

Divorce laws and intimate partner violence: Evidence from Mexico*

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Abstract

This paper examines whether divorce laws affect intimate partner violence (IPV) in the context of a developing country. Exploiting the state-level variation in the timing of the introduction of unilateral and no-fault divorce in Mexico, it estimates the causal effect of reducing the cost of divorce on male-to-female physical, sexual, emotional and economic IPV. The results indicate a significant decrease in the probability of sexual, emotional and economic IPV, which is driven by couples who continue to remain married after the reform. This decline, however, only holds when these types of IPV are not associated with physical violence. The results also show a significant increase in the probability of physical and sexual IPV occurring alone. Taken together, these findings suggest a substitution effect across forms of violence, which is not consistent with the prediction of divorce threat models.

Keywords: Divorce laws, domestic violence, household bargaining, developing countries

JEL Classification: J12, J16, K36

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1 Introduction

IPV¹ is a serious public health problem. In Mexico, estimates indicate that about 37% of married (74% of divorced) women have experienced it at some point during their current (past) relationship. IPV is also associated with a wide range of negative health and labour market outcomes for victims (Campbell, 2002; Lloyd, 1997; Tolman and Wang, 2005), as well as adverse intergenerational consequences (Aizer, 2011; Carrell and Hoekstra, 2010; Pollak, 2004). In this context, it is crucial to understand what can be done to prevent IPV. Economists have provided some insights into this question by examining factors that could potentially affect IPV, including labour market opportunities (Aizer, 2010; Anderberg et al., 2015), conditional cash transfer (CCT) programmes (Angelucci, 2008; Bobonis et al., 2013), historical factors (Alesina et al., 2016; Tur-Prats, 2015), and arrest and prosecution policies (Aizer and Dal Bó, 2009; Iyengar, 2009).

There is still, however, little evidence of the impact of divorce laws on IPV, both inside and outside economics. This paper examines this question by exploiting the variation in the timing of the introduction of unilateral and no-fault divorce (hereafter unilateral divorce) across Mexican states. Unilateral divorce implies that either of the two spouses can file for divorce without the consent of the other and without the need to prove fault. Studying divorce laws is important because, by regulating the dissolution of the marriage, they are likely to affect intra-household dynamics including the experience of IPV.

To the best of my knowledge, only two papers have examined the impact of divorce laws on IPV (Brassiolo, 2016; Stevenson and Wolfers, 2006). Both of them find a significant decrease in the probability of violence for treated women compared to non-treated ones following a reduction in the cost of divorce. However, they focus on developed countries, namely Spain and United States, respectively, whose findings might not apply to the case of developing countries. The main reason lies in the different socio-economic and cultural contexts, including the importance of religion². For instance, in developing countries, IPV might be regarded as being relatively more normal, there can be less support for victims, more difficulties enforcing alimony payments and child maintenance, and fewer outside options for women. Divorce can also be less culturally accepted³ (WHO, 2002, 2014). All these reasons might make women less likely to divorce and/or men more likely to inflict IPV in response to a reduction in the cost of divorce in developing countries compared to their counterparts in developed ones. Consequently, it is not clear *a priori* whether

¹I use IPV, violence and abuse interchangeably.

²According to the 2010 Population Census, 83% of Mexicans consider themselves as Catholics. Moreover, a national survey on the values and attitudes of Catholics conducted in 2006 found that only 19% of Catholics do not (or very rarely) attend religious services. Although one might argue that Catholicism is also very important in Spain, the percentage of practicing Catholics has sharply decreased over time. According to the CIS Barómetro of 2006, 78% of Spanish consider themselves as Catholics of which 53% never (or very rarely) attend mass.

³Comparing Mexico to United States, Mexico's crude divorce rate was 0.7 in 2006, whereas in United States it was 3.7 in the same year (data from the United Nations).

the effect of unilateral divorce on IPV will be similar in both settings. For instance, one could observe an increase, instead of a decrease, if easier divorce leads to what is known as a ‘male backlash effect’⁴.

The primary contribution of my paper is, thus, to empirically examine the relationship between easier divorce and IPV in the context of a developing country. To do so, I focus on Mexico, which provides a unique case study for analysing the question of interest. First, divorce laws are determined at the state level, which allows me to exploit the staggered implementation of unilateral divorce. Similar divorce reforms in other countries have occurred at the national level⁵. Second, the timing of the reform and the availability of data are appropriate to examining the impact of easier divorce on IPV in a Difference-in-Differences (DiD) framework, which will provide an estimate of the average causal effect of the reform. In particular, there is information on IPV both before and after the law changes, which is not the case for the other reforming countries of the region.

In order to estimate the causal impact of reducing the cost of divorce on IPV, I use data from a nationally representative survey called ENDIREH⁶. Three independent cross-sectional waves of this survey are used in this study (2003, 2006 and 2011). I employ a DiD approach and estimate the impact of the reform on four types of IPV, namely physical, sexual, emotional and economic.

My baseline results indicate that, after the reform, women in the treatment group, as compared to those in the control group, are 1.7, 4.9 and 4.3 percentage points significantly less likely to experience sexual, emotional and economic IPV, respectively. Compared to the prevalence of IPV for treated women in the pre-reform period, this corresponds to a 30%, 23% and 20% decline in IPV, respectively. This reduction is mainly driven by couples who continue to remain married after the reform. In the case of physical IPV, the effect has been found to be insignificant and close to zero.

I next examine whether easier divorce might have led to a substitution effect across types of IPV by constructing a set of indicators that capture different combinations of violence. I find that the significant decline in sexual, emotional and economic IPV only holds when these types of abuse are not associated with physical violence (and/or sexual IPV in the two latter cases). I also find that the probability of experiencing physical and sexual IPV alone (or with no associated emotional and/or economic violence) has significantly increased for treated women compared to non-treated ones after the reform. Taken

⁴In this context, a ‘male backlash effect’ occurs when the husband perceives the improvement in the wife’s outside option—through the reduction in the cost of divorce— as a threat to his culturally prescribed dominant role.

⁵Nicaragua allowed for unilateral divorce in 1988. In Uruguay, since 2013 unilateral divorce can be filed for after four months of being married. Previously, only women could unilaterally file for it, but there was a two-year marriage requirement. More recently, Argentina (2015) has moved towards unilateral divorce without any temporal requirement.

⁶*Encuesta Nacional sobre la Dinámica de las Relaciones en los Hogares* (National Survey on the Dynamics of the Relationship within the Households).

together, these results suggest that the reduction in the cost of divorce might have led to a substitution of emotional and economic IPV for physical and sexual violence, which is not consistent with the prediction of divorce threat models. Instead, it is consistent with a ‘male backlash effect’ explanation by which unilateral divorce would have been perceived by the husband as a threat to his dominant position. I obtain further support for this explanation when analysing heterogeneous effects of the reform by the spouses’ educational level, which proxies for their views of gender roles. In particular, the increase in IPV is concentrated on women with more ‘traditional’ gender role attitudes (i.e. less than primary completed) and those married to men with more ‘traditional’ gender role attitudes.

There are several reasons that could explain why a ‘male backlash effect’ would lead to an increase in physical and sexual IPV, but not other forms of violence. First, physical and sexual are the types of IPV that women more clearly associate with violence. Second, they are usually considered to be ‘more serious’ than emotional and economic abuse. Consequently, one would expect physical and sexual IPV to be more effective than other types of violence, at least in the short-run, which would make men more likely to use them as an instrument to reassert their dominance.

Finally, I estimate the impact of unilateral divorce on a proxy for the woman’s bargaining power in the household, namely her contribution to decision-making. My results indicate that treated women have improved their absolute and relative decision-making power compared to non-treated ones after the reform. Although this finding is in line with the prediction of divorce threat models, it is unlikely to explain the decline in sexual, emotional and economic IPV with no associated physical violence. The reason is that it has been accompanied by an increase in physical and sexual IPV occurring alone, which seems to be consistent with a ‘male backlash effect’ explanation.

In addition to examining the relationship between divorce laws and IPV in the context of a developing country, the results of this paper contribute to the previous literature in a number of other ways. First, they highlight the importance of analysing potential substitution effects across forms of IPV; an analysis very rarely conducted in the literature. Second, they indicate that the husband’s gender role attitudes is an important source of variation in explaining the impact of unilateral divorce on IPV, which is consistent with previous findings focusing on income (e.g. Angelucci (2008) and Atkinson et al. (2005)). Third, they shed some light on the determinants of the intra-household distribution of power by showing an improvement in the woman’s decision-making power following a reduction in the cost of divorce, which is in line with the prediction of divorce threat models. Finally, they inform about the potential consequences of unilateral divorce in the specific case of Mexico. This is of particular importance in the context of this country, where states are gradually moving towards unilateral divorce and where this move is facing the opposition of conservative sectors of the society.

The rest of the paper is organised as follows. Section 2 briefly reviews previous related literature. Section 3 describes the divorce reform in Mexico. Section 4 specifies the identification strategy. Section 5 describes the data and presents some descriptive statistics. Section 6 reports the baseline results, conducts some robustness tests, examines the potential reasons behind my findings and analyses heterogeneous impacts of the reform. Section 7 looks at the effect of easier divorce on the woman’s bargaining power. Section 8 provides some conclusions and discusses the limitations and implications of the study.

2 Related literature

Divorce threat models predict that easier access to divorce will decrease IPV through two main channels. The first works through a decrease in the probability of abuse within intact marriages. The idea is that easier divorce makes the threat of divorce more credible, which redistributes bargaining power towards the spouse relatively more willing to divorce. In the context of abusive relationships, she would presumably be the abused partner, who can use her improved bargaining position to lower the level of violence.

The second mechanism works through an increase in the probability that abused women divorce, since the reduction in the cost of divorce makes the dissolution of violent relationships easier. A necessary condition for this latter channel is that divorce rates have changed following the adoption of unilateral divorce. This was one of the earliest studied outcomes in the divorce literature⁷. Most of these studies have found a significant increase in divorce rates following these types of reforms, at least in the short run (see Friedberg (1998) and Wolfers (2006) for a state-level analysis in the United States, and González and Viitanen (2009) and Kneip and Bauer (2009) for a cross-country analysis in Europe). Nevertheless, the end of the marriage does not necessarily lead to the end of violence (Aizer and Dal Bó, 2009). This is confirmed by my 2006 sample in which 40% of divorced women who were abused during their last marriage, have also experienced violence inflicted by their ex-husband after divorcing.

In spite of the theoretical association between divorce laws and IPV, the empirical evidence remains scarce. To the best of my knowledge, only two papers in the economics literature have looked at the effect of divorce laws on IPV. The earliest one is Stevenson and Wolfers (2006), who exploit the state-level variation in the timing of the introduction of unilateral divorce in United States. Employing a DiD strategy and two waves (1976 and 1985) of a national survey on physical violence, they find a large decline in both male-to-female and female-to-male IPV. One of the main limitations of Stevenson and Wolfers (2006) is the fact that they only have two survey waves and, by the time of the first wave, 31 states had already introduced unilateral divorce, while 37 had done so by

⁷Other outcomes include marriage rates (Rasul, 2006), woman’s labour supply (Bargain et al., 2012; Gray, 1998; Stevenson, 2008), home production (Gray, 1998), children’s outcomes (Gruber, 2004), fertility decisions (Bellido and Marcén, 2014; Drewianka, 2008) and violent crime (Delpiano and Giolito, 2012).

the time of the second one. In order to mitigate this concern, they use alternative control groups and show that their estimates are not sensitive to them⁸.

In a more recent paper, Brassiolo (2016) analyses the impact of a 2005 reform that significantly reduced the cost of divorce in Spain on male-to-female IPV⁹. Using cohabiting women as a control group, he finds a significant decrease in IPV following the reform. He also finds that women in the middle and bottom of the education distribution, and those without young children appear to have benefited the most from the reform. Furthermore, Brassiolo (2016) attempts to disentangle whether the reduction in violence is due to a decrease in the propensity towards violence of married couples or to an increase in the propensity of abused women to dissolve the marriage. He does so by distinguishing between still married and divorced/separated couples at the time of the survey, while they all were married at the time of the reform. He finds that the bulk of the decline is concentrated on the former, which provides support for the first mechanism¹⁰.

In the context of Mexico, a recent paper (Beleche, 2017) sheds some light on the effect of three reforms related to domestic violence (i.e. criminalisation of domestic violence in the Penal Code, inclusion of domestic violence as a ground for divorce and adoption of the Law of Access, Assistance and Prevention against Intra-Family Violence) on IPV. The objective of this study is to estimate the impact of these reforms on female suicide rates by exploiting their staggered introduction. The results show a significant decrease in suicide rates in adopting states, as compared to non-adopting ones, following the introduction of the Penal Code reform; whereas no significant effect is reported for the other two reforms¹¹. In order to examine the possible mechanisms behind her findings, she looks at the effect of the Penal Code reform on IPV using the ENDIREH 2003 sample. She finds a significant decline in the probability of physical and sexual violence, while an insignificant effect is obtained for emotional abuse.

In addition to the divorce literature, my paper is also closely related to a body of research that aims to understand the determinants of IPV. In this regard, most attention has been devoted to the relationship between a woman's economic status and IPV. Stud-

⁸Stevenson and Wolfers (2006) also examine the impact of unilateral divorce on intimate homicides. Their results show a significant decrease in male-to-female homicides, while the estimates are insignificant when female-to-male homicides are considered. These findings stand in sharp contrast to the ones in Dee (2003), who reports an insignificant effect of unilateral divorce on spousal homicides of wives, whereas a significant increase in spousal homicides of husbands. The latter is concentrated in states with matrimonial property laws that favour the husbands. Given this, he suggests that the increase in homicides of husbands might be due to a loss of the wife's bargaining power.

⁹This reform eliminated, among other things, the need for one-year judicial separation before a divorce could be filed, reduced the mandatory marriage length before dissolution from one year to three months, and introduced unilateral and no-fault divorce.

¹⁰Stevenson and Wolfers (2006) cannot disentangle both channels because their survey only captures information on married couples.

¹¹Stevenson and Wolfers (2006) also look at the effect of unilateral divorce on suicide rates and find a significant decrease in female suicide rates following the reform, while the effect for male suicide rates seems to be insignificant.

ies from developed countries have usually reported a negative association between both (Aizer, 2010; Anderberg et al., 2015), which is consistent with the prediction of divorce threat models. By contrast, evidence from developing countries has been mixed.

In the context of Mexico, two papers have studied the impact of the antipoverty CCT programme *Oportunidades* on IPV (Angelucci, 2008; Bobonis et al., 2013). Bobonis et al. (2013) find that beneficiary women are less likely to experience physical IPV, but more likely to experience threats of violence with no associated physical violence compared to non-beneficiary women. They suggest that this may be driven by a motive of rent extraction. Exploiting the initial random implementation of the programme in rural villages, Angelucci (2008) examines its impact on drunken IPV. She finds different results depending on the magnitude of the income transfer and the husband’s level of education. Violence decreases for households entitled to small transfers and for households entitled to large transfer where husbands have completed primary education, whereas it increases for households entitled to large transfers where husbands have not completed primary education. She suggests that men without primary education might hold traditional views of gender roles and, consequently, they might perceive income transfers targeted at women as a threat to their dominant position (i.e. a ‘male backlash effect’ occurs).

Evidence from other regions is also mixed. In the context of India, Amaral (2017) finds that the probability of experiencing IPV decreases following a reform that improves women’s inheritance rights. Using an instrumental variable (regional variation in the impact of rainfall shocks on female labour demand in rural areas) approach, Chin (2012) reports a negative effect of working for pay on the probability of physical IPV. This result stands in sharp contrast to the one in Luke and Munshi (2011) employing female income and a similar methodology.

Taken together, the literature has shown that, in the context of a developing country, an improvement in the woman’s outside option will not necessarily decrease IPV, as was already suggested in section 1. This is empirically examined for the case of divorce laws in the following sections.

3 Reform of the divorce legislation in Mexico

In Mexico, divorce laws are determined at the state level. The first state to introduce unilateral divorce was Mexico City¹² in August 2008, followed by Hidalgo in March 2011 and ten other states between 2012 and 2017¹³. Given that the last wave of the survey was conducted in 2011, treated women are restricted to be drawn from only two states, namely Mexico City and Hidalgo¹⁴.

¹²During my time span Mexico had 31 states and one Federal District, but for simplicity I refer to all of them as states. Recently the Federal District has changed its name to Mexico City.

¹³Guerrero and Estado de Mexico in 2012; Quintana Roo, Coahuila and Sinaloa in 2013; Nayarit in 2014; Aguascalientes and Yucatan in 2015; Queretaro in 2016; and Oaxaca in 2017.

¹⁴In August 2017 a new wave of the survey was released. Although this wave was released after this paper was prepared, it would be interesting to re-examine the relationship between easier divorce and

In Mexico City, the Legislative Assembly approved unilateral divorce on 27th August 2008 by amending the Civil Code and the Code of Civil Procedures¹⁵. This reform was published in the *Gaceta Oficial* of the Federal District on 3rd October, which came into effect 30 days after it. In Hidalgo, the Congress approved unilateral divorce on 18th March 2011 by amending the Family Law and the Code of Family Procedures¹⁶. This was published in the *Periódico Oficial* of the State of Hidalgo on 31st March and came into effect 60 days after it. Under the new legislation, any of the two spouses can ask for the dissolution of the marriage without the consent of the other and without the need to prove fault. In the case of Mexico City there is the specific requirement of having been married for at least one year. The procedure of unilateral divorce is judicial and requires filing for it at the Family Court.

In the old divorce regime, if a partner wanted to unilaterally dissolve the marriage, she needed to prove a cause, which included, among others, the usual causes of domestic violence¹⁷, infidelity and abandonment of the home. Fault divorce has been derogated in both Mexico City and Hidalgo. Alternatively, both partners could file for divorce by mutual consent at the Family Court (judicial procedure), which required a mandatory one-year of marriage. This type of mutual consent divorce has been derogated in Mexico City, whereas in Hidalgo it does no longer have the one-year length of marriage requirement. Furthermore, in Mexico City there was, and still is after the reform, the so-called administrative divorce, which is a mutual consent divorce by administrative procedure. Thus, it needs to be filed for at the Civil Registry, instead of the Family Court, and requires having been married for at least one year¹⁸. Further information on the divorce types and requirements in each state can be found in columns 1-4 of table B1 in the Appendix.

The benefits of the reform depend on the type of divorce spouses are likely to file for. If mutual consent is an option, this reform has not introduced any benefit in Mexico City, since they could file for mutual consent divorce by judicial procedure under the old regime and they can still file for administrative divorce if they fulfill the requirements. In both cases, there was/is a mandatory one-year of marriage, as there is for unilateral divorce. Comparing administrative to unilateral divorce, couples that qualify for the former are

IPV using this additional wave.

¹⁵See pages 31-56 of the *Diario de los debates de la Asamblea Legislativa del Distrito Federal* of 27th August 2008. Complete text in <http://www.aldf.gob.mx/archivo-29d877a2d50013f22c7ee4613fc35a2d.pdf>. This text also contains information about the origins of the reform, the motivation for approving it and the voting results.

¹⁶See Decree 584 in <http://intranet.e-hidalgo.gob.mx/normatecae/archivos/dec584.pdf>. It also contains information about the motivation for approving the reform.

¹⁷Domestic violence as a cause for divorce was explicitly recognised in Mexico City, but not Hidalgo. To the best of my knowledge, a proposal for legislative reform presented in September 2008 requested its addition, but it was not added by the time unilateral divorce was approved. Even when domestic violence was not explicitly recognised, it could be grounded on the cause of ‘brutality, threats and serious insults’.

¹⁸It also requires being above 18, not having children under custody and having reached an agreement about the dissolution of the matrimonial property.

expected to file for it given its lower time¹⁹ and likely economic cost²⁰. In the case of Hidalgo, the introduction of unilateral divorce has reduced the cost in terms of time, since mutual consent divorce does no longer require the mandatory one-year of marriage.

If mutual consent is not an option (which is likely in the context of violent marriages) or proving fault is difficult, this reform has clearly reduced the cost of divorce in time²¹, monetary and emotional terms. However, the length of time and the cost needed to obtain unilateral divorce depend, among other things, on whether the spouses reach an agreement regarding the children's custody, alimony payments, use of marital home and dissolution of the matrimonial property.

The reduction in the cost of divorce had immediate effects on divorce rates, as figure 1 shows (figure C1 in the Appendix depicts the divorce rate by type of divorce). They boosted in the year following the reform with growth rates reaching 22% in Mexico City and 38% in Hidalgo. One possible reason for this large increase is that unilateral divorce could have increased divorce among couples that sooner or later were going to divorce, even if the law had not been passed. After the initial rise in divorces, the increasing trend decelerated in both states and, since 2012, the growth rate has become negative in Mexico City, which is consistent with findings in United States (Wolfers, 2006)²².

Furthermore, the reduction in the cost of divorce could have had a differential impact on wives and husbands. As mentioned earlier, the spouse relatively more willing to exit the marriage, would likely have benefited the most from the reform. Figure 2 depicts the proportion of divorces by who initiates them. It shows that women file for divorce more often than their male counterpart. I next look at fault divorces grounded on the cause of domestic violence (figure 3). Consistent with the previous one, this figure shows that divorce based on this ground was initiated more often by women than by men before the reform. This is in line with information from my sample of abused women, who are asked 'Who took the decision of separating?'. In most of the cases, it was the woman, which occurs both before and after the reform. Overall, given that women are more likely to file for divorce, especially in the context of violent marriages, they are likely to have benefited relatively more from easier access to divorce.

Who has benefited the most from the reform also depends on the matrimonial property regime and whether the rules governing the dissolution of the property have changed. In Mexico, there is no matrimonial property regime by default, but spouses need to choose

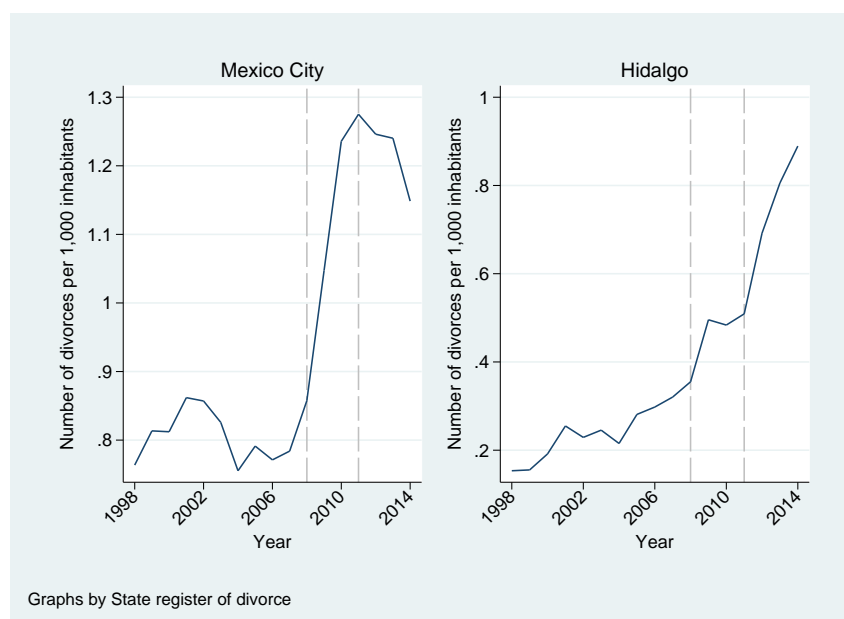
¹⁹Administrative divorce is usually granted within 15 and 30 days, while a judicial divorce requires at least one month.

²⁰The cost of registering an administrative divorce in Mexico City is 1,050.00 Mexican pesos, while a judicial decree 208.90 (SEFIN, 2016). However, once legal fees have been taken into account, the overall cost of an administrative divorce is usually lower than that of a judicial divorce

²¹A fault divorce could take a minimum of six months.

²²One possible explanation for the negative growth rate is that, even if divorce rates among couples that were married when the divorce reform was introduced could have risen, divorce rates among post-reform married couples might have dropped to a larger extent, as Mechoulam (2006) finds for United States, which would have left a negative net effect.

Figure 1: Divorce rate



Notes: The vertical axes refer to the annual number of divorces per 1,000 inhabitants. The two vertical lines refer to the year unilateral divorce was introduced (2008 in Mexico City and 2011 in Hidalgo).
Source: Divorce statistics, INEGI

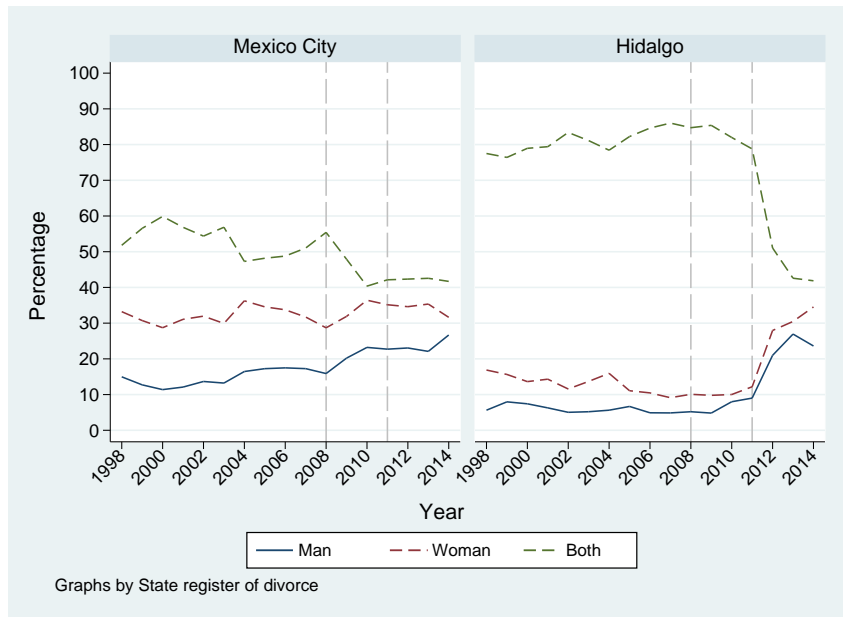
it at the time of the marriage. They have the option of community and separate regimes, or a mix of both types; and this has not changed with the reform. Upon divorce, a community property regime is likely to benefit relatively more the spouse who has acquired less assets during the marriage, which is usually the woman, while the contrary in the case of a separate property regime (Dee, 2003). The survey provides information on the matrimonial property regime of couples in 2003, which indicates that 69% of them were married under a community property regime, 14% under a separate regime and 17% did not know the regime. If these numbers can be extrapolated to the two other years²³, I would expect that, overall, easier divorce has not damaged women in terms of property.

Moreover, the adoption of unilateral divorce has been accompanied by changes in the economic compensation upon divorce. In particular, it has been made explicit that there needs to be a compensation for the spouse that has been responsible for the household chores and care of the children, or that has not acquired property (or of significantly lower value) during the marriage²⁴. Although an economic compensation existed in the old divorce regime, in the case of fault divorce, it was only received by the innocent spouse. Thus, when there was no innocent spouse (e.g. divorce was grounded on a separation

²³Although this question is not directly asked in the other two years, I can infer the matrimonial property regime for the group of abused women in 2006, which shows that in most cases they are also married under a community property regime.

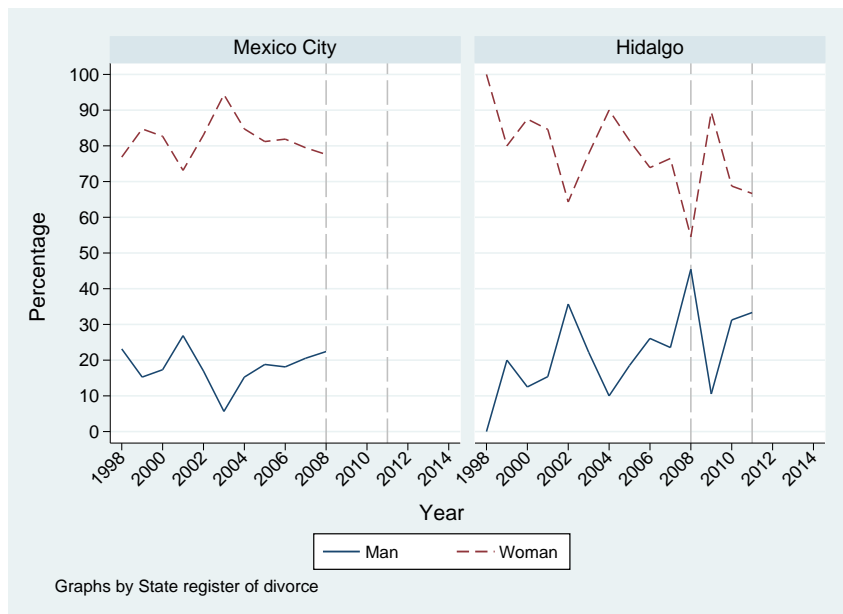
²⁴In Mexico City, this only occurs when the matrimonial property regime is separation, while in Hidalgo regardless of the regime (for more details see Article 267 VI of the Civil Code of the Federal District and Article 476 bis of the Code of Family Procedures of Hidalgo).

Figure 2: Percentage of divorces by who initiates divorce



Notes: The vertical axes refer to the percentage of divorces initiated by women, men and both. The two vertical lines refer to the year unilateral divorce was introduced (2008 in Mexico City and 2011 in Hidalgo). *Source:* Divorce statistics, INEGI.

Figure 3: Percentage of divorces by who initiates divorce grounded on domestic violence



Notes: The vertical axes refer to the percentage of divorces initiated by women and men grounded on the explicit cause of domestic violence or the cause of 'brutality, threats and serious injuries'. The two vertical lines refer to the year unilateral divorce was introduced (2008 in Mexico City and 2011 in Hidalgo). *Source:* Divorce statistics, INEGI.

length of at least two years), none of the spouses received a compensation. This change in divorce rules is likely to have benefited women relatively more than men, since they usually fulfill the role of ‘housewives’ (58% of my sample) and acquire less assets during the marriage.

4 Identification strategy

In order to estimate the causal impact of reducing the cost of divorce on IPV, I take advantage of the natural experiment explained above. Specifically, the geographical and temporal variation in the introduction of unilateral divorce provides an ideal setting for a DiD framework. This approach compares the average prevalence of IPV for women in the treatment and control groups, before and after the reform, and estimates the average treatment effect on the treated. More formally, I pool the three survey years (2003, 2006 and 2011) and estimate the following Linear Probability Model²⁵:

$$IPV_{ist} = \beta_0 + \delta Treat_s \times Post_t + \beta_1 X_{ist} + \alpha_s + \gamma_t + \varepsilon_{ist} \quad (1)$$

where ist refers to woman i living in state s at the time of the survey observed in survey year t . IPV_{ist} is an indicator of whether the woman has experienced IPV in the past 12 months. $Treat_s$ is an indicator denoting whether the woman is part of the treatment group i.e. whether she was married at the time of the reform residing in Mexico City or Hidalgo (the control group is formed by married women living in 9 non-reform states, which is explained below). $Post_t$ is a dichotomous variable equal to one if the woman belongs to the post-treatment period (i.e. was surveyed in 2011) and zero otherwise. δ is the DiD estimator or, in other words, the average change in the prevalence of IPV due to the divorce reform.

X_{ist} includes a set of time-varying covariates at the individual, couple and household level. These variables control for differences in observable characteristics among women that could have affected the selection into the treatment, as well as IPV. α_s is a vector of state fixed effects for a woman’s state of residence. It absorbs the treatment indicator, $Treat_s$. α_s controls for any time-invariant unobserved factor, such as access to health clinics and shelters, historical and cultural aspects, and policies that were introduced before my time span. γ_t is a vector of survey year fixed effects, which capture aggregate shocks including nationwide reforms (e.g. General Law on Women’s Access to a Life Free of Violence of 2007). γ_t absorbs the post-treatment indicator, $Post_t$. ε_{ist} is the error term. I cluster the standard errors at the state level in order to allow for within-state

²⁵I will also present marginal effects from estimating a Probit model. There is still a debate on how to interpret these marginal effects (Ai and Norton, 2003; Greene, 2010; Puhani, 2012). I follow Puhani (2012, p. 87) approach. He demonstrates that, in the case of DiD models, the treatment effect is equal to ‘the cross difference of the conditional expectation of the observed outcome minus the cross difference of the conditional expectation of the potential outcome without treatment’.

autocorrelation of unobserved shocks (Bertrand et al., 2004)²⁶.

The introduction of unilateral divorce can be considered a valid natural experiment provided that, conditional on X_{ist} , the probability of being treated is random. To provide support for this, I first argue that the adoption of unilateral divorce was unanticipated in both Mexico City and Hidalgo. The origins of the divorce reform in Mexico City can be found in two initiatives for reforming the Civil Code and the Code of Civil Procedures of the Federal District presented by two political parties on 29 November 2007 and 20 May 2008. Early discussions between legislators and external stakeholders started in March 2008. After a process of debate, which was accompanied by media coverage, it was officially approved on 27 August 2008. Even when discussions started several months before its approval, it was unclear what change they would lead to. The reason lies in the ‘pro-traditional family’ support of large part of the Mexican population, which is reflected in the composition of the Legislative Assembly²⁷. The final distribution of votes was as shown in figure C2 in the Appendix. All ‘against votes’ come from the conservative party, PAN (*Partido de Acción Nacional*) [National Action Party] and most of the ‘in favour’ votes from PRD (*Partido Revolucionario Democrático*) [Democratic Revolutionary Party], which is a party of progressive ideology and one of the proponents of the divorce reform.

In the case of Hidalgo, the origins of the divorce reform are based on the Initiative for Decree presented by the Executive Power of Hidalgo on 17 January 2011. A quick search on google reveals that prior to this date there were no news published in relation to unilateral divorce in this state. Moreover, even when unilateral divorce was approved two months later, the result of the Initiative was unclear *a priori*. As in Mexico City, the reason lies on the ‘pro-traditional family’ support of large part of the population, which is relatively more pronounced in Hidalgo than in the urban metropolis of Mexico City.

Even if unilateral divorce was unanticipated, given that the post-treatment data were collected after its approval, women and men could have adjusted their behaviour in response to its expected introduction, which would have changed the composition of treatment and control groups. First, unilateral divorce could have changed the incentives to marry. For instance, it might have encouraged women who were undecided about marrying to do so (González and Viitanen, 2009). If these new marriages are of lower (better) quality, IPV could have increased (decreased). Conversely, marriage rates could have also decreased following the reform (Rasul, 2003). In order to account for this, I define the

²⁶My preferred specification only includes 11 states, which is well below the accepted number of clusters in order to produce accurate standard errors. As a consequence of it, my standard errors are likely to be underestimated. One common practice for dealing with this shortcoming is to use the Wild cluster bootstrap-t procedure described in Cameron et al. (2008). As a robustness check, I will present the main results using these alternative standard errors.

²⁷This is related to the importance of Catholicism in Mexico. As mentioned earlier, 83% of Mexicans are Catholics. This figure is 82% in Mexico City and 87% in Hidalgo. Moreover, according to the 2006 national survey on the values and attitudes of Catholics, 38% of Catholics are highly religious, 42% medium and 20% little. Moreover, 84% of Catholics say that religion is very important in their lives.

treatment group as those women who were married at the time of the reform, i.e. married for at least three years living in Mexico City, or at least one year living in Hidalgo, when the data was collected in the post-treatment period. I use the same definition for 2003 and 2006 in order to ensure comparability across years. Regarding the control group, I take a conservative approach and restrict it to women who have been married for at least three years at the time of the reform²⁸.

Second, unilateral divorce could have pushed ‘bad marriages’ (i.e. most violent ones) to drop out of the sample. In order to examine whether this is the case, I restrict the sample to couples who were married at the time of the reform living in Mexico City or Hidalgo and compare the probability of experiencing IPV throughout the relationship between marriages that continue intact after the reform and those that split. A simple mean difference test shows that marriages that break up were significantly more violent than those that continue married. This could introduce sample selection bias because my preferred sample is restricted to marriages that remain intact after the reform. The reason is twofold. First, the definition of IPV for divorced/separated women is not comparable to that used for married women, as well as across survey years. Second, divorced/separated women were not surveyed in 2003. In order to reduce concerns of sample selection, I will also present estimates including all women who were married at the time of the reform, regardless of their marital status at the time of the survey. This will also shed some light on the two channels posited by economists to explain the effect of divorce laws on IPV²⁹.

Third, the reform could have also driven inter-state migration. I only observe the state of residence of the woman at the time of the survey, which could have changed as a consequence of the divorce reform. For instance, women might have moved to reform states in order to benefit from easy divorce³⁰. If these women are more (less) likely to experience abuse, the estimates will be upward (downward) biased. Migratory divorce is, however, not expected to be of concern due to two reasons. First, only 32 couples have divorced after unilateral divorce was introduced. Second, in the case of my main sample (i.e. married women at the time of the survey), migratory divorce is unlikely to have occurred, since it only includes women who are residing with their husbands³¹.

An additional condition for unilateral divorce to be a valid natural experiment is that the adoption of this reform has been exogenous to the evolution of IPV. Section 6.2 will show that this seems to be, indeed, the case.

The key issue in estimating policy impacts is the construction of a valid control group,

²⁸Including women married for less than three years in treatment and control groups provides estimates that are quantitatively and qualitatively very similar to the ones presented later.

²⁹Given that my main sample is restricted to women who are married at the time of the survey, the fact that there is a one-year of marriage requirement in Mexico City is irrelevant for defining the treatment group. This will be taken into account when including divorced/separated women.

³⁰Spouses can divorce in the state where they set their residence, regardless of where they married.

³¹Women who migrate for divorce purposes are unlikely to be residing with their husbands, since otherwise they could have filed for a mutual consent divorce in their state of origin.

which will be used to estimate the unobserved counterfactual, that is, the outcome of a treated woman had she not received the treatment. In order for the DiD framework to be valid, the control group should follow a trend in IPV similar to the one that the treatment group would have experienced in the absence of the policy. This is called the parallel trend assumption, which is the crucial identifying assumption in any DiD setting. There is no formal way of testing for this assumption, but the usual approach has been to visually examine the pre-treatment trends of both groups. If they follow a similar trend, this provides support for the assumption.

A natural control group would be to choose all married women not living in the two reform states (i.e. other 30 states). My preferred control group is, however, limited to 9 of them³². The reason is that I can confidently inspect the parallel trend assumption for 10 states only, since the 2003 sample is only representative in 11 out of 32 states (1 reform-Hidalgo- and 10 non-reform³³ states; see column 8 of table B1)³⁴. From these 10 non-reform states, I further exclude one (Nuevo Leon), since, after checking the evolution of IPV during the pre-treatment period, it shows a path markedly different to the one experienced by the reform states. Thus, my final preferred set of states consists of 2 reform and 9 non-reform states.

Figure 4 shows the trends of treatment and control groups between 2003 and 2011 for the four types of IPV³⁵. The pre-treatment trends of both groups seem to have followed a similar path in the four types of IPV, which provides confidence for the parallel trend assumption. Section 6.2 will further examine the validity of this assumption by conducting two falsification tests.

A potential threat to the validity of the parallel trend assumption refers to the adoption of reforms during my time span other than unilateral divorce that could have had a differential impact between treatment and control groups. I outline four possibilities. First, three states part of my control group³⁶ introduced the ground for divorce based on domestic violence in 2004 (see column 5 of table B1 for more details). Second, since the 1990s, all states have introduced changes to their Penal Codes with the objective of recognising domestic violence as a criminal offence. However, only one state in my preferred sample has done so during my time span³⁷ (see column 6 of table B1). The

³²I could have also chosen cohabiting women in reform states as the control group, as done in Brassiolo (2016). However, this does not seem to be an appropriate control group for my sample. The reason is that I do not find support for the satisfaction of the parallel trend assumption both graphically and by conducting the two falsification tests explained later. Moreover, the estimates are extremely sensitive to the covariates included and the robustness checks do not always confirm the baseline estimates.

³³Baja California, Coahuila, Chihuahua, Nuevo Leon, Sonora, Zacatecas, Michoacán, Chiapas, Quintana Roo and Yucatán.

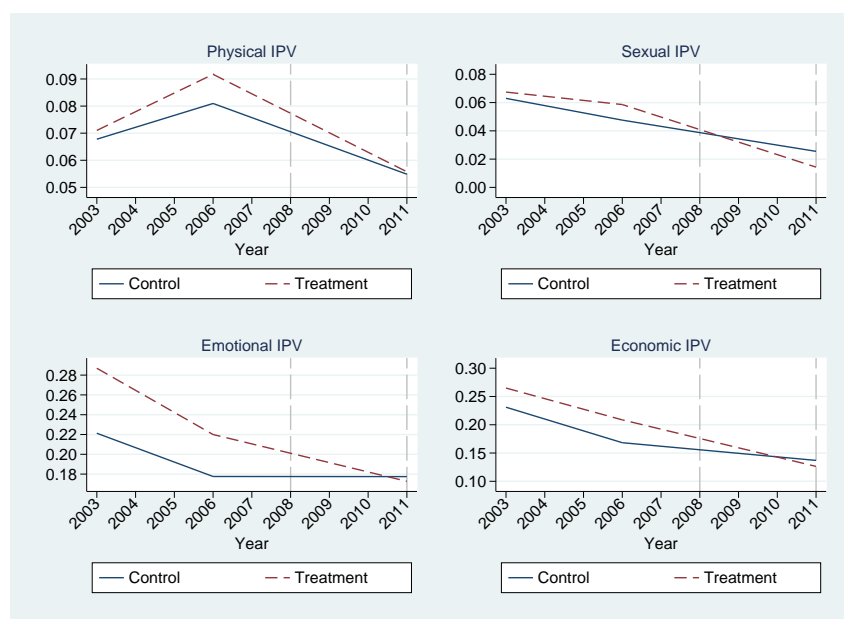
³⁴As a robustness check, I consider all 30 non-reform states as the control group.

³⁵The treated group in 2003 includes Mexico City, but it should be interpreted carefully, since the sample is not representative for this state. In order to diminish concerns in this regard, I have applied the survey sampling weights.

³⁶Baja California, Chiapas and Quintana Roo.

³⁷Quintana Roo.

Figure 4: IPV trend by treatment status



Notes: The vertical axes refer to the percentage of women experiencing IPV. The two vertical lines refer to the year unilateral divorce was introduced (2008 in Mexico City and 2011 in Hidalgo). Sampling weights are applied.

trends shown in figure 4 are not affected if I exclude those states that have changed their divorce or criminal legislations. Moreover, to test for the sensitivity of my estimates to these reforms, section 6.2 will re-estimate equation 1 controlling for them.

Third, the Congress of the Union decreed the *Ley General de Acceso de las Mujeres a una Vida Libre de Violencia* (General Law on Women’s Access to a Life Free of Violence) in 2007³⁸, which is the current normative framework about violence against women at the national level. This General Law constitutes the basic reference framework under which each state has to frame specific Laws, as well as modify the Civil and Criminal Codes. Column 7 of table B1 provides the specific date in which each state approved the reform. All of them did it between 2006 and 2011, which suggests that both treatment and control groups might have been affected similarly. Even though, one cannot rule out that any observed change in IPV might be, in part, capturing the impact of this other law.

A final reform that could represent a threat to identification is the decriminalisation of elective abortion in the first 12 weeks of pregnancy in Mexico City, which came into force in April 2007. This could have affected IPV in either direction. This type of abortion is performed free of charge at any of the health clinics and hospitals part of the Ministry of Health for women residents in Mexico City. In addition, non-residents can abort for free at any of the health clinics (four in total), while in the hospitals they need to pay a sliding-scale fee, which depends on their socio-economic status. Moreover,

³⁸Published in the *Diario Oficial de la Federación* on 1 February 2007. See text in http://www.diputados.gob.mx/LeyesBiblio/pdf/LGAMVLV_171215.pdf.

some organisations offer financial support for women traveling from other states of Mexico (including a stipend for covering the travel costs). Even when financial help for women who cannot afford to abort in Mexico City exists, mis-information might make them less likely to benefit from the reform as compared to women without financial constraints. If this is the case, women in treatment and control groups would have not benefited similarly from the reform. Furthermore, in response to the abortion reform in Mexico City, several other states have amended their Constitutions to protect the right to life from conception or fertilisation. A total of 18 have done so since 2007 and all of them were between 2008 and 2009. As a robustness check, I will control for whether the woman is likely to have benefited from the reform in Mexico City and whether the state has introduced regressive constitutional changes in terms of abortion.

In addition to all these reforms, there might still be unobserved factors that have affected treatment and control groups differently. To further reduce this concern, in section 6.2 I will, for instance, conduct two falsification tests; control for state time-varying covariates, such as the general level of violence and the economic conditions in the state; and interact all covariates with the $Post_t$ indicator in order to control for different trends in observable characteristics between treatment and control groups.

5 Data and descriptive statistics

5.1 *ENDIREH survey and sample*

ENDIREH is a national (urban and rural) and state level representative survey³⁹, which collects data on independent cross-sectional samples. In 2003, the target population were women aged 15 or older with a partner residing in the household. In 2006 and 2011, this population was expanded to also include ever married or cohabiting (divorced, separated or widowed) and single (never married or cohabiting) women, as well as those married or cohabiting not residing with their partners. A total of 34,184, 133,398 and 152,636 women were interviewed in 2003, 2006 and 2011, respectively. My main sample is comprised of married women living with their husbands, which represent 82% of the ENDIREH sample in 2003, 49% in 2006 and 43% in 2011⁴⁰. Of these, I exclude women not part of my treatment or control groups and those with missing values in any of the variables⁴¹, which reduces the final sample to 55,593 women (16,137 in 2003, 19,463 in 2006 and 19,993 in 2011).

ENDIREH data were collected through direct interviews conducted by trained women between 20th October and 14th November of 2003, 9th October and 3rd November of 2006,

³⁹As mentioned earlier, it is representative in all states in 2006 and 2011, but only in 11 in 2003.

⁴⁰In 2006 and 2011, cohabiting women represent 13% of the sample, divorced 2%, separated 7%, widowed 7% and single 26%.

⁴¹I decide to do pairwise deletion due to the small number of missing values once I remove those corresponding to the dependent variable, namely 2% of the sample.

and 3rd October and 11th November of 2011⁴². Moreover, interviews were conducted in private and participants were guaranteed confidentiality, which reduces concerns of under-reporting (Ellsberg et al., 2001).

ENDIREH provides information on whether the woman has experienced 29 violent items⁴³, which I group into four categories of IPV, namely physical and serious threats, sexual, emotional and economic. I group serious threats together with physical violence because they can be considered to be similar in terms of their severity. This is consistent with the classification of physical IPV used in previous studies (e.g. Stevenson and Wolfers (2006) and La Mattina (2017)). For the rest of the items, the classification follows the one suggested by ENDIREH. From the 29 violent events, I exclude one, namely ‘has your partner stopped talking to you?’, since this question can be interpreted with a large degree of subjectivity. Table B2 in the Appendix presents the prevalence of each violent item for treated and control groups in 2003, 2006 and 2011.

For each of the four categories of IPV, I construct a dichotomous variable equal to one if the woman has experienced any violent item in the 12 months prior to when the survey was conducted and zero otherwise. The fact that the questionnaire includes a broad range of questions regarding each of the four types of violence, further reduces concerns of under-reporting (Ellsberg et al., 2001). Panel A of table 1 reports the prevalence of these four forms of IPV for treatment and control groups in 2003, 2006 and 2011. In general, emotional IPV is the most common, followed by economic, physical and sexual, respectively. Moreover, with the exception of physical abuse between 2003 and 2006, there has been a decline in IPV over time.

ENDIREH also contains information on a rich set of individual, couple and household characteristics. I specifically control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence and a Socio-Economic Status (SES) index⁴⁴ (see details in the Appendix).

⁴²See INEGI (2003, 2006, 2011) for a detailed explanation of the methodology.

⁴³30 violent items in 2006 and 2011, but only 29 in 2003. In order to ensure comparability among years, I restrict them to 29.

⁴⁴I do not control for woman’s employment status because it is likely to be affected by the divorce reform (Bargain et al., 2012), as well as by IPV (Lloyd, 1997), as previous studies have shown.

Table 1: Descriptive statistics

	2003		2006		2011	
	T	C	T	C	T	C
Panel A: Prevalence of IPV						
Physical IPV	0.071	0.068	0.092	0.081	0.056	0.055
Sexual IPV	0.067	0.063	0.059	0.048	0.014	0.026
Emotional IPV	0.287	0.221	0.220	0.178	0.173	0.177
Economic IPV	0.265	0.231	0.209	0.168	0.126	0.137
Panel B: Covariates						
Age woman	45.200	41.373	45.012	42.940	46.565	44.141
Age man	48.602	44.685	48.161	46.189	49.680	47.265
Indigenous woman	0.072	0.099	0.070	0.104	0.044	0.096
Indigenous man	0.053	0.105	0.071	0.111	0.047	0.103
<Primary education woman	0.069	0.105	0.065	0.119	0.048	0.085
Primary education woman	0.329	0.445	0.307	0.401	0.250	0.364
Secondary education woman	0.458	0.358	0.465	0.373	0.495	0.425
Higher education woman	0.144	0.093	0.163	0.107	0.207	0.126
<Primary education man	0.041	0.102	0.045	0.108	0.038	0.083
Primary education man	0.333	0.412	0.278	0.379	0.227	0.361
Secondary education man	0.360	0.340	0.443	0.363	0.464	0.396
Higher education man	0.266	0.146	0.234	0.150	0.270	0.160
Violence in childhood	0.159	0.120	0.442	0.386	0.408	0.410
Length relationship	23.436	20.971	23.327	22.462	24.649	23.384
Number young children	0.328	0.471	0.301	0.412	0.132	0.186
Urban residence	0.922	0.774	0.888	0.757	0.895	0.759
SES low	0.242	0.456	0.237	0.397	0.208	0.395
SES middle	0.515	0.371	0.453	0.401	0.419	0.399
SES high	0.243	0.173	0.310	0.202	0.373	0.206
Observations	1,618	14,519	3,285	16,178	3,489	16,504

Notes: ‘T’ stands for treatment and ‘C’ for control. Sampling weights are applied.

Panel B of table 1 reports the mean value of all the covariates for treatment and control groups in 2003, 2006 and 2011. Women in the treatment group are older (as are their spouse), less likely to be indigenous (likewise for their partner), more likely to achieve a higher educational level (also their spouse), to have experienced violence in their childhood, been in the relationship for a longer time, have a lower number of young children, live in urban areas and have a high SES index. The difference in means between treatment and control groups is significant in most of the cases, even (although in relatively less) when I estimate within-state differences, which indicates that controlling for these characteristics is important.

6 Results

6.1 Baseline results

Table 2 reports the DiD estimate associated with equation 1. Column 1 only controls for state and year fixed effects, while columns 2, 3 and 4 add individual, couple and household level covariates, respectively. Taking into consideration the binary nature of the dependent variable, column 5 shows the marginal effects from estimating a Probit model. Finally, column 6 reports the prevalence of IPV for treated women in the pre-reform period, while column 7 the prevalence of IPV in the sample.

Specification 1 indicates that the reduction in the cost of divorce has significantly (at the 1% level) decreased the probability that treated women experience sexual, emotional and economic abuse compared to non-treated women after the reform. Adding the covariates in subsequent models reduces the magnitude of the coefficients, but the sign and significance remains unchanged. Likewise, the marginal effects are similar to the OLS estimates, although their magnitude is smaller.

Table 2: Effect of easier divorce on IPV – Main specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	LPM				Probit	Mean (pre/treat)	Mean (all)
Physical	-0.007 (0.007)	-0.003 (0.007)	-0.004 (0.007)	-0.003 (0.007)	-0.001 (0.008)	0.081	0.068
Sexual	-0.019*** (0.003)	-0.017*** (0.003)	-0.017*** (0.003)	-0.017*** (0.003)	-0.013*** (0.001)	0.056	0.042
Emotional	-0.058*** (0.010)	-0.050*** (0.007)	-0.051*** (0.007)	-0.049*** (0.007)	-0.038*** (0.006)	0.213	0.192
Economic	-0.048*** (0.009)	-0.044*** (0.008)	-0.044*** (0.008)	-0.043*** (0.007)	-0.034*** (0.005)	0.217	0.182
State/Year FE	Yes	Yes	Yes	Yes	Yes		
Individual	No	Yes	Yes	Yes	Yes		
Couple	No	No	Yes	Yes	Yes		
Household	No	No	No	Yes	Yes		
Observations	55,593	55,593	55,593	55,593	55,593		

Notes: OLS estimates (columns 1-4) and marginal effects (column 5) associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Mean (pre/treat)’ refers to the prevalence of IPV for treated women before the divorce reform (i.e. average 2003-2006). ‘Mean (all)’ refers to the prevalence of IPV in the entire sample. ‘FE’ stands for fixed effects. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. Individual covariates include both partners’ age, both partners’ indigenous background, both partners’ educational attainment and woman’s experience of violence in her childhood. Couple covariates include length of the relationship and number of young children. Household covariates include urban residence and SES index. ***significant at 1% level, **at 5%, *at 10%.

My preferred specification controls for the full set of covariates (model 4). According

to it, women in the treatment group, as compared to those in the control group, are 1.7, 4.9 and 4.3 percentage points less likely to experience sexual, emotional and economic IPV, respectively, following the reform. Comparing these figures to the prevalence of IPV for treated women in the pre-reform period (column 6), they represent a 30%, 23% and 20% decrease in violence, respectively. The fact that sexual IPV represents a larger decline than emotional and economic abuse is consistent with previous empirical findings (Brassiolo, 2016). Regarding physical IPV, the coefficient of interest is negative, but insignificant and very close to zero across all specifications.

As mentioned earlier, by restricting the sample to marriages that remain intact after the reform, the estimates might be biased due to sample selection. In order to diminish this concern and shed some light on the two potential channels that economists have proposed to explain the effect of easier divorce on IPV, I now include women who were married at the time of the reform, regardless of their marital status at the time of the survey (i.e. married, divorced or separated)⁴⁵. This approach reduces the sample to years 2006 and 2011, since no information on divorced and separated women is available for 2003. However, the main limitation of including these two additional groups of women refers to the definition of IPV. In 2006, IPV refers to violence experienced since the couple split, whereas in 2011 to violence experienced in the year before the survey, regardless of whether it has been inflicted during or after the couple split.

Table 3 reports the estimates of interest⁴⁶. Panel A only includes intact marriages excluding the year 2003 and not controlling for the partner's characteristics⁴⁷. The estimates confirm the findings in table 2. Panel B expands the sample to include women who have divorced after the reform, while panel C also includes those who have separated. Separated women could have been either married or cohabiting at the time of the reform and this cannot be disentangled with the available data⁴⁸. The estimates reported in panels B and C are almost identical to those in panel A. According to divorce threat models, this suggests that the decrease in IPV is likely to be driven by a redistribution of bargaining power towards the woman, rather than by a change in divorce rates, which is in line with the findings in Brassiolo (2016). However, even when this seems to be a plausible explanation, further evidence presented later in section 6.4 will show limited support for this mechanism.

⁴⁵In the case of Mexico City, the definition of the treatment group for divorced and separated women accounts for the fact that there is a one-year marriage requirement.

⁴⁶I do not control for the length of the relationship because it is likely to be endogenous when including divorced and separated women.

⁴⁷I do not control for the partner's characteristics because this information is not available for women not residing with their partners (most of the divorced and separated ones).

⁴⁸I can disentangle this for 2006, where cross-tabulations show that most women who were separated had been married before.

Table 3: Effect of easier divorce on IPV – Extended sample

	(1)	(2)	(3)	(4)	(5)
	LPM				Probit
Panel A: Married women					
Physical	-0.010 (0.009)	-0.005 (0.008)	-0.006 (0.008)	-0.005 (0.008)	-0.002 (0.009)
Sexual	-0.022*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)	-0.019*** (0.003)	-0.018*** (0.002)
Emotional	-0.047*** (0.009)	-0.038*** (0.008)	-0.039*** (0.008)	-0.038*** (0.008)	-0.037*** (0.010)
Economic	-0.051*** (0.007)	-0.044*** (0.008)	-0.045*** (0.007)	-0.043*** (0.007)	-0.044*** (0.008)
Observations	39,456	39,456	39,456	39,456	39,456
Panel B: Married+Divorced women					
Physical	-0.010 (0.009)	-0.006 (0.008)	-0.006 (0.008)	-0.005 (0.008)	-0.002 (0.008)
Sexual	-0.022*** (0.003)	-0.020*** (0.003)	-0.020*** (0.003)	-0.019*** (0.003)	-0.017*** (0.002)
Emotional	-0.046*** (0.009)	-0.037*** (0.009)	-0.038*** (0.008)	-0.036*** (0.008)	-0.036*** (0.010)
Economic	-0.050*** (0.007)	-0.043*** (0.008)	-0.043*** (0.008)	-0.042*** (0.008)	-0.042*** (0.009)
Observations	39,782	39,782	39,782	39,782	39,782
Panel C: Married+Divorced+Separated women					
Physical	-0.008 (0.007)	-0.004 (0.006)	-0.004 (0.007)	-0.003 (0.007)	-0.001 (0.007)
Sexual	-0.023*** (0.004)	-0.021*** (0.004)	-0.021*** (0.004)	-0.021*** (0.004)	-0.020*** (0.004)
Emotional	-0.047*** (0.009)	-0.038*** (0.009)	-0.038*** (0.009)	-0.037*** (0.009)	-0.037*** (0.010)
Economic	-0.051*** (0.008)	-0.044*** (0.008)	-0.045*** (0.008)	-0.043*** (0.008)	-0.044*** (0.009)
Observations	41,598	41,598	41,598	41,598	41,598
State/Year FE	Yes	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	Yes	Yes
Couple	No	No	Yes	Yes	Yes
Household	No	No	No	Yes	Yes

Notes: OLS estimates (columns 1-4) and marginal effects (column 5) associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘FE’ stands for fixed effects. The sample includes women who were married at the time of the reform and continue to be married at the time of the survey (panel A), continue to be married or have divorced at the time of the survey (panel B) and continue to be married, or have divorced or separated at the time of the survey (panel C). The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey (for all married women and for divorced/separated in 2011) or since the couple split (for divorced/separated women in 2006). Individual covariates include woman’s age, woman’s indigenous background, woman’s educational attainment and woman’s experience of violence in her childhood. Couple covariates include number of young children. Household covariates include urban residence and SES index. ***significant at 1% level, **at 5%, *at 10%.

6.2 Robustness checks

In this section, I test for the validity of the DiD framework, as well as for the sensitive-ness of my estimates to controlling for other reforms, including other time-varying state level covariates and employing alternative control groups. I also compute the standard errors using the Wild cluster bootstrap-t procedure and examine whether my findings reflect changes in the woman’s reporting behaviour rather than in the prevalence of IPV.

6.2.1 Exogeneity of the timing of unilateral reform

I first test whether the introduction of unilateral divorce in Mexico City and Hidalgo was exogenous to the evolution of IPV. To examine this, I first compute the weighted average value of each outcome and covariate by state and year. I then regress an indicator of whether the state has introduced unilateral divorce (i.e. equal to one for Mexico City and Hidalgo) on the average prevalence of IPV in the pre-reform periods (i.e. 2003 and 2006). If higher (lower) prevalence led to the introduction of unilateral divorce, I would expect to see a significant positive (negative) coefficient. Table B3 in the Appendix presents the results. Columns 1, 3, 5 and 7 do not control for any covariate, while columns 2, 4, 6 and 8 control for the full set of them. As can be seen, the prevalence of IPV in the pre-reform period is not significantly associated with the subsequent adoption of unilateral divorce. Moreover, none of the covariates are significantly associated with the timing of the reform. This provides support for the validity of unilateral divorce as a natural experiment.

6.2.2 Falsification tests

I next examine the validity of the parallel trend assumption. Figure 4 in section 4 provided support for this assumption by showing that the four types of IPV had followed a similar trend in both treatment and control groups during the pre-reform period. In order to further test for the satisfaction of this assumption, I conduct two falsification tests. First, restricting the sample to the pre-reform period, I re-estimate the DiD model assuming that unilateral divorce was introduced at some point between 2003 and 2006. Thus, 2003 is the pre-treatment period, while 2006 the post-treatment one. Since this ‘placebo treatment’ precedes the divorce reform, I would expect the DiD coefficient to be close to zero and insignificant. Panel A of table 4 presents the results. Column 1 reproduces the baseline estimates from table 2 for comparison purposes, while columns 2-6 report the estimates from the falsification test. The coefficients for the four types of IPV are insignificant and close to zero, regardless of whether I control for the covariates or estimate a probit model.

The second falsification test is based on estimating the effect of the divorce reform on a type of violence against women different to IPV, which I call public abuse, inflicted by an unknown person. This type of abuse should not be affected by the reform. I exclude

violence inflicted by a known person because this could be correlated with the woman's marital status, as well as IPV. Information on public abuse is only available for 2006 and 2011, which explains the smaller number of observations. It refers to abuse experienced at any point in life by women in several settings including work, school, streets, public transport, parties and home⁴⁹. Results are shown in panel B of table 4. As expected, the divorce reform has not significantly changed the probability of experiencing public abuse for women in the treatment group compared to those in the control group.

Table 4: Effect of easier divorce on IPV/Public abuse – Falsification tests

	(1)	(2)	(3)	(4)	(5)	(6)
	Baseline		Falsification test			
Dependent variable	LPM		LPM			Probit
Panel A: Placebo DiD						
Physical IPV	-0.003 (0.007)	0.007 (0.005)	0.003 (0.003)	0.003 (0.003)	0.003 (0.004)	0.003 (0.005)
Sexual IPV	-0.017*** (0.003)	0.006 (0.007)	0.004 (0.005)	0.004 (0.005)	0.004 (0.005)	0.007 (0.005)
Emotional IPV	-0.049*** (0.007)	-0.022 (0.018)	-0.028 (0.019)	-0.028 (0.019)	-0.026 (0.018)	-0.016 (0.014)
Economic IPV	-0.043*** (0.007)	0.006 (0.015)	-0.003 (0.017)	-0.003 (0.017)	-0.002 (0.017)	0.005 (0.015)
Observations	55,593	35,600	35,600	35,600	35,600	35,600
Panel B: Effect of unilateral divorce on public abuse						
Public abuse		-0.023 (0.025)	-0.019 (0.021)	-0.018 (0.020)	-0.020 (0.021)	-0.007 (0.015)
Observations	39,425	39,425	39,425	39,425	39,425	
State/Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual	Yes	No	Yes	Yes	Yes	Yes
Couple	Yes	No	No	Yes	Yes	Yes
Household	Yes	No	No	No	Yes	Yes

Notes: OLS estimates associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. 'FE' stands for fixed effects. The sample in panel A is restricted to years 2003 and 2006, while the sample in panel B to years 2006 and 2011. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey (panel A) and an indicator of whether the woman has experienced public abuse at any point in her life (panel B). Individual covariates include both partners' age, both partners' indigenous background, both partners' educational attainment and woman's experience of violence in her childhood. Couple covariates include length of the relationship and number of young children. Household covariates include urban residence and SES index. ***significant at 1% level, **at 5%, *at 10%.

⁴⁹The violent items refer to having been humiliated, ignored for being a woman, been physically assaulted, received insinuations or proposals for having sex in exchange for something, experienced reprisals due to the negative to these proposals, been touched without permission, been forced to have sex, been forced to have sex in exchange for money, experienced fear of being sexually assaulted or abused, and received rude or offensive saucy remarks about the body or with sexual connotation. The last three were asked for all settings in 2011, but only for settings other than work and school in 2006. Moreover, for abuse at work in 2006, it refers to violence experienced during the year before the survey.

Overall, the results from these two falsification tests provide support for the parallel trend assumption. First, they indicate that the decline in IPV is not likely to be driven by an alternative phenomenon that predated the divorce change. Second, they suggest that changes in IPV do not seem to be driven by systematic unobserved differences between treatment and control groups.

6.2.3 *Controlling for other covariates*

The next set of robustness checks consists of controlling for covariates (including other reforms) that could potentially have a differential impact on the IPV trends of treatment and control groups. Section 4 reviewed three main potential confounding reforms, namely the introduction of the divorce cause of domestic violence, the criminalisation of domestic violence in the Penal Code and the decriminalisation of abortion in Mexico City. Regarding the first two, three states have modified their divorce (Baja California, Chiapas and Quintana Roo) and criminal (Quintana Roo) legislations and all of them did it between 2003 and 2006. To examine the sensitivity of my results to these changes, I include an indicator of whether the state has adopted any legislation modification by the time of the survey. Column 2 of table 5 presents the results. They show that the magnitude of the effect is slightly smaller than that reported in column 1 for all types of IPV, but the main conclusions remain unchanged. Moreover, the coefficient on the ‘legislation reform’ variable is insignificant in all cases except for physical IPV for which it is positive and significant.

Regarding the decriminalisation of abortion in Mexico City, I control for whether the woman is likely to benefit from it (column 3). In particular, I create a dichotomous variable equal to one if a woman aged 15-44⁵⁰ lives in Mexico City or if she lives in any other state, but her dwelling is classified as having a middle or high SES; and zero otherwise. One would expect that women living in low SES dwellings would be unlikely to afford the costs associated with aborting in Mexico City. In addition, column 4 controls for whether the state has introduced constitutional changes to protect the right to life. The coefficient corresponding to the abortion reform is significantly negatively associated with physical violence, while the coefficient on the constitutional changes is significantly positively correlated with sexual IPV. In specification 3, the inclusion of this covariate leaves the coefficients of interest largely unaffected; whereas in model 4 they are smaller, but the main conclusions remain unchanged.

Model 5 controls for two other time-varying state level covariates in order to further diminish concerns of omitted variables. Specifically, it controls for the male’s homicide rate and the male’s unemployment rate (see details of their construction in the Appendix). I control for the homicide rate as a proxy for the general level of violence. Since 2007,

⁵⁰Women below 45 are more likely to be in reproductive age.

some regions of the country have experienced a large increase in violence⁵¹. It could be that IPV is higher in these states due to a greater tolerance for it. I exclude female homicides, since these would include intimate partner homicides, which previous studies have found to be affected by the reduction in the cost of divorce (Stevenson and Wolfers, 2006). The unemployment rate serves as a proxy for the macroeconomic trend in the state. As in the previous case, I only control for the male’s unemployment rate. The coefficients of these two variables are all insignificant. Moreover, the estimates of interest remain largely unaffected.

Table 5: Effect of easier divorce on IPV – Additional covariates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline	Divorce+ Criminal	Abortion MC	Abortion Const.	State covariates	Covariates × Post	Reform states
Physical	-0.003 (0.007)	-0.002 (0.007)	-0.002 (0.006)	-0.005 (0.007)	-0.002 (0.007)	-0.004 (0.006)	-0.003 (0.007)
Sexual	-0.017*** (0.003)	-0.016*** (0.003)	-0.017*** (0.003)	-0.012*** (0.003)	-0.017*** (0.004)	-0.020*** (0.003)	-0.017*** (0.003)
Emotional	-0.049*** (0.007)	-0.047*** (0.007)	-0.049*** (0.007)	-0.047*** (0.008)	-0.049*** (0.007)	-0.050*** (0.011)	-0.049*** (0.007)
Economic	-0.043*** (0.007)	-0.042*** (0.006)	-0.042*** (0.007)	-0.034*** (0.004)	-0.045*** (0.007)	-0.045*** (0.007)	-0.043*** (0.007)
Observations	55,593	55,593	55,593	55,593	55,593	55,593	55,593

Notes: OLS estimates associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. Column 1 reproduces the baseline estimates from table 2, column 2 controls for whether the state has modified the divorce and/or criminal legislations with regard to domestic violence, column 3 controls for whether the woman is likely to benefit from the decriminalisation of abortion in Mexico City, column 4 controls for whether the state has introduction constitutional changes to protect the right to life from conception or fertilisation, column 5 controls for male’s homicide and unemployment rates in the state, columns 6 controls for the interaction between the covariates and the post-reform indicator, and column 7 includes an indicator of whether the state has introduced unilateral divorce after 2011. ‘MC’ stands for Mexico City and ‘Const’ for constitutional. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

Column 6 adds interaction terms between all covariates and the post-treatment indicator $Post_t$. The objective is to control for different trends in observable characteristics, which could otherwise be driving my findings. Adding these covariates slightly increases the magnitude of the effect of interest, but the estimates point in the same direction.

As a final robustness check, column 7 includes an indicator of whether the state has introduced unilateral divorce after 2011. Only three states in my control group have done so (Coahuila, Quintana Roo and Yucatán). The reason for this test is that these states might have unobserved factors that make them more prone to adopt unilateral divorce. If

⁵¹Previous studies have found this to be closely related to the ‘war on drugs’ initiated by the former President Felipe Calderón (Dell, 2015).

these factors have changed over time (e.g. gender norms), they could have contaminated my results. The coefficient of this covariate is significantly positively associated with sexual and economic IPV. Even though, including it does not affect the estimate of interest, which remains almost identical to that reported in column 1.

6.2.4 Additional robustness checks

I first consider alternative control groups to test whether my results are sensitive to the restriction of the number of states. Column 2 of table B4 in the Appendix reports the results when women part of the control group are drawn from any of the 30 non-reform states. In column 3 I restrict this control group to states that have not reformed their divorce and criminal legislations. In addition to this restriction, column 4 excludes women who are not likely to have benefited from the decriminalisation of abortion in Mexico City, column 5 removes those states that have introduced constitutional changes in response to Mexico City's abortion reform and column 6 excludes late reform states. Although in some of the cases the estimates show that the effect of unilateral divorce is now smaller or slightly larger in magnitude, the coefficients lead to the same conclusions than those obtained from column 1.

One concern of my survey is that the variable 'length of the marriage' is based on the question 'How old were you when you married or started living with your partner?'. Thus, the age reported is not necessarily the age at marriage, but the age at which the couple started living together. Consequently, the computed length of the marriage is not precisely calculated. As a robustness check, I restrict the sample to women married for at least 10 years at the time of the reform, i.e. at least 13 years at the time of the survey living in Mexico City and 11 years in Hidalgo, since these women are more likely to actually be 'married'. The control group is restricted to been married for at least 13 years. Specification 7 shows the estimates of interest, which confirm the baseline findings.

6.2.5 Wild cluster bootstrapped standard errors

Using cluster-robust standard errors when the number of clusters is small is likely to underestimate the standard errors (see footnote 26). One commonly used method to deal with this limitation is to employ the Wild cluster bootstrap-t procedure described in Cameron et al. (2008). Table B5 in the Appendix re-estimates the baseline results using this method. As can be seen, the Wild cluster bootstrapped standard errors are larger than the cluster-robust ones reported in table 2. Even though, the main findings are confirmed i.e. the DiD estimate for physical IPV remains insignificant, whereas that for sexual, emotional and economic IPV significant at the 1% level.

6.2.6 Reporting behaviour

A final concern of my estimates is that they could be driven by a differential propensity to report IPV of women in treatment and control groups induced by the reform. To

examine this, I estimate the effect of the reform on woman’s reporting behaviour. ENDI-REH survey provides information on whether the woman reports the violent incident to the police, Public Ministry or another authority. I construct an indicator of whether she reports it⁵².

A woman’s reporting behaviour is only observed for abused women, which can introduce sample selection bias if the probability that men use IPV is non-randomly distributed. For instance, men who think that their wives would report IPV upon abuse might be less likely to use it. To correct for this, I use Heckman sample selection model. For doing so, I need a variable that affects the man’s decision to use IPV, but not the woman’s probability of reporting it directly. A candidate for this role is the man’s experience of violence in his childhood. Previous literature has shown that men are more likely to inflict violence if they have experienced it in the past (Gover et al., 2008; Kwong et al., 2003; Pollak, 2004). At the same time, there is no reason for expecting this variable to be associated with the woman’s reporting behaviour through any channel other than the IPV one. Using this variable, however, has the problem of having a large number of missing values (16%). Given this, I also estimate the baseline regression using this restricted sample, which provides very similar results to the ones reported in table 2 (see table B6 in the Appendix).

Table B7 presents the results. Column 2 reports the Probit estimate associated with the selection variable. It shows that a man’s experience of violence in his childhood is significantly positively associated with a woman’s experience of IPV as an adult. Column 1 presents the OLS estimate corresponding to an ordinary LPM model, while column 3 takes into account sample selection and reports the maximum likelihood estimate associated with the Heckman model. Regardless of the specification, treated women have not significantly changed their reporting behaviour after the reform. This is consistent with the fact that women rarely report IPV, regardless of the cost of divorce.

6.3 Comparison with previous studies

The findings so far suggest that the probability of experiencing IPV has decreased for treated women compared to non-treated ones following easier access to divorce. This is in line with the prediction of divorce threat models. However, the magnitude and significance of the estimates varies across types of IPV, as well as compared to previous studies.

Focusing on physical IPV, while I find a negative, but insignificant effect of the divorce reform on this type of violence, both Stevenson and Wolfers (2006) and Brassiolo (2016) report a significant decrease. Their estimates indicate a decline of 4.8 and 0.6 percentage points (32% of the sample mean), respectively, which is larger than the 0.3 percentage

⁵²14% of women in my sample have reported IPV to the police, Public Ministry or another authority, but this drops to 9% when they do not experience physical IPV.

Table 6: Effect of easier divorce on IPV – Definition of IPV based on Brassiolo (2016)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Physical		Emotional		Economic		
	All (7 items)	Physical (5 items)	Emotional (2 items)	All (3 items)	All (5 items)	Economic (4 items)	Emotional (1 item)
<i>Treat × Post</i>	-0.019* (0.009)	-0.005 (0.007)	-0.020*** (0.005)	-0.039*** (0.006)	-0.047*** (0.009)	-0.048*** (0.009)	-0.003 (0.003)
Mean (all)	0.109	0.064	0.079	0.113	0.125	0.119	0.022
Observations	55,593	55,593	55,593	55,593	55,593	55,593	55,593

Notes: OLS estimates associated with the variable *Treat × Post* reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Mean (all)’ refers to the prevalence of IPV in the sample. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

point (4% of the sample mean) decrease in my case. Compared to Stevenson and Wolfers (2006, p. 281), this cannot be attributed to the definition of IPV, since I use a very similar one to them. However, this is not the case for Brassiolo (2016, p. 474).

In order to ensure comparability with this latter study, I construct an alternative measure similar to the one employed by him. He considers three items⁵³, which can be matched with seven of mine⁵⁴; five of which I classify as physical IPV, while two as emotional. Results are reported in columns 1-3 of table 6. Column 1 includes all seven violent items, column 2 only the five related to physical abuse, while column 3 the two related to emotional. Using this alternative definition, women in the treatment group, as compared to those in the control one, have experienced a decline of 1.9 percentage points in physical IPV following the reform, although it is only significant at the 10% level. This represents 17% of the sample mean, which is below the value obtained by Brassiolo (2016) (and Stevenson and Wolfers (2006)). The reduction is, however, entirely driven by the items classified as emotional violence under my definition.

Regarding sexual IPV, my estimates show a significant decline in the prevalence of this type of violence, which is consistent with the findings in Brassiolo (2016). In terms of the magnitude of the effect, the baseline specification indicates a decline in sexual IPV of 1.7 percentage points (40% of the sample mean) for treated women compared to non-treated ones after the reform, which is very close to the 1.5 percentage point (41% of the sample mean) decline reported in Brassiolo (2016).

⁵³He insults or threatens you, at times he frightens you, he pushes or hits you when he is angry.

⁵⁴Has your husband... pushed you or pulled your hair?, kicked you?, beaten you with his hands or any object?, threatened you with a weapon?, threatened to kill you, himself or the children?, threatened to leave you, hurt you, take your children away or kick you out?, made you feel fear?.

With respect to emotional IPV, I find a significant 4.9 percentage point decrease, which is more than double the significant 2.2 percentage point decrease reported by Brassiolo (2016). However, when looking at how much this represents over the sample mean, my estimate represents 25%, which is below the 30% found by him. Furthermore, when I restrict the definition of emotional IPV to be more closely related to that used by Brassiolo (2016, p. 474)⁵⁵, the DiD estimate decreases to 3.9 percentage points, although this represents 35% of the sample mean (see column 4 of table 6).

In terms of economic violence, this is to some extent comparable with what Brassiolo (2016) terms ‘psychological abuse in the form of control’. He finds a negative, but insignificant, impact of the reform on this type of violence, while I find a significant negative one. Even when it is insignificant, the magnitude of the coefficient indicates a decrease of 30% of the sample mean, which is larger than the 24% found in my case. Following the exercise done for physical and emotional IPV, I examine whether the different results between both studies are sensitive to the definition of abuse used⁵⁶. Results are reported in columns 5-8 of table 6. They confirm my baseline findings, i.e. treated women are significantly less likely to experience economic IPV compared to non-treated ones following the reform. Moreover, the magnitude of the effect is now larger than before (4.7 percentage points or 38% of the sample mean).

The findings so far highlight two main points. First, a reduction in the cost of divorce seems to have a decreasing effect on the prevalence of IPV. However, the magnitude and significance of this effect varies across forms of abuse, as well as compared to estimates from developed countries. In particular, I have found an insignificant and small effect of unilateral divorce on physical IPV, whereas a significant and large one on sexual, emotional and economic IPV. In addition, the magnitude of the effect for physical and sexual IPV has been found to be smaller than that reported for developed countries. Conversely, when emotional and economic abuse have been defined similarly to previous papers, the magnitude of the impact has been found to be larger than in developed countries.

Second, the estimates might be sensitive to the definition of IPV used, which has been shown to occur for physical violence. This is, however, unlikely to explain the insignificant effect of the reform on physical IPV, since my results are not consistent with those in

⁵⁵His definition includes the following items: He does not consider your needs; he tells you that you are not capable of anything without him; he says everything you do is wrong, that you are clumsy; he belittles or does not value your beliefs (religious, political, etc.); he does not value the work you do; he demeans you in front of your children. These six items can be compared to three of mine: Has your husband... ashamed, underestimated or humiliated you?; ignored or not shown you affection?; turned your children or relatives against you?.

⁵⁶Brassiolo (2016) includes three violent items (he prevents you from seeing your family or relating to friends and neighbors, he takes the money your earn or does not give you what you need, he decides what you can and cannot do), which are matched with five of mine. I classify four of them as economic items (been stingy with the household expenses, even though he has money?, not given you the upkeep or threatened you to not giving it?, appropriated or taken money or possessions from you?, forbidden you to work or study?) and one as emotional (locked you in, forbidden you from going out or being visited?).

Stevenson and Wolfers (2006) employing a very similar definition. This insignificant impact is also unlikely to be explained by a non-response of physical IPV to changes in the spouses' outside options, as internal threat point models posit (Anderson and Eswaran, 2009; Lundberg and Pollak, 1993)⁵⁷, since other forms of abuse have experienced a decrease following the reform. This suggests that there might be other reasons behind my findings, which are examined in the next section.

6.4 Substitution effects across types of IPV

A plausible explanation for the insignificant impact of unilateral divorce on physical IPV is that it might be hiding a substitution effect across types of IPV. In order to examine this, I construct a set of indicators of whether the woman has experienced physical IPV with no associated sexual; emotional; economic; emotional and economic; and sexual, emotional and economic IPV. Results are reported in panel A of table 7. Panels B, C and D construct equivalent indicators for sexual, emotional and economic violence, respectively. The sample mean value (last row of column 5 in each panel) shows that 1.3% of women report that physical IPV occurs alone (6.6% report physical IPV). The equivalent figures are 0.4% (4.1%) for sexual, 6.4% (18.9%) for emotional and 6.3% (17.9%) for economic abuse. This provides support for the widespread recognition that IPV manifests itself in multiple forms, which usually overlap (Mechanic et al., 2008).

The estimates indicate that, after the reform, women in the treatment group, as compared to those in the control group, are significantly more likely to experience physical IPV with no associated emotional and/or economic abuse. They are also significantly more likely to experience physical IPV alone, but not physical violence with no associated sexual abuse. Focusing on column 5, the estimate indicates an increase of 0.7 percentage points in the prevalence of physical IPV occurring alone, which represents a 87% increase with respect to the prevalence of IPV for treated women prior to the divorce reform. Interestingly, panel B shows that the decrease in the probability that treated women experience sexual IPV, as compared to non-treated ones, following the reform is entirely driven by the probability of experiencing this type of abuse with no associated physical violence. In the rest of the cases, the prevalence of sexual violence increases, although it is not always significant (3 percentage points or 75% of the pre-reform prevalence for treated women in model 5).

Panels C and D show very similar results for emotional and economic IPV. The significant decrease is only observed when these types of violence do not occur together with physical and/or sexual abuse. The decline in terms of percentage points has been of 2.4-

⁵⁷Internal threat point models argue that the threat of divorce might not be credible under certain circumstances, such as when the breakdown of the bargaining process arises over minor decisions or when divorce is not socially acceptable. In these cases, a more plausible threat scenario would be a non-cooperative outcome within the marriage. Consequently, changes in the spouses' outside options should have no impact on their bargaining positions.

3.7 and 1.7-3.2 for emotional and economic IPV, respectively, which is smaller than the one reported in table 2 (4.9 and 4.3 percentage points). Compared to the prevalence of IPV for treated women prior to the divorce reform, the decrease represents 19-26% and 12-20%, respectively.

Table 7: Effect of easier divorce on IPV – Substitution effects

	(1)	(2)	(3)	(4)	(5)
Panel A: Physical IPV with no associated...					
	Sexual	Emotional	Economic	Emo/Eco	Sex/Emo/Eco
<i>Treat × Post</i>	0.001 (0.007)	0.009** (0.003)	0.008** (0.004)	0.007* (0.004)	0.007* (0.004)
Mean (pre/treat)	0.054	0.013	0.024	0.009	0.008
Mean (all)	0.048	0.018	0.026	0.014	0.013
Panel B: Sexual IPV with no associated...					
	Physical	Emotional	Economic	Emo/Eco	Phy/Emo/Eco
<i>Treat × Post</i>	-0.012*** (0.002)	0.001 (0.001)	0.003 (0.002)	0.003** (0.001)	0.003** (0.001)
Mean (pre/treat)	0.030	0.009	0.011	0.004	0.004
Mean (all)	0.023	0.008	0.011	0.005	0.004
Panel C: Emotional IPV with no associated...					
	Physical	Sexual	Economic	Phy/Sex	Phy/Sex/Eco
<i>Treat × Post</i>	-0.037*** (0.007)	-0.031*** (0.009)	-0.008 (0.007)	-0.024*** (0.007)	-0.008 (0.007)
Mean (pre/treat)	0.145	0.165	0.083	0.124	0.062
Mean (all)	0.142	0.159	0.082	0.127	0.065
Panel D: Economic IPV with no associated...					
	Physical	Sexual	Emotional	Phy/Sex	Phy/Sex/Emo
<i>Treat × Post</i>	-0.032*** (0.006)	-0.023*** (0.005)	-0.002 (0.005)	-0.017** (0.006)	-0.001 (0.005)
Mean (pre/treat)	0.161	0.172	0.088	0.140	0.078
Mean (all)	0.140	0.151	0.071	0.125	0.064
Observations	55,593	55,593	55,593	55,593	55,593

Notes: OLS estimates associated with the variable *Treat × Post* reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Phy’ stands for physical, ‘Sex’ for sexual, ‘Emo’ for emotional and ‘Eco’ for economic. ‘/’ refers to ‘and’ (i.e. Phy/Sex means Physical *and* sexual). ‘Mean (pre/treat)’ refers to the prevalence of IPV for treated women before the divorce reform (i.e. average 2003-2006). ‘Mean (all)’ refers to the prevalence of IPV in my sample. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

Taken the results in tables 2 and 7 together, they suggest that making divorce easier might have led to a substitution of emotional and economic IPV for physical and sexual violence. These findings are not consistent with the prediction of divorce threat models, since they predict that *all* types of IPV will decline following a reduction in the cost of divorce. In contrast, they are consistent with a ‘male backlash effect’ explanation by which the reform has been perceived by the husband as a threat to his dominant position. This would have made him more likely to use physical and sexual IPV alone or with no associated emotional and/or economic abuse; at the same time that less likely to inflict emotional and economic IPV.

There are several reasons that could explain why a ‘male backlash effect’ would lead to an increase in physical and sexual IPV, but not other forms of violence, even when this might seem counterintuitive *a priori*. First, physical and, to a lesser extent, sexual are the types of IPV that women more clearly associate with violence. Violent acts related to emotional and economic IPV are sometimes normalised in the everyday relationship with husbands (Radford and Harne, 2008; Walby and Allen, 2004). Second, they are usually considered to be ‘more serious’ than emotional and economic abuse⁵⁸, even when the consequences of emotional violence can be longer-lasting (Arias and Pape, 1999; Mechanic et al., 2008). Consequently, one would expect physical and sexual IPV to be more effective than other types of violence, at least in the short-run, which would make men more likely to use them as an instrument to reassert their dominance.

My findings provide support for the hypothesis that, in developing countries, the reduction in the cost of divorce would not necessarily decrease IPV, but it might lead to an increase of it if the improvement in the woman’s outside option is perceived as a threat to the man’s dominant position. An increase in violence following an improvement in the woman’s outside option has also been found in previous studies about Mexico looking at the effect of the CCT programme *Oportunidades* on IPV (Angelucci, 2008; Bobonis et al., 2013). However, unlike Bobonis et al. (2013), when I estimate the impact of unilateral divorce on the probability of receiving threats of violence with no associated physical abuse, I do not find any significant effect. This is likely due to the different impact on men that the two types of changes in the woman’s outside option (unilateral divorce versus CCT programmes) represent. While their findings provide support for a rent extraction motive of violence, this motivation is not suitable in the context of divorce laws. Instead, a ‘male backlash effect’ hypothesis seems to be a more plausible explanation.

6.5 Heterogeneous effects

The findings in the previous section suggest that the reduction in the cost of divorce might have led to a ‘male backlash effect’. If this is the case, one would expect this

⁵⁸In the survey, abused women are asked about whether they think that the violent act is very serious, serious or not serious. On average, physical and sexual violent items are ranked among the most serious, followed by economic and emotional ones, respectively.

to be driven by spouses who hold more ‘traditional’ gender role attitudes. To examine whether this is the case, I proxy for gender role attitudes using the level of education. This has been a proxy previously employed in the literature (Angelucci, 2008; Sullivan et al., 2014)⁵⁹.

6.5.1 *Man’s educational attainment*

To analyse whether the effect of the reform varies with the husband’s education, I interact this variable with $Treat \times Post$ ⁶⁰, which provides the differential impact of the reform across levels of education. Results are reported in table 8. Columns 1 and 2 refer to physical and sexual IPV occurring alone, respectively; whereas columns 3, 4, 5 and 6 to physical, sexual, emotional and economic IPV defined as in the baseline case⁶¹. Panel A reports the estimates assuming a homogeneous impact across women; while panel B reports the estimates associated with each educational level⁶². Panel C presents the differential impact of the reform across educational groups. Finally, panel D reports the mean value of IPV for treated women in the pre-reform period.

As expected, the significant increase in physical and sexual IPV occurring alone is concentrated on the group of women married to men with low education (columns 1 and 2). In particular, treated women married to men with low education have experienced an increase of 7.1 and 1.0 percentage points in physical and sexual IPV, respectively; and this increase has been quite large in economic terms. This increase is significantly larger than that experienced by women married to men with intermediate education. In the case of women married to men with high education, the effect of the divorce reform on IPV has been insignificant and close to zero for both types of violence.

It is also worth noticing that women married to men with high education and, to a lesser extent, intermediate hold the bulk of the significant decline in sexual, emotional and economic IPV (columns 3, 4 and 5). These men are likely to have more ‘progressive’ views of gender roles.

⁵⁹In the survey, the woman is directly asked about her views on gender roles. I use this information to check whether gender role attitudes and educational attainment are, indeed, associated. I find that 16% of women with less than primary education completed agree with the statement ‘the man has the right to beat his wife’, while this figure is only 1% for women with higher education completed. I do not use women’s gender role attitudes directly, since it is likely to be endogenous.

⁶⁰I also include the corresponding lower order interactions terms.

⁶¹Considering physical IPV with no associated sexual violence leads to very similar results than those reported in column 3. Same for sexual IPV with no associated physical violence in column 4; and emotional or economic abuse with no associated physical and/or sexual violence in columns 5 and 6.

⁶²For women married to men with low education, the effect of the reform on IPV is given by $Treat \times Post$; for women married to men with intermediate education, by the sum of $Treat \times Post$ and $Treat \times Post \times Intermediate$; and for women married to men with high education, by the sum of $Treat \times Post$ and $Treat \times Post \times High$.

Table 8: Effect of easier divorce on IPV – Heterogeneous effects by man’s education

	(1)	(2)	(3)	(4)	(5)	(6)
	Physical only	Sexual only	Physical	Sexual	Emotional	Economic
Panel A: Overall effect (homogeneous)						
All women	0.007* (0.004)	0.003** (0.001)	-0.003 (0.007)	-0.017*** (0.003)	-0.049*** (0.007)	-0.043*** (0.007)
Panel B: Overall effect (heterogeneous)						
Low	0.071** (0.023)	0.010*** (0.002)	0.011 (0.055)	-0.012 (0.015)	-0.078 (0.074)	-0.068 (0.059)
Intermediate	0.008** (0.003)	0.003 (0.002)	-0.009 (0.012)	-0.018*** (0.004)	-0.040*** (0.012)	-0.034*** (0.010)
High	-0.001 (0.005)	0.001 (0.001)	0.011 (0.007)	-0.026*** (0.005)	-0.078*** (0.012)	-0.070*** (0.013)
Panel C: Differential effect						
Intermediate vs. Low	-0.063** (0.025)	-0.007** (0.003)	-0.020 (0.067)	-0.006 (0.016)	0.038 (0.085)	0.035 (0.062)
High vs. Low	-0.072** (0.026)	-0.009*** (0.003)	-0.000 (0.061)	-0.015 (0.018)	0.000 (0.079)	-0.002 (0.068)
High vs. Intermediate	-0.009** (0.004)	-0.002 (0.002)	0.020* (0.010)	-0.009 (0.006)	-0.038** (0.013)	-0.036** (0.016)
Panel D: Prevalence of IPV						
Low	0.007	0.000	0.116	0.083	0.259	0.210
Intermediate	0.009	0.005	0.088	0.062	0.223	0.236
High	0.005	0.002	0.050	0.034	0.170	0.163
Observations	55,593	55,593	55,593	55,593	55,593	55,593

Notes: Panels A and B report the OLS estimates associated with the variable $Treat \times Post$. Panel C reports the OLS estimates associated with the variable $Treat \times Post$ interacted with the man’s educational level. Panel D reports the prevalence of IPV for treated women before the divorce reform (i.e. average 2003-2006). Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Low’ refers to less than primary education completed, ‘Intermediate’ to primary, secondary or vocational training completed, and ‘High’ to university education completed. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, woman’s educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

6.5.2 Woman’s educational attainment

As in the case of husbands, women with more ‘traditional’ gender role attitudes are expected to hold the bulk of the increase in IPV. Table 9 presents the results.

Table 9: Effect of easier divorce on IPV – Heterogeneous effects by woman’s education

	(1)	(2)	(3)	(4)	(5)	(6)
	Physical only	Sexual only	Physical	Sexual	Emotional	Economic
Panel A: Overall effect (homogeneous)						
All women	0.007* (0.004)	0.003** (0.001)	-0.003 (0.007)	-0.017*** (0.003)	-0.049*** (0.007)	-0.043*** (0.007)
Panel B: Overall effect (heterogeneous)						
Low	0.066*** (0.005)	0.009*** (0.002)	0.047 (0.042)	0.022 (0.018)	-0.063*** (0.011)	-0.027 (0.019)
Intermediate	0.006* (0.003)	0.003 (0.002)	-0.009 (0.011)	-0.021*** (0.004)	-0.059*** (0.012)	-0.051*** (0.011)
High	0.004 (0.002)	0.002 (0.001)	0.010 (0.012)	-0.023*** (0.007)	-0.019 (0.019)	-0.020 (0.014)
Panel C: Differential effect						
Intermediate vs. Low	-0.060*** (0.006)	-0.006 (0.004)	-0.056 (0.053)	-0.043** (0.018)	0.005 (0.016)	-0.024 (0.027)
High vs. Low	-0.062*** (0.006)	-0.007** (0.003)	-0.037 (0.046)	-0.045* (0.024)	0.044* (0.021)	0.007 (0.021)
High vs. Intermediate	-0.002 (0.002)	-0.001 (0.002)	0.019 (0.016)	-0.002 (0.008)	0.039 (0.022)	0.031 (0.020)
Panel D: Prevalence of IPV						
Low	0.014	0.003	0.106	0.078	0.220	0.206
Intermediate	0.008	0.004	0.086	0.062	0.227	0.232
High	0.005	0.001	0.046	0.021	0.141	0.154
Observations	55,593	55,593	55,593	55,593	55,593	55,593

Notes: Panels A and B report the OLS estimates associated with the variable $Treat \times Post$. Panel C reports the OLS estimates associated with the variable $Treat \times Post$ interacted with the woman’s educational level. Panel D reports the prevalence of IPV for treated women before the divorce reform (i.e. average 2003-2006). Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Low’ refers to less than primary education completed, ‘Intermediate’ to primary, secondary or vocational training completed, and ‘High’ to university education completed. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, man’s educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

Columns 1 and 2 show that the significant increase in physical and sexual IPV is concentrated on women with low education. This pattern is really similar to that observed for men. This suggests that the increase in violence might not only be driven by ‘traditional’ gender role attitudes of women, but also by positive assortative mating in terms of views of gender roles. That is, if women with low education tend to marry men with

low education⁶³, they would be marrying men who hold more ‘traditional’ gender role attitudes and, thus, who are more likely to be violent (as results in table 8 have shown).

Regarding the decline in sexual, emotional and economic IPV reported in panel A, no clear pattern is observed. The decrease in sexual IPV is driven by women in the middle and top of the education distribution (column 4), while the decrease in emotional by those in the middle and bottom (column 5), and the decline in economic by those in the middle (column 6)

7 The effect of easier divorce on woman’s bargaining power

Divorce threat models posit that a reduction in the cost of divorce should redistribute power towards the spouse relatively more willing to divorce, which I expect to be the wife (see section 3 for a discussion on this). To the best of my knowledge this prediction has, however, not been tested in the empirical literature. The present section aims to fill this gap by using the woman’s (absolute and relative) contribution to decision-making as a proxy for her bargaining power⁶⁴. Examining the link between divorce laws and bargaining power is not only important by itself but also because divorce laws have been found to affect a number of outcomes of the bargaining process including IPV, woman’s labour force participation and household production (see section 2 for references). In the specific case of IPV, divorce threat models predict that easier divorce should reduce IPV through an improvement in the woman’s bargaining power. This prediction, however, ignores the possibility that the husband perceives his wife’s improved bargaining power as a threat to his dominant position. If this is the case, violence could increase, as my results for physical and sexual IPV suggest.

In order to examine whether the divorce reform has had any impact on the intra-household distribution of power, I re-estimate equation 1, but considering as dependent variable the woman’s contribution to decision-making. The survey asks women who (her alone, her partner alone, both together or other people⁶⁵) makes most of the times eight decisions regarding whether she can work or study, go out of home, how to spend the household money, what the children can do, move house or town, when to have sexual relations, if contraception methods are used and who uses them⁶⁶.

I use these eight decisions to construct two set of indices. The first set captures the woman’s absolute decision-making power, while the second one her relative say (see details in the Appendix). Moreover, for each of them, I construct three indices. First, an overall

⁶³There is a large theoretical and empirical literature on assortative mating on education (Becker, 1973; Çelikaksoy et al., 2006). In my sample, 46% of women with low education are married to men of the same level of education. This number is 83% for women with intermediate education and 72% for those with high education.

⁶⁴This has been a proxy used previously in the literature. See, for instance, Majlesi (2016).

⁶⁵In less than 0.20% of the cases the decision is taken by other people.

⁶⁶In 2003, the survey asked women about 13 decisions, whereas in 2006 and 2011 about 11. However, only 8 are comparable among waves.

index that groups the eight decisions. Second, an index that groups the two decisions related to the woman’s personal activities, which are decisions most of the times made by her alone (personal index)⁶⁷. Following the terminology of household bargaining models, they can be considered to be her private goods and services. Third, an index that groups the six decisions related to household activities, which are decisions most often taken by both partners together (household index)⁶⁸. They can be interpreted as the household public goods and services. Table B8 in the Appendix provides some descriptive statistics. Focusing on the overall index for treated women in 2011, 34% of the decisions were made by the woman alone, 7% by her partner alone and 59% by both together. Since more decisions were taken by the woman alone than by her husband, the relative decision-making power index is positive. Comparing 2011 with previous years, the percentage of decisions made by the woman alone has been increasing over time, but this is entirely driven by those decisions related to her personal activities.

Table 10: Effect of easier divorce on woman’s decision-making power

	(1)	(2)	(3)	(4)	(5)	(6)
	Absolute			Relative		
	Overall	Personal	Household	Overall	Personal	Household
<i>Treat × Post</i>	0.029*	0.094***	-0.006	0.045**	0.108***	0.011
	(0.015)	(0.029)	(0.007)	(0.015)	(0.029)	(0.007)
Mean	0.275	0.468	0.195	0.185	0.375	0.106
Observations	55,178	55,178	55,178	55,178	55,178	55,178

Notes: OLS estimates associated with the variable *Treat × Post* reported. Robust standard errors clustered at the state level in parentheses. Sample weights are applied. The smaller number of observations compared to table 2 is due to the missing values in the variables used to construct the woman’s decision-making power indices. ‘Mean’ refers to the mean value of the dependent variable for treated women before the divorce reform (i.e. average 2003-2006). The dependent variable is an index of woman’s absolute (columns 1-3) or relative (columns 4-6) decision-making power. In columns 1 and 4 it groups all the decisions (eight), in columns 2 and 5 those related to the woman’s personal goods and services (two) and in columns 3 and 4 those related to the household public goods and services (five). All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

Table 10 presents the results. Columns 1-3 report the estimates associated with the woman’s absolute decision-making power, whereas columns 4-6 the ones associated with her relative say. Columns 1 and 4 refer to the overall index, columns 2 and 5 to the personal index, and columns 3 and 6 to the household index. Focusing on the overall index, women in the treatment group have significantly improved both their absolute and relative decision-making power compared to women in the control group after the

⁶⁷Whether she can work or study and whether she can go out of home.

⁶⁸How to spend the household money, what the children can do, whether to move house or town, when to have sexual relations, if contraception methods are used and who uses them.

reform. Comparing the magnitude of the coefficient with the average value of the index for treated women in the pre-reform period, this represents a 10% increase in column 1 and 24% in column 4. In both cases the significant increase is driven by the woman's personal index. Moreover, although insignificant, the introduction of unilateral divorce seems to have improved the woman's relative say about household decisions with a 10% increase (column 6).

In short, the results presented in this section suggest that treated women have significantly improved their bargaining position compared to non-treated ones following the reform. This shows support for the prediction that easier access to divorce has benefited women relatively more than men, which has translated into a redistribution of power towards them. However, this has only occurred in decisions usually made by women alone and, as such, it only reflects a limited improvement in their bargaining position. Furthermore, in contrast with the prediction of divorce threat models, women's improved bargaining power is unlikely to serve as a channel for explaining the decrease in sexual, emotional and economic IPV with no associated physical violence. The reason is that this decline has been accompanied by an increase in physical and sexual IPV occurring alone, which seems to be consistent with a 'male backlash effect' explanation. Moreover, the results in this section are also consistent with the possibility that the improvement in the woman's bargaining position serves as an additional channel (in addition to the reduction in the cost of divorce) through which men feel their dominant position threatened.

8 Conclusion

This paper has provided empirical evidence of the relationship between divorce laws and IPV in the context of a developing country. It has specifically identified the effect of reducing the cost of divorce on the prevalence of male-to-female physical, sexual, emotional and economic IPV by exploiting the state-level variation in the timing of the introduction of unilateral divorce in Mexico.

My results have shown that women in the treatment group, as compared to those in the control group, are significantly less likely to experience sexual, emotional and economic IPV following the reform. They have also shown a significant increase in the probability of physical and sexual IPV occurring alone or with no associated emotional and economic abuse. Taken together, these findings suggest that easier divorce might have led to a substitution of emotional and economic abuse for physical and sexual violence, which is consistent with a 'male backlash effect' explanation. In addition, I have also found that the reduction in the cost of divorce has improved the decision-making power of treated, as compared to non-treated, women after the reform.

One of the main limitations of this study is the cross-sectional nature of the data, which does not allow me to fully sweep out individual unobserved specific factors that could affect the selection into the treatment and the prevalence of IPV. Nevertheless, I

have conducted a number of robustness checks in order to mitigate against this concern.

The findings in this paper have highlighted the importance of analysing the relationship between divorce laws and IPV in the context of a developing country by showing different intra-household dynamics than those observed in developed countries. They have also highlighted the sensitivity of the results to the definition of physical IPV, which suggests the need for using reliable and validated definitions.

My results have a clear policy implication. They suggest that laws aimed at making the dissolution of marriage easier can contribute to reduce IPV, even when spouses do not divorce. However, they can also have adverse consequences on women if these types of reforms lead to a ‘male backlash effect’, which suggests the need for interventions that challenge ‘traditional’ gender roles. Taken together, my findings are of particular importance in the current context of Mexico, where states are gradually introducing unilateral divorce, as well as for other developing countries considering such measures.

References

- Ai, C., and Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics Letters*, 80(1), 123–129.
- Aizer, A. (2010). The gender wage gap and domestic violence. *The American Economic Review*, 100(4), 1847–1859.
- Aizer, A. (2011). Poverty, violence, and health. *Journal of Human Resources*, 46(3), 518–538.
- Aizer, A., and Dal Bó, P. (2009). Love, hate and murder: Commitment devices in violent relationships. *Journal of Public Economics*, 93(3-4), 412–428.
- Alesina, A., Brioschi, B., and Ferrara, E. L. (2016). Violence against women: A cross-cultural analysis for Africa. NBER Working Paper.
- Amaral, S. (2017). Do improved property rights decrease violence against women in India? ISER Working Paper Series.
- Anderberg, D., Rainer, H., Wadsworth, J., and Wilson, T. (2015). Unemployment and domestic violence: Theory and evidence. *The Economic Journal*, (pp. 1–33).
- Anderson, S., and Eswaran, M. (2009). What determines female autonomy? Evidence from Bangladesh. *Journal of Development Economics*, 90(2), 179–191.
- Angelucci, M. (2008). Love on the rocks: Domestic violence and alcohol abuse in rural Mexico. *The B.E. Journal of Economic Analysis and Policy*, 8(1), 1–41.
- Arias, I., and Pape, K. T. (1999). Psychological abuse: Implications for adjustment and commitment to leave violent partners. *Violence and victims*, 14(1), 55–67.
- Atkinson, M. P., Greenstein, T. N., and Lang, M. M. (2005). For women, breadwinning can be dangerous: Gendered resource theory and wife abuse. *Journal of Marriage and Family*, 67(5), 1137–1148.

- Bargain, O., González, L., Keane, C., and Özcan, B. (2012). Female labor supply and divorce: New evidence from Ireland. *European Economic Review*, 56(8), 1675–1691.
- Becker, G. S. (1973). A Theory of Marriage: Part I. *Journal of Political Economy*, 81(4), 813–846.
- Beleche, T. (2017). Domestic violence laws and suicide in Mexico. *Review of Economics of the Household*.
- Bellido, H., and Marcén, M. (2014). Divorce laws and fertility. *Labour Economics*, 27, 56–70.
- Bertrand, M., Duflo, E., and Mullainathan, S. (2004). How much should we trust differences-in-differences estimates? *The Quarterly Journal of Economics*, 119(1), 249–275.
- Bobonis, G. J., González-Brenes, M., and Castro, R. (2013). Public transfers and domestic violence: The roles of private information and spousal control. *American Economic Journal: Economic Policy*, 5(1), 179–205.
- Brassiolo, P. (2016). Domestic violence and divorce law: When divorce threats become credible. *Journal of Labor Economics*, 2(34), 443–477.
- Cameron, A. C., Gelbach, J. B., and Miller, D. L. (2008). Bootstrap-based improvements for inference with clustered errors. *The Review of Economics and Statistics*, 90(3), 414–427.
- Campbell, J. C. (2002). Health consequences of intimate partner violence. *The Lancet*, 359, 1331–1336.
- Carrell, S. E., and Hoekstra, M. L. (2010). Externalities in the classroom: How children exposed to domestic violence affect everyone’s kids. *American Economic Journal: Applied Economics*, 2(1), 211–228.
- Çelikaksoy, A., Nielsen, H. S., and Verner, M. (2006). Marriage migration: Just another case of positive assortative matching? *Review of Economics of the Household*, 4(3), 253–275.
- Chin, Y. M. (2012). Male backlash, bargaining, or exposure reduction: Women’s working status and physical spousal violence in India. *Journal of Population Economics*, 25(1), 175–200.
- Dee, T. S. (2003). Until death do you part: The effects of unilateral divorce on spousal homicides. *Economic Inquiry*, 41(1), 163–182.
- Dell, M. (2015). Trafficking networks and the Mexican drug war. *American Economic Review*, 6(105), 1738–1779.
- Delpiano, J. C., and Giolito, E. (2012). The impact of unilateral divorce on crime. *Journal of Labor Economics*, 30(1), 215–248.
- Drewianka, S. (2008). Divorce law and family formation. *Journal of Population Economics*, 21(2), 485–503.

- Ellsberg, M., Heise, L., Pena, R., Agurto, S., and Winkvist, A. (2001). Researching domestic violence against women: Methodological and ethical considerations. *Studies in Family Planning*, 32(1), 1–16.
- Friedberg, L. (1998). Did unilateral divorce raise divorce rates? Evidence from panel data. *The American Economic Review*, 88(3), 608–627.
- Garcia-Ramos, A. (2017). Woman’s relative income and intimate partner violence in Mexico: A non-monotonic relationship. Working Paper, University of Birmingham.
- González, L., and Viitanen, T. K. (2009). The effect of divorce laws on divorce rates in Europe. *European Economic Review*, 53(2), 127–138.
- Gover, A. R., Kaukinen, C., and Fox, K. A. (2008). The relationship between violence in the family of origin and dating violence among college students. *Journal of Interpersonal Violence*, 23(12), 1667–1693.
- Gray, J. S. (1998). Divorce-law changes, household bargaining, and married women’s labor supply. *The American Economic Review*, 88(3), 628–642.
- Greene, W. (2010). Testing hypotheses about interaction terms in nonlinear models. *Economics Letters*, 107(2), 291–296.
- Gruber, J. (2004). Is making divorce easier bad for children? The long-run implications of unilateral divorce. *Journal of Labor Economics*, 22(4), 799–833.
- INEGI (2003). *Encuesta nacional sobre la dinámica de las relaciones en los hogares 2003: Síntesis metodológica*. Mexico City: INEGI.
- INEGI (2006). *Encuesta nacional sobre la dinámica de las relaciones en los hogares 2006: Síntesis metodológica*. Mexico City: INEGI.
- INEGI (2011). *Encuesta nacional sobre la dinámica de las relaciones en los hogares 2011: Síntesis metodológica*. Mexico City: INEGI.
- Iyengar, R. (2009). Does the certainty of arrest reduce domestic violence? Evidence from mandatory and recommended arrest laws. *Journal of public economics*, 93(1-2), 85–98.
- Kneip, T., and Bauer, G. (2009). Did unilateral divorce laws raise divorce rates in Western Europe? *Journal of Marriage and Family*, 71(3), 592–607.
- Kwong, M. J., Bartholomew, K., Henderson, A. J. Z., and Trinke, S. J. (2003). The intergenerational transmission of relationship violence. *Journal of Family Psychology*, 17(3), 288–381.
- La Mattina, G. (2017). Civil conflict, domestic violence and intra-household bargaining in post-genocide Rwanda. *Journal of Development Economics*, 124, 168–198.
- Lloyd, S. (1997). The effects of domestic violence on women’s employment. *Law and Policy*, 19(2), 139–167.
- Luke, N., and Munshi, K. (2011). Women as agents of change: Female income and mobility in India. *Journal of Development Economics*, 94(1), 1–17.

- Lundberg, S., and Pollak, R. A. (1993). Separate spheres bargaining and the marriage market. *Journal of Political Economy*, 101(6), 988–1010.
- Majlesi, K. (2016). Labor market opportunities and women’s decision making power within households. *Journal of Development Economics*, 119, 34–47.
- Mechanic, M. B., Weaver, T. L., and Resick, P. A. (2008). Mental health consequences of intimate partner abuse: A multidimensional assessment of four different forms of abuse. *Violence Against Women*, 14(6), 634–654.
- Mechoulan, S. (2006). Divorce laws and the structure of the American family. *The Journal of Legal Studies*, 35(1), 143–174.
- Pollak, R. A. (2004). An intergenerational model of domestic violence. *Journal of Population Economics*, 17(2), 311–329.
- Puhani, P. A. (2012). The treatment effect, the cross difference, and the interaction term in nonlinear ‘difference-in-differences’ models. *Economics Letters*, 115(1), 85–87.
- Radford, J., and Harne, L. (2008). The nature and extent of domestic violence. In J. Radford, and L. Harne (Eds.) *Tackling domestic violence: Theories, policies and practice*. Berkshire, UK: McGraw-Hill Education.
- Rasul, I. (2003). The impact of divorce laws on marriage. Unpublished paper, University of Chicago and CEPR.
- Rasul, I. (2006). Marriage markets and divorce laws. *Journal of Law, Economics, and Organization*, 22(1), 30–69.
- SEFIN (2016). Realizar pagos, Registro Civil, Secretaria de Finanzas @ONLINE. URL http://www.finanzas.df.gob.mx/formato_lc/soloCivil.php1
- Stevenson, B. (2008). Divorce law and women’s labor supply. *Journal of Empirical Legal Studies*, 5(4), 853–873.
- Stevenson, B., and Wolfers, J. (2006). Bargaining in the shadow of the law: Divorce laws and family distress. *The Quarterly Journal of Economics*, 121(1), 267–288.
- Sullivan, O., Billari, F. C., and Altintas, E. (2014). Fathers’ Changing Contributions to Child Care and Domestic Work in Very Low-Fertility Countries. *Journal of Family Issues*, 35(8), 1048–1065.
- Tolman, R. M., and Wang, H. C. (2005). Domestic violence and women’s employment: Fixed effects models of three waves of women’s employment study data. *American Journal of Community Psychology*, 36(1), 147–158.
- Tur-Prats, A. (2015). Family types and intimate-partner violence: A historical perspective. Working Paper Series, Barcelona GSE.
- Walby, S., and Allen, J. (2004). *Domestic violence, sexual assault and stalking: findings from the British Crime Survey*. Home Office.
- WHO (2002). *World report on violence and health*. Geneva: World Health Organization.

WHO (2014). *Global status report on violence prevention 2014*. Geneva: World Health Organization.

Wolfers, J. (2006). Did unilateral divorce laws raise divorce rates? A reconciliation and new results. *The American Economic Review*, 96(5), 1802–1820.

Appendix A: Data

Definition of covariates

Unless otherwise specified, data are obtained from ENDIREH.

- **Age:** Number of years.
- **Indigenous:** Dichotomous variable equal to one if the woman (man) speaks an indigenous language and zero otherwise.
- **Education:** Educational attainment is measured as the maximum level of education reached by using a categorical variable with four categories. It is equal to one if the woman (man) has not completed primary education; equal to two if she (he) has finished primary education; equal to three if she (he) has completed secondary education, A levels or technical vocational training; and equal to four if she (he) has finished any of the courses considered part of higher education (undergraduate or postgraduate studies).
- **Violence in childhood:** Indicator of whether the woman experienced either physical or emotional abuse before the age of 13 in her family of origin.
- **Length of relationship:** Number of years that the spouses have been living together.
- **Number of young children:** Number of children below 6 that the couple has.
- **Urban residence:** Dichotomous variable equal to one if the household is located in an urban area and zero if in a rural.
- **Socio-Economic Status:** The SES index captures the household living standard by considering variables related to dwelling infrastructure and access to utilities, household ownership of durable assets and number of residents (see details below).
- **Male Homicide rate:** The homicide rate is measured as the number of intentional homicides per 100,000 inhabitants. Data for homicides come from death certificates and for population from CONAPO (*Consejo Nacional de Población*) [National Council of Population].
- **Unemployment rate:** The unemployment rate is measured as the ratio of the unemployed population to the economically active population. Data are obtained from ENOE (*Encuesta Nacional de Ocupación y Empleo*) and ENE (*Encuesta Nacional de Empleo*) [National Labour Force Survey].

Construction of SES index

This section briefly explains the construction of the household SES index⁶⁹. The SES index groups a wide range of variables that capture the household living standard (26 in total). In order to construct this index I follow several steps. First, I convert each categorical variable into a dichotomous one. Second, I exclude variables that have a very low frequency and are conceptually similar to others with higher frequency. Third, I remove specific variables in order to avoid perfect linear combinations of them. Fourth, I drop women with missing values in any of the variables. After all these adjustments, I end up with 20 variables. The index is constructed as the weighted sum of all them in which the weights are the loadings of the first principal component obtained from conducting a principal component analysis. Households are then classified into three groups according to the value of the index. Households in the lowest 40% of the distribution are classified as ‘low’, in the highest 20% as ‘high’ and in the rest as ‘middle’.

Woman’s decision-making power

For constructing the woman’s absolute decision-making power, I first recode each decision as one if the woman makes it alone and zero otherwise⁷⁰. The index is then constructed as the sum of the number of decisions made by the woman alone, which I re-scale to range between zero and one. Thus, it should be interpreted as the proportion of decisions made by her alone. The woman’s relative decision-making power is defined as the proportion of decisions made by the woman alone minus the proportion of decisions made by the man alone.

⁶⁹See Garcia-Ramos (2017) for a detailed explanation of it.

⁷⁰It could be that, however, the woman reports that she makes the decision alone, but she is influenced by her partner or, if he disagrees, it is him who actually has the final say. I have information on whether he complains if she makes the decision alone, but not on what occurs if he does. Even though, the fact that only 8% of women in 2006 and 2011 (no information for 2003) report that he complains provides confidence for the idea that a woman’s decision when taken alone is usually respected.

Appendix B: Supplementary tables

Table B1: Divorce/Domestic Violence Laws and Representative sample in 2003

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
State	U	U year	MC (judicial)	MC (adm)	DV Divorce	DV Penal Code	DV Law	Rep.
Central								
Mexico City	08/2008	yes	yes/no	yes	yes	yes	01/2008	no
Guanajuato			yes	no	06/2008	yes	11/2010	no
Hidalgo	03/2011	no	yes/yes(1)	no	no	yes	12/2007	yes
México	05/2012	yes	yes/yes	yes	01/2007	yes	11/2008	no
Morelos			yes	yes	09/2006	06/2006	12/2007	no
Puebla			yes	yes	11/2007	yes	11/2007	no
Querétaro	04/2016	no	yes	yes	2008	02/2008	03/2009	no
Tlaxcala			yes	yes	01/2006	12/2013	12/2007	no
North								
Aguascalientes	06/2015	yes	yes/no	yes	yes	02/2004	11/2007	no
Baja California			yes	yes	11/2004	yes	06/2008	yes
Baja California Sur			yes	yes	yes	03/2005	03/2008	no
Coahuila	04/2013	yes	yes/yes	12/2006	yes	yes	07/2008	yes
Chihuahua			yes	yes	yes	yes	01/2007	yes
Durango			yes	yes	yes	04/2004	11/2007	no
Nuevo León			yes	yes	yes	yes	09/2007	yes
San Luis Potosí			yes	yes	yes	yes	08/2007	no
Sinaloa	02/2013	no	yes/yes(1)	yes	yes	yes	07/2007	no
Sonora			yes	no	yes	yes	10/2007	yes
Tamaulipas			yes	yes	yes	yes	08/2007	no
Zacatecas			yes	no	yes	yes	01/2009	yes
West								
Colima			yes	yes	yes	11/2005	11/2008	no
Jalisco			yes	yes	11/2007	yes	05/2008	no
Michoacán			yes	yes	yes	yes	12/2008	yes
Nayarit	05/2014	no	yes/yes	yes	05/2007	12/2004	11/2008	no
East and South								
Campeche			yes	yes	06/2007	12/2014	07/2007	no
Chiapas			yes	yes	11/04	yes	03/2009	yes
Guerrero	03/2012	yes	yes/yes	yes	yes	yes	02/2008	no
Oaxaca	04/2017	no	yes/no	yes	yes	yes	03/2009	no
Quintana Roo	05/2013(2)	yes	yes/yes	yes	07/2004	06/2006	11/2007	yes
Tabasco			yes	yes	12/2008	yes	12/2008	no
Veracruz			yes	yes	yes	11/2003	02/2008	no
Yucatán	06/2015	yes	yes/yes	yes	no	yes	03/2008	yes

Notes: Column 1 refers to the date unilateral divorce was approved and column 2 to whether there is a one-year marriage requirement. If unilateral divorce has not been introduced these two columns are in blank. Column 3 refers to whether there was/is mutual consent divorce by judicial procedure (when unilateral divorce has been introduced, the first term refers to before its implementation and the second to after). Column 4 refers to whether there is administrative divorce. Column 5 refers to whether domestic violence was/is explicitly recognised as a cause for divorce. If it was before 20th October 2003 (when the data collection for ENDIREH 2003 started), it says 'yes'. Column 6 refers to whether domestic violence has been recognised in the Penal Code. If it was before 20th October 2003, it says 'yes'. Column 7 refers to the date in which the Law on Women's Access to a Life Free of Violence was adopted. Column 8 states whether the sample was representative in ENDIREH 2003. 'U' and 'MC' stand for unilateral and mutual consent, respectively, 'adm' for administrative, 'DV' for domestic violence and 'Rep' for representative.

(1) Do not require a mandatory one-year of marriage after the introduction of unilateral divorce.

(2) Quintana Roo continuous to have fault divorce on its Civil Code after introducing unilateral divorce.

Source: Own elaboration based on Civil Codes, Codes of Civil Procedures, Family Codes, Codes of Family Procedures, Family Laws and Divorce Laws (columns 1-5); Penal Codes (column 6); Law on Women's Access to a Life Free of Violence (column 7) and ENDIREH (column 8).

Table B2: Prevalence of IPV by violent item

	2003		2006		2011	
	T	C	T	C	T	C
During the last year, has your husband or partner...						
Physical IPV and serious threats						
pushed you or pulled your hair?	0.047	0.046	0.074	0.059	0.027	0.032
tied you up?	0.000	0.001	0.003	0.002	0.000	0.001
kicked you?	0.015	0.012	0.020	0.016	0.006	0.006
thrown any object at you?	0.011	0.020	0.030	0.025	0.009	0.013
beaten you with his hands or any object?	0.043	0.036	0.050	0.044	0.032	0.028
tried to hang or choke you?	0.004	0.007	0.010	0.007	0.003	0.004
assaulted you with a knife or blade?	0.001	0.004	0.005	0.004	0.002	0.002
fired a weapon at you?	0.000	0.001	0.002	0.001	0.000	0.001
threatened you with a weapon?	0.008	0.011	0.006	0.006	0.005	0.004
threatened to kill you, himself or the children?	0.023	0.020	0.010	0.012	0.005	0.011
Sexual IPV						
demanding you to have sexual relations?	0.066	0.061	0.056	0.046	0.013	0.024
forced you to do sexual things that you do not like?	0.011	0.018	0.014	0.010	0.004	0.008
used physical strength to force you to have sexual relations?	0.015	0.019	0.018	0.014	0.006	0.008
Emotional IPV						
ashamed, underestimated or humiliated you?	0.109	0.073	0.073	0.056	0.058	0.058
ignored or not shown you affection?	0.124	0.082	0.111	0.076	0.085	0.081
said you cheat on him?	0.084	0.057	0.063	0.050	0.039	0.050
made you feel fear?	0.075	0.071	0.059	0.047	0.037	0.038
threatened to leave you, hurt you, take your children away or kick you out?	0.082	0.068	0.054	0.046	0.033	0.048
locked you in, forbidden you from going out or being visited?	0.031	0.030	0.023	0.023	0.013	0.017
turned your children or relatives against you?	0.039	0.037	0.031	0.019	0.016	0.019
destroyed, thrown away or hidden things belonging to you or the household?	0.052	0.035	0.030	0.027	0.012	0.022
sopped talking to you?	0.177	0.155	0.194	0.166	0.179	0.133
got angry because household chores are not done like he wants?	0.110	0.094	0.099	0.083	0.071	0.070
Economic IPV						
complained about how you spend money?	0.108	0.118	0.124	0.090	0.081	0.080
been stingy with the household expenses, even though he has money?	0.098	0.070	0.088	0.062	0.046	0.054
not given you the upkeep or threatened you to not giving it?	0.062	0.045	0.042	0.038	0.027	0.031
spent money needed for the household?	0.075	0.069	0.061	0.053	0.022	0.040
appropriated or taken money or possessions from you?	0.012	0.010	0.008	0.007	0.006	0.008
forbidden you to work or study?	0.096	0.090	0.063	0.054	0.028	0.038
Observations	1,618	14,519	3,285	16,178	3,489	16,504

Notes: 'T' stands for treatment and 'C' for control. Sampling weights are applied.

Table B3: Exogeneity of the reform

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Physical 06	-0.491 (0.499)	-1.466 (2.328)						
Physical 03	-0.583 (0.542)	-0.769 (1.467)						
Sexual 06			0.269 (0.716)	-0.041 (3.456)				
Sexual 03			0.106 (0.548)	-0.307 (1.400)				
Emotional 06					0.029 (0.505)	-1.101 (1.183)		
Emotional 03					0.017 (0.424)	-0.511 (0.711)		
Economic 06							-0.022 (0.269)	-0.171 (0.862)
Economic 03							-0.044 (0.206)	-0.290 (0.518)
Age_w		0.038 (0.115)		0.005 (0.112)		0.047 (0.121)		0.009 (0.104)
Age_m		0.082 (0.100)		0.113 (0.103)		0.088 (0.091)		0.118 (0.090)
Indigenous_w		6.956 (4.910)		6.911 (4.287)		7.413 (5.437)		7.667 (4.961)
Indigenous_m		-6.216 (4.455)		-6.160 (3.830)		-6.709 (5.011)		-6.915 (4.496)
Primary edu_w		-0.644 (1.279)		-0.668 (1.257)		-0.366 (1.344)		-0.510 (1.205)
Secondary edu_w		-1.716 (2.163)		-1.812 (2.232)		-1.456 (2.242)		-1.736 (2.027)
Higher edu_w		-4.662 (3.005)		-4.896 (2.938)		-4.859 (2.966)		-4.790 (2.876)
Primary edu_m		1.346 (1.412)		1.233 (1.449)		1.495 (1.456)		1.285 (1.458)
Secondary edu_m		3.044 (2.335)		2.957 (2.435)		3.166 (2.401)		3.027 (2.444)
Higher edu_m		4.982 (3.780)		4.955 (3.913)		5.243 (3.757)		4.993 (3.812)
Child violence		-0.097 (0.371)		-0.382 (0.454)		0.064 (0.424)		-0.418 (0.456)
Length relation		-0.038 (0.075)		-0.039 (0.074)		-0.041 (0.080)		-0.046 (0.077)
Young children		-0.031 (0.749)		-0.072 (0.745)		0.172 (0.729)		-0.003 (0.828)
Urban		-0.556 (0.644)		-0.488 (0.626)		-0.469 (0.574)		-0.455 (0.593)
SES middle		-0.074 (0.800)		-0.036 (0.689)		-0.248 (0.962)		-0.132 (0.754)
SES high		0.011 (0.524)		0.101 (0.579)		0.033 (0.549)		0.071 (0.595)
Constant	0.107 (0.082)	-4.828 (3.157)	0.052 (0.052)	-4.779 (3.050)	0.057 (0.114)	-5.789 (3.704)	0.071 (0.073)	-5.119 (3.423)
Observations	64	64	64	64	64	64	64	64

Notes: OLS estimates reported. Robust standard errors clustered at the state level in parentheses. All the variables are weighted averages of the ENDIREH sample by state and year. 'edu' stands for education, 'w' for woman, 'm' for man, '03' for 2003 and '06' for 2006. The dependent variable is an indicator of whether the state has introduced unilateral divorce by 2011. ***significant at 1% level, **at 5%, *at 10%.

Table B4: Effect of easier divorce on IPV – Additional robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Baseline	Alternative control groups					Married >10 years
		All	Divorce +Criminal	Abortion MC	Abortion Const.	Late reform	
Physical	-0.003 (0.007)	0.004 (0.007)	0.000 (0.007)	-0.004 (0.008)	0.001 (0.009)	-0.006 (0.008)	-0.003 (0.007)
Sexual	-0.017*** (0.003)	-0.011*** (0.003)	-0.012*** (0.003)	-0.020*** (0.002)	-0.010** (0.003)	-0.014** (0.005)	-0.022*** (0.004)
Emotional	-0.049*** (0.007)	-0.037*** (0.009)	-0.044*** (0.008)	-0.051*** (0.010)	-0.036*** (0.009)	-0.048*** (0.009)	-0.038*** (0.007)
Economic	-0.043*** (0.007)	-0.033*** (0.007)	-0.034*** (0.006)	-0.045*** (0.007)	-0.023** (0.008)	-0.041*** (0.006)	-0.057*** (0.011)
Observations	55,593	141,644	61,851	42,048	38,814	37,760	40,530

Notes: OLS estimates associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. Column 1 reproduces the baseline estimates from table 2. Column 2 considers all non-reform states (i.e. 30) as control group. Column 3 excludes from all these non-reform states those that have reformed their divorce and criminal legislations and, in addition to this, column 4 excludes women who are not likely to have benefited from the decriminalisation of abortion in Mexico City, column 5 removes states that have introduced constitutional changes to protect the right to life from conception or fertilisation, and column 6 excludes states that have introduced unilateral divorce after 2011. Column 7 defines the treatment group as women married for at least 10 years at the time of the reform living in Mexico City or Hidalgo. ‘MC’ stands for Mexico City and ‘Const’ for constitutional. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

Table B5: Effect of easier divorce on IPV – Wild cluster bootstrapped standard errors

	(1)	(2)	(3)	(4)
Physical	-0.007 (0.009)	-0.003 (0.008)	-0.004 (0.008)	-0.003 (0.008)
Sexual	-0.019*** (0.006)	-0.017*** (0.006)	-0.017*** (0.005)	-0.017*** (0.005)
Emotional	-0.058*** (0.019)	-0.050*** (0.016)	-0.051*** (0.016)	-0.049*** (0.016)
Economic	-0.048*** (0.016)	-0.044*** (0.014)	-0.044*** (0.014)	-0.043*** (0.014)
State/Year FE	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	Yes
Couple	No	No	Yes	Yes
Household	No	No	No	Yes
Observations	55,593	55,593	55,593	55,593

Notes: OLS estimates associated with the variable $Treat \times Post$ reported. Wild cluster bootstrapped standard errors in parentheses. Sampling weights are applied. ‘FE’ stands for fixed effects. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. Individual covariates include both partners’ age, both partners’ indigenous background, both partners’ educational attainment and woman’s experience of violence in her childhood. Couple covariates include length of the relationship and number of young children. Household covariates include urban residence and SES index. ***significant at 1% level, **at 5%, *at 10%.

Table B6: Effect of easier divorce on IPV – Excludes missing values for man’s experience of violence in childhood

	(1)	(2)	(3)	(4)	(5)
Dependent variable	LPM			Probit	
Physical	-0.009 (0.008)	-0.006 (0.007)	-0.007 (0.007)	-0.006 (0.008)	-0.004 (0.008)
Sexual	-0.021*** (0.003)	-0.019*** (0.003)	-0.019*** (0.003)	-0.018*** (0.003)	-0.016*** (0.001)
Emotional	-0.064*** (0.013)	-0.056*** (0.011)	-0.057*** (0.011)	-0.055*** (0.011)	-0.042*** (0.008)
Economic	-0.054*** (0.013)	-0.050*** (0.011)	-0.050*** (0.011)	-0.049*** (0.011)	-0.040*** (0.009)
State/Year FE	Yes	Yes	Yes	Yes	Yes
Individual	No	Yes	Yes	Yes	Yes
Couple	No	No	Yes	Yes	Yes
Household	No	No	No	Yes	Yes
Observations	46,609	46,609	46,609	46,609	46,609

Notes: OLS estimates (columns 1-4) and marginal effects (column 5) associated with the variable $Treat \times Post$ reported. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘FE’ stands for fixed effects. The sample excludes missing values of the variable man’s experience of violence in childhood. The dependent variable is an indicator of whether the woman has experienced IPV in the year before the survey. Individual covariates include both partners’ age, both partners’ indigenous background, both partners’ educational attainment and woman’s experience of violence in her childhood. Couple covariates include length of the relationship and number of young children. Household covariates include urban residence and SES index. ***significant at 1% level, **at 5%, *at 10%.

Table B7: Effect of easier divorce on reporting behaviour

	(1)	(2)	(3)
	Ordinary LPM	Selection equation	Heckman
Violence childhood man		0.417*** (0.031)	
<i>Treat</i> × <i>Post</i>	-0.006 (0.017)		-0.008 (0.018)
Wald test (p-value)			0.000
Observations	10,641	46,146	46,146

Notes: Column 1 reports the OLS estimate associated with the variable *Treat* × *Post* when an ordinary LPM is estimated. Column 2 reports the Probit estimate associated with the selection variable ‘Violence childhood man’ and column 3 the maximum likelihood estimate associated with the variable *Treat* × *Post* when a Heckman selection model is estimated. Robust standard errors clustered at the state level in parentheses. Sampling weights are applied. ‘Wald test’ refers to the test of independent equations. The sample in column 1 is restricted to women who have experienced IPV in the 12 months prior to the survey. The smaller number of observations in columns 2 and 3 compared to the baseline specification in table 2 is due to the missing values in the variables man’s experience of violence in childhood and report of IPV to the police or any other authority. The dependent variable is an indicator of whether the woman has reported IPV to the police, Public Ministry or any other authority (columns 1 and 3); or an indicator of whether her husband has experienced IPV in his childhood (column 2). All specifications control for both partners’ age, both partners’ indigenous background, both partners’ educational attainment, woman’s experience of violence in her childhood, length of the relationship, number of young children, urban residence, SES index, and state and year fixed effects. ***significant at 1% level, **at 5%, *at 10%.

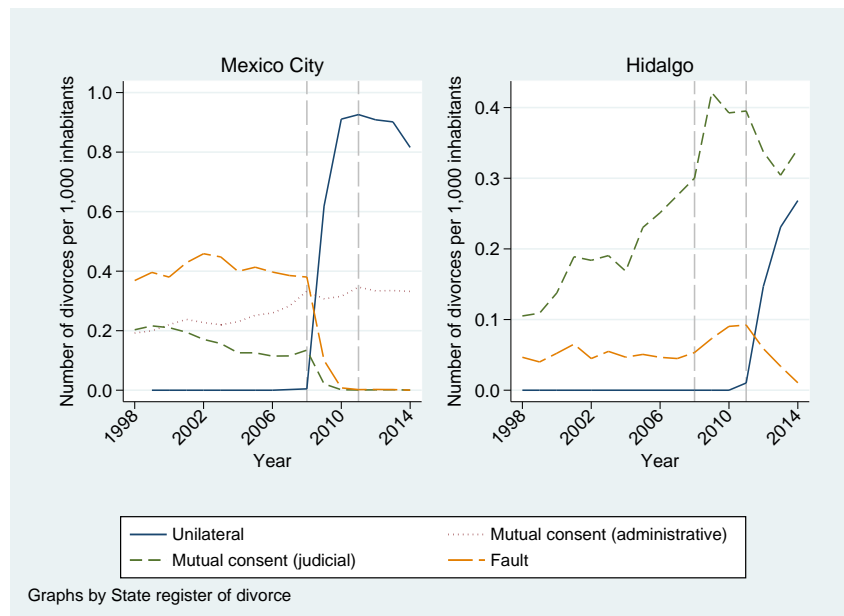
Table B8: Descriptive statistics: Decision-making power

	2003		2006		2011	
	T	C	T	C	T	C
Woman’s decision making-power: Overall	0.234	0.237	0.295	0.279	0.339	0.321
Woman’s decision making-power: Personal	0.260	0.267	0.570	0.518	0.690	0.613
Woman’s decision making-power: Household	0.223	0.222	0.181	0.181	0.187	0.195
Man’s decision making-power: Overall	0.067	0.065	0.101	0.107	0.069	0.089
Man’s decision making-power: Personal	0.075	0.073	0.101	0.119	0.064	0.085
Man’s decision making-power: Household	0.064	0.062	0.101	0.102	0.072	0.092
Both partners’ decision making-power: Overall	0.555	0.563	0.604	0.612	0.590	0.589
Both partners’ decision making-power: Personal	0.500	0.504	0.328	0.362	0.245	0.301
Both partners’ decision making-power: Household	0.577	0.588	0.717	0.714	0.740	0.711
Relative decision making-power: Overall	0.167	0.172	0.194	0.173	0.269	0.232
Relative decision making-power: Personal	0.186	0.194	0.468	0.399	0.627	0.529
Relative decision making-power: Household	0.159	0.161	0.080	0.080	0.115	0.103
Observations	1,597	14,293	3,262	16,104	3,483	16,439

Notes: ‘T’ stands for treatment and ‘C’ for control. Woman’s (man’s) decision-making power refers to the proportion of decisions made by the woman (man) alone. Both partners’ decision-making power refers to the proportion of decisions made by both partners jointly. Relative decision-making power is the proportion of decisions made by the woman alone minus the proportion of decisions made by the man alone.

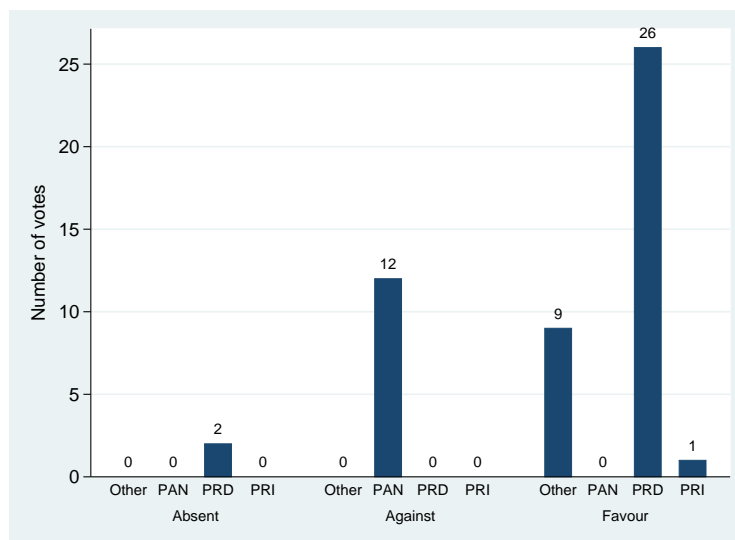
Appendix C: Supplementary figures

Figure C1: Divorce rate by type of divorce



Notes: The vertical axes refer to the annual number of divorces per 1,000 inhabitants. The two vertical lines refer to the year unilateral divorce was introduced (2008 in Mexico City and 2011 in Hidalgo).
Source: Divorce statistics, INEGI

Figure C2: Distribution of votes in the Legislative Assembly



Notes: The vertical axis refers to the number of votes. *Source:* *Diario de los debates de la Asamblea Legislativa del Distrito Federal*, 27 August 2008.