. Full sample.

	Dependent variable	
	Self-Reported Abuse (1)	Technical Abuse (2)
Married * Post	-0.484*	-4.381***
	(0.269)	(0.678)
Married * Post * Intermediate Education	-0.332	1.641**
	(0.294)	(0.650)
Married * Post * High Education	-0.210	1.993***
	(0.368)	(0.757)
Married	3.445***	0.414
	(0.768)	(1.435)
Post	0.008	-0.429
	(0.169)	(0.500)
Intermediate Education	0.122	-0.459
	(0.193)	(0.579)
High Education	-0.168	-1.476**
	(0.231)	(0.660)
Adj. R^2	0.024	0.022
N	69886	54779

Notes: The sample includes all adult women in 1999, 2002, and 2006. Low education (omitted category) includes women with primary school or less, medium education accounts for women with high school, while high education accounts for women with a university degree. Dependent variables are dummy variables for different measures of abuse. Self-reported abuse refers to the last 12 months, while all technical measures of abuse refers to current situation. The treatment group includes women who were married at the moment of the reform in divorce legislation, independently of their current marital status. The control group includes women with partner but who are not legally married. The control variables included in the regressions are: age group dummies, age and education of the husband, presence of young children at home, number of children, a dummy for urban-rural residence, region fixed effects, year fixed effects, immigration status, and religion beliefs. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 10: Heterogeneous impacts by education level including only married women in the sample.

	All married women		Married women aged 30-50	
	Dependent variable		Dependent variable	
	Self-Reported Abuse (1)	Technical Abuse (2)	Self-Reported Abuse (3)	Technical Abuse (4)
Intermediate Education * Post	-0.450	1.134	-1.088**	-0.592
	(0.329)	(0.711)	(0.541)	(1.209)
High Education * Post	-0.205	2.296***	-0.621	0.833
	(0.433)	(0.878)	(0.619)	(1.331)
Intermediate Education	0.738**	-0.379	0.953**	0.479
	(0.310)	(0.646)	(0.417)	(0.925)
High Education	0.786*	-2.034**	0.936*	-1.282
	(0.430)	(0.832)	(0.532)	(1.098)
Post	-0.469*	-4.525***	0.015	-2.890**
	(0.264)	(0.597)	(0.495)	(1.132)
Adj. R^2	0.004	0.015	0.004	0.014
N	40535	40535	20741	20741

Notes: The sample includes all married women in columns 1-2, and middle aged women (30-50 years) in columns 3-4. Low education (omitted category) includes women with primary school or less, medium education accounts for women with high school, while high education accounts for women with a university degree. Dependent variables are dummy variables for different measures of abuse. Self-reported abuse refers to the last 12 months, while technical abuse refers to current situation. The control variables included in the regressions are: age group dummies; education dummies; age, education, and labor market status of the husband; number of children; region fixed effects; and year fixed effects. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Survey of Violence Against Women 1999, 2002, and 2006.

Table 11: Effect of the Divorce Law Reform on the Female Homicide by Intimate Partner.

| | Poisson | | Ordinary Least Squares | | | |
| | Homicide counts | | Homicide rate | | Homicide rate in logs | |
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.356*	0.272	0.568***	0.456**	0.421**	0.335*
	(0.187)	(0.190)	(0.193)	(0.219)	(0.187)	(0.196)
Married	-0.813***	0.471	-0.758***	0.950	-0.775***	0.530
	(0.091)	(1.272)	(0.119)	(1.809)	(0.111)	(1.609)
Post*Married	-0.326***	-0.164	-0.526***	-0.303	-0.376***	-0.205
	(0.114)	(0.201)	(0.155)	(0.270)	(0.137)	(0.238)
Quarter dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	$\chi^2 = 21.99$	$\chi^2 = 26.74$	$F = 1.09$	$F = 1.24$	$F = 1.80$	$F = 2.12$
Group linear trend	No	$\chi^2 = 1.03$	No	$F = 0.90$	No	$F = 0.68$
Adj. R^2			0.719	0.718	0.741	0.740
Goodness-of-fit chi2	46.259					
Prob > chi2(71)	0.99					
Mean dependent variable	7.977	7.977	1.140	1.140	-0.046	-0.046

Notes: The sample includes the number of adult female homicides by quarter, 2000-2010. The dependent variable is constructed by aggregating the number of homicides per group and quarter, and is defined as a count variable (columns 1-2), as a rate in terms of the size of corresponding group population (columns 3-4), and as the logarithm of the rate (columns 5-6). Columns 2, 4, and 6 are similar to columns 1, 3, and 5, respectively, except for the inclusion of group-specific linear trends. The treatment group includes homicides of women who were either married to or separated at the moment of the homicide. All other victim-perpetrator relationships (cohabiting couples, romantic partners) are included in the control group. All regressions include 88 observations (11 years x 4 quarters x 2 groups). Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Mortality Statistics collected by Queen Sofia Center.

Table 12: Effect of the Divorce Law Reform on the Female Homicide by Intimate Partner: Married versus Separated Women.

| | Poisson | Ordinary Least Squares | |
	Homicide counts (1)	Homicide rate (2)	Homicide rate in logs (3)
Post	0.402*	2.064**	0.673**
	(0.235)	(0.969)	(0.280)
Married	-0.556***	-0.391*	-0.579***
	(0.123)	(0.201)	(0.150)
Separated	1.509***	3.249***	1.417***
	(0.166)	(0.600)	(0.170)
Post*Married	-0.315**	-0.354	-0.328*
	(0.148)	(0.261)	(0.179)
Post*Separated	-0.657***	-1.437**	-0.643***
	(0.211)	(0.723)	(0.212)
Quarter dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Adj. R^2		0.494	0.723

Notes: The sample includes the number of adult female homicides by quarter, 2000-2010. The dependent variable is constructed by aggregating the number of homicides per group and quarter, and is defined as a count variable (column 1), as a rate in terms of the size of corresponding group population (column 2), and as the logarithm of the rate (column 3). There are two treatment groups, depending on the legal status of the victim at the moment of the homicide: (i) Women who were legally married to the perpetrator, and (ii) Women who were already separated or in the process of separation from the perpetrator. All other victim-perpetrator relationships (cohabiting couples, romantic partners) are included in the control group. All regressions include 132 observations (11 years x 4 quarters x 3 groups). Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Mortality Statistics collected by Queen Sofia Center.

Table 13: Impact on Marital Dissolution.

	Dependent variable: 1 if divorced		
	Total (1)	Women (2)	Men (3)
time	0.518***	0.623***	0.407***
	(0.027)	(0.043)	(0.032)
$post^{2005}$	3.252***	1.659**	4.866***
	(0.447)	(0.701)	(0.550)
timepost	0.056	0.091	0.020
	(0.042)	(0.066)	(0.052)
Divorcees (per 1000)	42.398	53.947	30.542
Effect	3.926***	2.746***	5.105***
	(0.615)	(0.975)	(0.741)
Change (%)	2.02	1.04	3.38
Adj. R^2	0.018	0.017	0.012
N	3404397	1724559	1679838

Notes: The sample includes individuals between 20 and 60 years of age in all quarters between 2001 and 2009. The dependent variable is a dummy variable set equal to 1 if the person declare to be separated or divorced at the moment of the interview. The control variables are dummies for age groups and education levels, plus quarter fixed effects to control for seasonality. When both men and women are included in the sample (column 1), a dummy for sex is also included. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Spanish Labor Force Survey, National Institute of Statistics, Spain.

Table 14: Structural break tests for time series of marriages.

	Dependent variable: number of marriages per month		
	Linear trend (1)	Quadratic trend (2)	Cubic trend (3)
$Time$	-6.67***	-35.11***	-79.49***
	(1.79)	(7.52)	(22.00)
$Timesq$		0.07***	0.34***
		(0.02)	(0.13)
$Timecu$			-0.00**
			(0.00)
$Post^{2005}$	259.42	-1966.27	-1423.39
	(908.72)	(1427.96)	(2057.07)
$Timepost$	-17.14	45.90	135.51
	(27.39)	(111.69)	(294.66)
$Timepostsq$		-1.70	-3.95
		(1.96)	(12.06)
$Timepostcu$			0.03
			(0.14)
$Marriages(L)$	0.18***	0.13***	0.12**
	(0.05)	(0.05)	(0.05)
$GDPgrowth(L12)$	347.71***	332.48***	314.67***
	(104.07)	(105.12)	(105.92)
Constant	6051.71***	8823.96***	10965.51***
	(968.23)	(1183.33)	(1546.12)
Chow test of structural break			
Ho:	b[$Timepost$]=0	b[$Timepost$]=0 b[$Timepostsq$]=0	b[$Timepost$]=0 b[$Timepostsq$]=0 b[$Timepostcu$]=0
F test	0.392	1.811	0.335
p-value	0.532	0.165	0.715
Adj. R^2	0.831	0.837	0.839
N	395	395	395
Durbin-Watson	1.968	1.961	1.955

Notes: The sample includes all marriages occurred between 1976 and 2009 on a monthly basis. $Post^{2005}$ is a dummy variable set equal to 1 since July 2005. All regressions have month fixed effects. Robust standard errors are reported in parentheses. *, **, and*** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

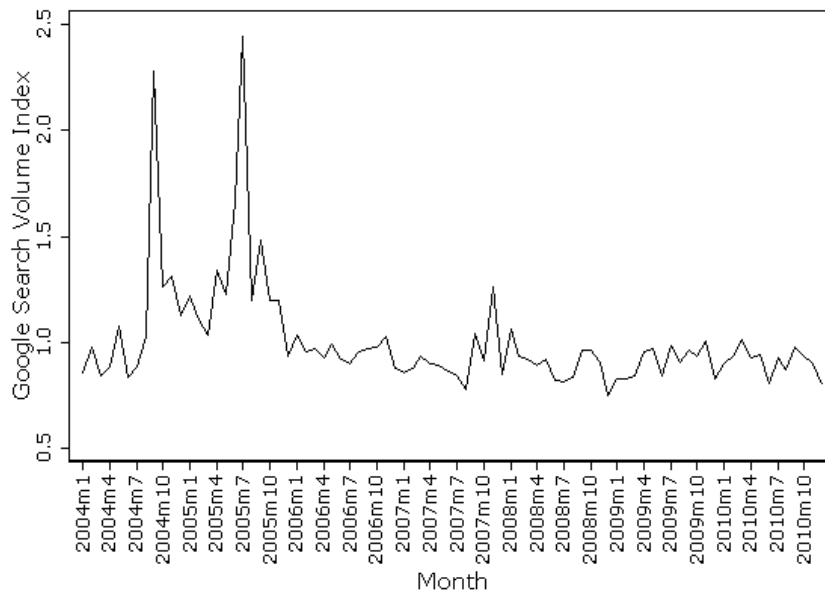# Appendix A. Additional Figures and Tables

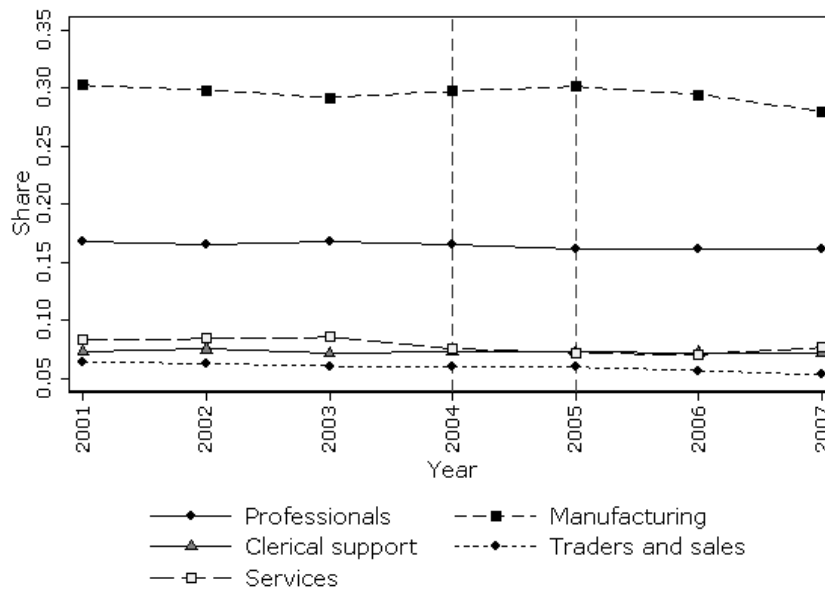**Figure A.1:** Divorces according to who is the petitioner
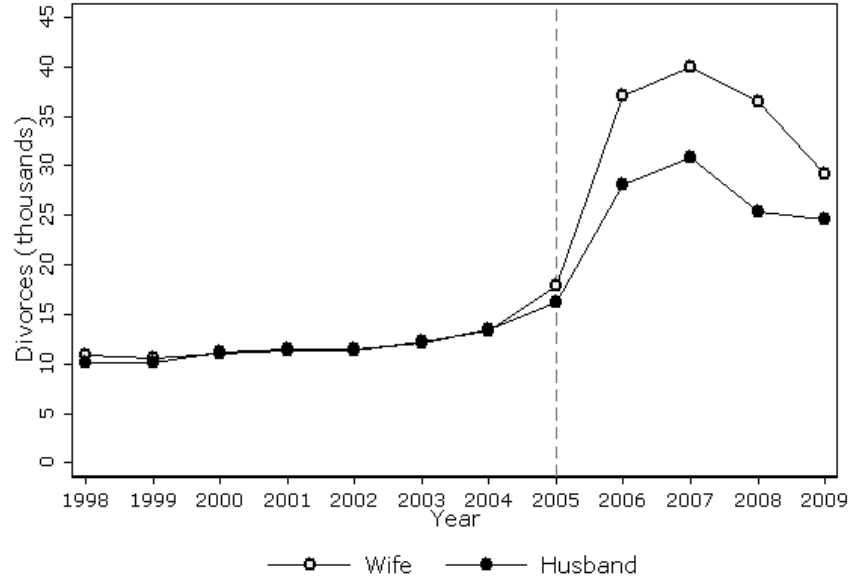
Source: National Institute of Statistics, Spain.

Figure A.2: Google Search Volume Index for the query "divorcio"

Source: Google Trends.

**Figure A.3:** Evolution of marriages by husband's occupation

Notes: These five occupations of husbands account for almost 90 percent of all husbands. A change in the coding of occupation after 2007 makes it not possible to continue the series for a longer period at the same level of disaggregation. Vertical lines in 2004 and 2005 indicate the years of announcement and enactment of the legal change, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Figure A.4: Evolution of marriages by wife's occupation

Notes: These five occupations of wives account for 87 percent of all wives. A change in the coding of occupation after 2007 makes it not possible to continue the series for a longer period at the same level of disaggregation. Vertical lines in 2004 and 2005 indicate the years of announcement and enactment of the legal change, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Figure A.5: Average age at marriage
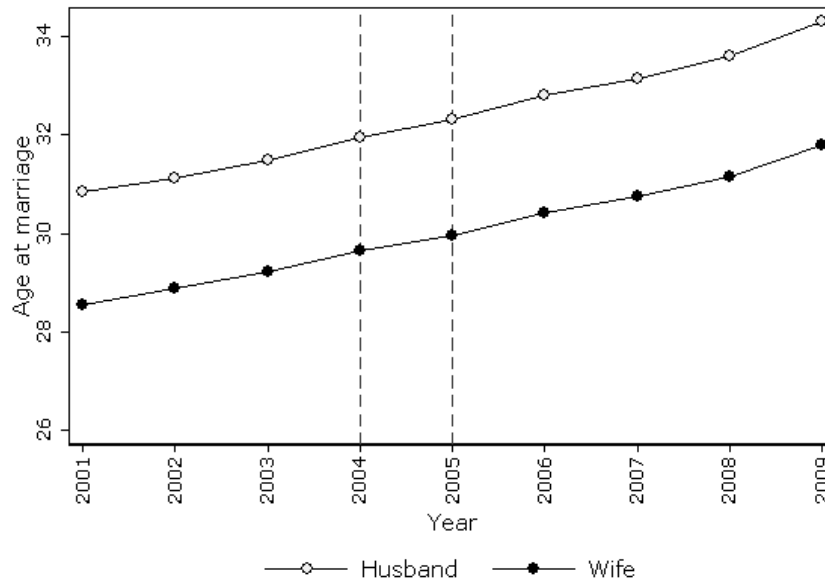
Notes: Vertical lines in 2004 and 2005 indicate the years of announcement and enactment of the legal change, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Figure A.6: Evolution of marriages by spouses' civil status: Divorced
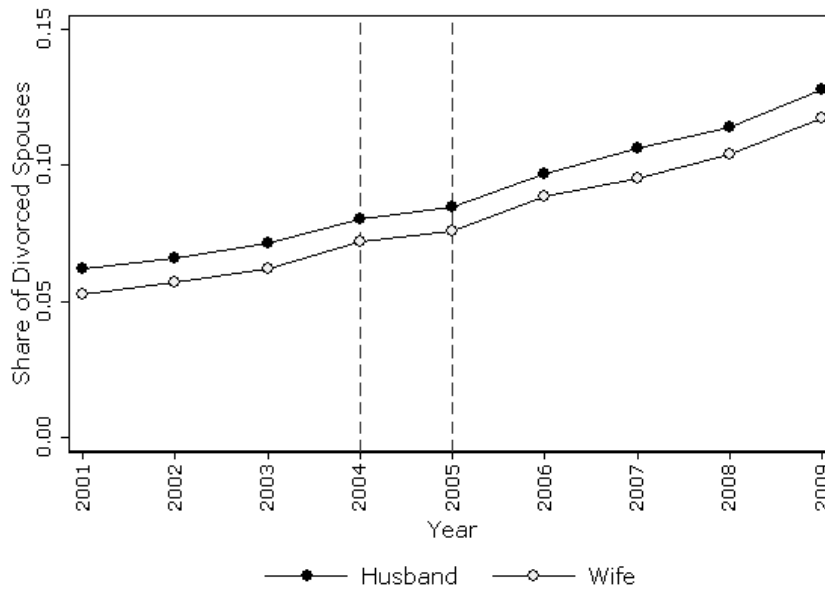

Notes: Vertical lines in 2004 and 2005 indicate the years of announcement and enactment of the legal change, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Table A.1: Measures of Technical Abuse: Definitions and Frequencies.

Definition of Technical Abuse			Classification according to Alberdi and Matas (2002)		
Indicator of abuse	mean	st. dev.	Type of abuse	mean	st. dev.
Insults or threatens you	0.0129	(0.1126)	Physical abuse	0.0190	(0.1367)
Makes you to become afraid	0.0096	(0.0974)			
Pushes or hits you when he becomes angry	0.0063	(0.0793)			
Insists on having sexual intercourse even if he knows you do not want to	0.0370	(0.1888)	Sexual abuse	0.0370	(0.1888)
Prevent you from visiting your family or relate to your friends, neighbors	0.0127	(0.1122)	Psychological abuse (control)	0.0282	(0.1654)
Takes the money your earn or does not give what you need	0.0037	(0.0606)			
Decides what yo can do or not do	0.0179	(0.1326)			
Does not care about your needs	0.0181	(0.1333)	Psychological abuse (emotional mistreatment)	0.0752	(0.2638)
Says where would you go without him	0.0142	(0.1185)			
Says that everything you do is always wrong, that you are clumsy	0.0176	(0.1313)			
Ridicules you or does not value your beliefs (religious, political, etc)	0.0136	(0.1157)			
Does not value the job or tasks you do	0.0445	(0.2063)			
Blames you in from of your children	0.0213	(0.1443)			
Technical abuse	0.1095	(0.3123)			

Notes: The measure of technical abuse is based on a series of 13 questions included in the survey as indicators of abuse according to the opinion of experts. This part of the questionnaire is answered only by women who declare to be in a relationship at the moment of the survey, independently of their legal civil status. For each indicator of abuse, there is information on the frequency of occurrence (i.e. frequently, sometimes, rarely, never) and on who is the offender. In this paper, I follow the same criterion the Spanish Women's Institute established when published the data, that is, to consider a situation of intimate partner abuse exists when there is a positive response to the correspondent question, the situation occurs "frequently" or "sometimes", and the offender is the intimate partner. I also follow Alberdi and Matas (2002) classification of these 13 indicators of abuse into 4 categories: physical, sexual, and two forms of psychological abuse.

Table A.2: Impact on the Composition of the Stock of Divorcees

	Age Group				Education Level			
	16-29	30-39	40-49	50-60	Less than primary	Primary	High school	University
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Women								
time	-0.089***	-0.131***	0.136***	0.065	-0.160***	-0.457***	0.452***	0.165***
	(0.021)	(0.044)	(0.048)	(0.043)	(0.024)	(0.039)	(0.048)	(0.039)
$post^{2005}$	-0.212	2.482***	-1.520**	-1.682***	0.199	-0.705	0.017	0.489
	(0.263)	(0.593)	(0.658)	(0.596)	(0.294)	(0.504)	(0.665)	(0.554)
timepost	0.015	-0.247***	0.005	0.356***	0.127***	0.251***	-0.421***	0.043
	(0.026)	(0.057)	(0.063)	(0.058)	(0.030)	(0.050)	(0.064)	(0.053)
Share before	3.952	25.905	40.568	28.081	5.081	17.461	55.276	22.182
Effect	-0.029	-0.478	-1.466	2.586***	1.727***	2.308***	-5.034***	0.999
	(0.439)	(0.922)	(1.014)	(0.915)	(0.483)	(0.815)	(1.031)	(0.839)
Change (%)	-0.96	-1.93	-3.43	9.36	64.08	19.33	-8.09	4.32
Panel B: Men								
time	-0.074***	-0.018	0.267***	-0.166***	-0.241***	-0.386***	0.462***	0.165***
	(0.024)	(0.059)	(0.066)	(0.061)	(0.032)	(0.056)	(0.067)	(0.054)
$post^{2005}$	-0.214	-1.063	-1.740**	1.456*	1.326***	-1.593**	-0.723	0.990
	(0.282)	(0.768)	(0.886)	(0.825)	(0.380)	(0.699)	(0.895)	(0.749)
timepost	0.031	-0.219***	-0.245***	0.559***	0.162***	0.237***	-0.327***	-0.073
	(0.028)	(0.074)	(0.086)	(0.081)	(0.039)	(0.069)	(0.087)	(0.072)
Share before	2.477	23.143	40.621	32.016	4.916	18.594	54.140	22.350
Effect	0.154	-3.696***	-4.683***	8.163***	3.267***	1.256	-4.643***	0.120
	(0.490)	(1.237)	(1.399)	(1.299)	(0.636)	(1.162)	(1.421)	(1.162)
Change (%)	8.62	-14.61	-10.27	31.40	394.39	8.46	-7.65	0.51

Notes: The sample includes individuals between 20 and 60 years of age in all quarters between 2001 and 2009. In each column, the dependent variables is a dummy variable set equal to 1 if the person corresponds to that particular age or education group. All regressions include quarter fixed effects to control for seasonality. Robust standard errors are reported in parentheses. *, **, and *** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Spanish Labor Force Survey, National Institute of Statistics, Spain.

Table A.3: Impact on the composition of new marriages according to main occupation of the husband.

	Five main occupations				
	Manufacturing	Professionals	Services	Clerical support	Sales and trading
	(1)	(2)	(3)	(4)	(5)
Time	0.024***	0.002	-0.022***	0.007***	-0.006***
	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)
$Post^{2005}$	1.203***	-0.141	-0.810***	-0.094	0.101
	(0.200)	(0.169)	(0.123)	(0.122)	(0.110)
Timepost	-0.103***	0.024***	0.070***	0.003	-0.023***
	(0.010)	(0.008)	(0.006)	(0.006)	(0.005)
Share before (%)[a]	40.124	22.301	10.620	9.868	8.071
Effect[b]	-2.493***	0.705***	1.716***	0.019	-0.717***
	(0.320)	(0.272)	(0.200)	(0.196)	(0.177)
Change (%)[c]	-6.30	3.41	13.55	0.24	-9.56
Adj. R^2	0.001	0.001	0.001	0.001	0.000
N	1075700	1075700	1075700	1075700	1075700

Notes: The sample includes all marriages occurred between 2001 and 2007. $Post^{2005}$ is a dummy variable set equal to 1 since July 2005. The dependent variable is a dummy for each of the five main professions of husbands, which has been multiplied by 100 to ease the readability of the results. Then, the share of each occupation should be interpreted as a percentage. All regressions have month fixed effects and a linear time trend.

a. Mean of the dependent variable during the pre-reform period.

b. Absolute effect of the reform on the dependent variable, measured 3 years after its introduction (half of the post-reform period). The corresponding standard error is reported in parentheses below.

c. Relative effect of the reform, calculated as the ratio of the absolute total effect to the predicted value of the dependent variable, had the reform not been implemented.

Robust standard errors are reported in parentheses. *, **, and*** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Table A.4: Impact on the composition of new marriages according to main occupation of the wife.

	Five main occupations				
	Professionals	Clerical support	Services	Housekeeping	Sales and trading
	(1)	(2)	(3)	(4)	(5)
$Time$	0.019***	0.017***	0.016***	-0.047***	0.017***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
$Post^{2005}$	-0.329*	0.091	-0.284**	0.088	0.104
	(0.176)	(0.163)	(0.143)	(0.127)	(0.129)
$Timepost$	0.020**	-0.006	0.028***	-0.004	-0.037***
	(0.009)	(0.008)	(0.007)	(0.006)	(0.006)
Share before (%)[a]	24.655	19.969	14.243	11.619	10.969
Effect[b]	0.385	-0.140	0.713***	-0.043	-1.213***
	(0.282)	(0.262)	(0.230)	(0.205)	(0.204)
Change (%)[c]	1.78	-0.99	4.00	-0.25	-13.12
Adj. R^2	0.001	0.003	0.001	0.006	0.001
N	1075700	1075700	1075700	1075700	1075700

Notes: The sample includes all marriages occurred between 2001 and 2007. $Post^{2005}$ is a dummy variable set equal to 1 since July 2005. The dependent variable is a dummy for each of the five main professions of wives, which has been multiplied by 100 to ease the readability of the results. Then, the share of each occupation should be interpreted as a percentage. All regressions have month fixed effects and a linear time trend.

a. Mean of the dependent variable during the pre-reform period.

b. Absolute effect of the reform on the dependent variable, measured 3 years after its introduction (half of the post-reform period). The corresponding standard error is reported in parentheses below.

c. Relative effect of the reform, calculated as the ratio of the absolute total effect to the predicted value of the dependent variable, had the reform not been implemented.

Robust standard errors are reported in parentheses. *, **, and*** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.

Table A.5: Impact on age and civil status of new couples.

	Age at marriage			Civil status at marriage		
	Husband's age	Wife's age	Age gap	Divorced husband	Divorced wife	Both divorced
	(1)	(2)	(3)	(4)	(5)	(6)
$Time$	0.031***	0.029***	0.001***	0.049***	0.051***	0.020***
	(0.001)	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)
$Post^{2005}$	-0.030	-0.021	-0.008	-0.028	-0.021	0.030
	(0.023)	(0.020)	(0.015)	(0.083)	(0.079)	(0.052)
$Timepost$	0.009***	0.007***	0.002***	0.037***	0.029***	0.023***
	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.002)
Average before[a]	32.336	29.989	2.347	8.880	7.959	3.332
Effect[b]	0.300***	0.232***	0.068***	1.292***	1.034***	0.869***
	(0.035)	(0.030)	(0.023)	(0.123)	(0.117)	(0.076)
Change (%)[c]	0.82	0.70	2.12	6.59	5.65	11.48
Adj. R^2	0.034	0.035	0.002	0.015	0.016	0.008
N	1829289	1829289	1829289	1829289	1829289	1829289

Notes: The sample includes all marriages occurred between 2001 and 2007. $Post^{2005}$ is a dummy variable set equal to 1 since July 2005. In columns 1-3, the dependent variable is either the age of spouses or the age gap between them, and is expressed in years. In columns 4-6, the dependent variable is dummy variable for the correspondent characteristic, which has been multiplied by 100 to ease the readability of the results. All regressions have month fixed effects and a linear time trend.

a. Mean of the dependent variable during the pre-reform period.

b. Absolute effect of the reform on the dependent variable, measured 3 years after its introduction (half of the post-reform period). The corresponding standard error is reported in parentheses below.

c. Relative effect of the reform, calculated as the ratio of the absolute total effect to the predicted value of the dependent variable, had the reform not been implemented.

Robust standard errors are reported in parentheses. *, **, and*** denote significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Source: Microdata from the Census of Marriages, National Institute of Statistics of Spain.