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Domestic violence laws and suicide in Mexico

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Abstract In the mid-1990s Mexican states began adopting reforms that for the first time criminalized domestic violence. Two separate policies were also adopted which allowed domestic violence to be grounds for divorce and established prevention and assistance programs for victims of domestic violence. I exploit the variation in time and geography to estimate the impact of these three policies on female suicide rates using a difference-in-difference methodology. The results indicate that states that criminalized domestic violence exhibited a 22–34% decrease in suicide rates compared to non-adopting states, but there is no robust evidence that the other two policies had any impact. A battery of tests provides support for the robustness of these findings and indicates that most of the effects are concentrated among married women. Analysis of a cross-sectional, nationally representative survey covering violence against women in Mexico suggests reduction in sexual and physical violence as a possible mechanism behind the reduction in female suicide rates. These findings are consistent with an intra-household bargaining model with asymmetric information and costly conflict which predicts that policies that reduce conflict within the household can reduce female suicides. The results highlight the importance of developing and implementing policies that facilitate reporting and providing access to legal institutions for victims of domestic violence, which can in turn improve a victim's wellbeing.

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1 Introduction

Domestic violence is a public health issue in both developed and developing countries. However, domestic violence appears to be more severe in developing countries. In Mexico, surveys indicate that at least one third of women report being in a violent relationship with a spouse, boyfriend, or partner (INSP 2009; Eternod Aramburu 2013). Besides the physical and socioeconomic impacts,[1] domestic violence can affect the mental health of the victim and lead to depression, low self-esteem, low self-reported happiness, and suicidal behavior (INEGI 2013; Diette et al. 2016). In fact, studies have reported a positive association between domestic violence and suicidal behavior (e.g., INEGI 2005; Stevenson and Wolfers 2006). This may not be surprising given that suicide rates have been shown to co-move with measures of well-being (Di Tella et al. 2003; Castillo-Manzano and Arankowsky-Sandoval 2008).

Studies have shown that public policy can alter violent behavior. Stevenson and Wolfers (2006) find that states in the US which facilitated the divorce process saw declines in the number of women murdered by their partners, as well as in female suicide and domestic violence for both men and women. Stevenson and Wolfers show that the change is mediated through improved intra-household bargaining power for the unhappy spouse. These findings are in line with traditional economic theories of the family, which generally predict that both physical and emotional violence may be reduced by improving women's bargaining power through safety net programs such as conditional cash transfers, or legal reforms (e.g., Brassiolo 2016).

More recent studies have shown that policies that are intended to improve a woman's outside opportunities but also challenge traditional roles can exacerbate conflict within the household. For example, Angelucci (2009) concludes that changes in a wife's income brought by Mexico's conditional cash transfer program Oportunidades led to reductions in physical abuse when the amount of the cash transfer was small, but that large cash transfers were associated with an increase in aggressive behavior by husbands with traditional gender role views. On the other hand, Bobonis et al. (2013) found that beneficiaries of Oportunidades were less likely to be victims of physical abuse, but more likely to be victims of violent threats without physical abuse. In a separate study, Anderson and Genicot (2015) found that improved female

[1] The World Health Organization estimated that in countries like Nicaragua and Chile, domestic violence costs, in terms of productivity loss, represent at least 1.6% of their gross domestic product (WHO 2005). Further, studies have shown that domestic violence is negatively associated with wages, health outcomes (Aizer 2010; Aizer 2011), and student performance (Carrell and Hoekstra 2010). There is also evidence that children who witness violence can become more likely to accept and perpetrate this behavior (Pollak 2004; Bowlus and Seitz 2006).

property rights in India increased suicide rates for men and women, which occurred due to increased conflict between the victim and the perpetrator.

All of these studies point out that further research is needed to understand the various mechanisms and unintended consequences of such policies (Bowlus and Seitz 2006). This paper contributes to this literature by examining the impact of the following three policies that address domestic violence in various institutional settings in Mexico:

- A Penal Code Reform that explicitly defined and criminalized domestic violence in a state's criminal code (the Penal Code Reform);
- A Civil Code Reform (also referred to as the Divorce Law) that added domestic violence as grounds for divorce in a state's code of civil procedures; and
- The Law of Access, Assistance and Prevention against Intra-Family Violence (the Assist Law) which established procedures for government entities to provide assistance programs to prevent domestic violence.

Using the heterogeneity in the adoption of these policies across time and states I find that only one of the policies—the one that for the first time criminalized domestic violence in a state's criminal code—is associated with a decrease in female suicide rates. The estimated effect of the Penal Code Reform represents a 22–34% decrease in female suicide rates, which is more than double the effect of adopting unilateral divorce laws in the United States reported by Stevenson and Wolfers (2006). Data from a nationally representative survey of partner violence against women allow me to investigate a possible mechanism and suggest that the effects are channeled through reduction in violence against women. The findings of an effect on the Penal Code Reform are consistent with Anderson and Genicot's (2015) model, which predicts a decrease in female suicide rates associated with policies that decrease conflict during the intra-household bargaining process.

This paper is organized as follows. The next section provides a brief background of the policies studied in the context of the Mexican legislature. The economic framework is discussed in Section 3, followed by the Methodology and Data (Section 4). The results and robustness checks are presented in Section 5, which leads to a discussion and conclusion (Section 6).

2 Background: domestic violence in the Mexican legislature

Mexican laws of divorce and family relations are embedded in civil and penal codes that fall under each state's sovereignty. In the mid-1990s Mexican states began to introduce new laws and to reform their penal and civil codes in an effort to update statutes that had not changed since the 1920s.[2] These policies all addressed the topic of domestic violence but did so in three different institutional settings by reforming the penal code, reforming the civil code of procedures, and adopting an administrative law of procedures for government entities.

The reform to a state's penal code made explicit what constituted domestic violence and delineated punitive actions for the perpetrator (the Penal Code Reform). Under the

[2] There are 31 states and the Federal District, which henceforth will be referred to as a state.

Penal Code Reform domestic violence[3] is defined as "the use of physical or moral strength of one member of the family on another family member against his or her physical or psychic integrity, independently of whether it results in injuries." Thus, the inclusion of this definition in the Penal Code institutes domestic violence as a crime. The reform further stipulates that the crime can be committed by the spouse, concubine, any blood relative or other relatives up to fourth degree, and adopted or adopting members living in the same household. The reform also establishes sanctions for the perpetrator that is found guilty of the crime; sanctions vary by state, but generally range from 6 months to 4 years in prison, loss of alimony or custody rights, a fine, or counseling requirements. Prior to the Penal Code Reform, a state's Penal Code covered crimes that were general, and which, for the most part, were consequences of aggressive behavior such as injuries, threats, or homicides. Sanctions for injuries were based on the severity of the wound, which was measured by the time it took to heal (15 days being the minimum for the injury to merit judicial intervention). Moreover, in pre-reform penal codes, marital rape was not considered a crime and as late as 1994 even a Mexican Supreme Court ruled spousal rape as the "undue exercise of a right".

While retaining the traditional grounds for divorce, states also reformed their civil codes to allow "acts of domestic violence committed by the spouse against another or against the children" as grounds for divorce (the Divorce Law). Although there were other causes such as extreme cruelty that existed prior to this reform, and which could be used for cases of domestic violence, they were seldom used as they did not explicitly define domestic violence or state that the aggressor could be the spouse.

Finally, states also began adopting the "Law of Access, Assistance and Prevention against Intra-family Violence" (the Assist Law). The Assist Law is an administrative law for government entities that established procedures to assist victims of domestic violence. Adoption of the Assist Law involved training law enforcement, health, and social workers on domestic violence issues; running prevention and intervention programs; and establishing shelters and centers that provide counseling and legal assistance to victims of domestic violence.

Adoption of these three policies has occurred quite rapidly, with most states having at least one or two of these policies in place by 2006 (see Supplementary Appendix Table 1). Because these policies varied not only in their approach to address domestic violence but also in the timing of adoption by states, they create a quasi-experimental setting to examine their impact on female suicide rates in Mexico. The next section presents the underlying economic framework and its predictions.

3 Economic framework

The traditional models of intra-household allocation focus on bargaining in the presence of a threat point—the highest level of utility attainable when no agreement is reached—that determines intra-family distribution through Nash bargaining between the partners. These models vary in how the value of the threat point is altered or determined, and thereby, how the distribution of resources is affected (e.g., Manser and Brown 1980;

[3] Generally, the penal codes discuss IFV while the civil codes use DV. Hereon I will use IFV and DV interchangeably.

McElroy and Horney 1981; Lundberg and Pollak 1993; Lundberg and Pollak 1994; Lundberg and Pollak 1996). Implicit in these models are the assumptions that bargaining and conflict can be separated, and that the outcome depends on how credible the threat point is (e.g., Stevenson and Wolfers 2006; Brassiolo 2016).

By contrast, other models assume there is asymmetric information with respect to the value each partner gains from staying in the relationship or that conflict is inherent to the bargaining process (e.g., Sanchez-Pages 2009; Bloch and Rao 2002; Bobonis 2009; Bobonis et al. 2013). A recent model by Anderson and Genicot (2015) extends these models by assuming (like the traditional models) that each partner in the relationship derives value from cooperating but adds the assumptions that neither partner knows the other's value *and* that conflict is an integral part of intra-household bargaining decisions.

In this model, it is each spouse's private value of staying in the relationship that leads to rejection of some offers or for bargaining to fail when a spouse's outside opportunities improve. Furthermore, separation or reverting to separate spheres cannot be achieved without there being a period of conflict. Specifically, a spouse (in this case the female victim) accepts an offer and enjoys her utility (V^f), if V^f is greater than the expected utility of separation (E^f). In turn, the expected utility of separation depends on the utility the victim would achieve separating net of the cost of conflict involved in order to achieve separation, $U^f - C^f$. This implies that a spouse stays alive if $C^f \leq U^f$. The cost of conflict represents the psychological or physical pain that a spouse endures during an episode of marital discord. If the cost is so high that the person chooses to commit suicide her utility is zero. The model predicts that female suicide occurs if the cost of conflict is high enough for the victim that she may opt to achieve exit more rapidly and end the pain.[4] Thus, policies that can reduce the intensity or duration of conflict can lead to reductions in female suicide rates.

Applying Anderson and Genicot (2015)'s model, the policies under study can impact suicide rates through reductions in the cost of conflict. To the extent that adoption of the Penal Code Reform facilitates (a credible threat of) incarceration of the aggressor, and thereby reduces the duration or frequency of conflict, one would expect that states that adopt this policy would observe a reduction in female suicide rates. The question of whether the Divorce Law reduces conflict during intra-household bargaining is not as clear. On the one hand, through the Divorce Law a victim's divorce proceedings are facilitated in the presence of marital discord, which could lead to reduction in conflict and thereby suicide. On the other hand, it is also possible that the divorce process itself could be a difficult and lengthy one that exacerbates marital discord and thereby lead to an increase in female suicide rates. Moreover, the effectiveness of the Divorce Law greatly depends on there being a legal union, but many of the unions in countries like in Mexico are formed by partners who cohabitate. Finally, if the Assist Law provides tools, via mediation or

[4] The model also speaks about the expected outcome of male suicide, but in this paper we focus on the model's prediction for female suicide. In Anderson and Genicot's (2015) model, male suicide rates can increase because an individual's utility under separation depends on his or her resources, so when the redistribution of resources improves the outcome of a separation for women, it makes separation less attractive for men. Analysis available upon request shows positive coefficients associated with the Penal Code Reform and male suicide rates but the effects are not statistically significant for all except the preferred specification.

counseling, that teach the aggressor and the victim to manage conflict and thereby reduce the duration or intensity of conflict, one would expect a reduction in female suicide rates. However, if those same tools create an atmosphere of greater conflict (e.g., the victim learns and implements the tools to avoid conflict but the aggressor does not), then female suicide rates could decrease. Taken together, the anticipated effects of these policies rest largely on their impact on conflict during the bargaining process and therefore remain an empirical question. The next section discusses the methodology and data to address this empirical question.

4 Methodology and data

4.1 Identification strategy

This study exploits the heterogeneity in the adoption of three different policies across states and time to estimate their impact on female suicide rates in Mexico. In order to identify the causal effect of the policies on the outcome of interest, the assumption is that the policies are exogenous. Causal effects remain unidentified if the adoption of a policy is correlated with time-varying unobservables that impact suicide rates. There also needs to be enough variation to precisely identify the effects. Regarding the first point, the policies under study were enacted to update the Mexican penal and civil codes, and although I cannot explicitly test whether the exogeneity assumption holds, in the next section I discuss robustness checks that provide evidence in support of this assumption.

With respect to the second point, Supplementary Appendix Table 1 lists the month and year in which each of the states adopted the three policies as of January 2007, and shows that there is variation, geographically and across time, in the adoption of the reforms. This variation is more evident as shown graphically in Supplementary Appendix Fig. 1. For instance, of the 32 states, there were states that had adopted the Assist Law (Aguascalientes, Hidalgo, Chihuahua, and Yucatan) or the Penal Code Reform (Tlaxcala, Queretaro and Campeche). But there were also four states without the Divorce Law. Finally, bordering states do not show any systematic tendency to adopt a particular policy.

Although there is no systematic tendency with respect to when the policies are first adopted, there appears to be some correlation within states. For example, at least 12 of 24 of the states adopting the Assist Law did so before either the Divorce Law or the Penal Code Reform, and 11 of the 24 states that adopted the Divorce Law also adopted the Penal Code Reform in the same year. In the next subsection I discuss how the methodology deals with this potential correlation.

4.2 Model specification

4.2.1 Model specification based on panel data on suicides

The specification of interest is given by Eq. (1), where $suicide_{st}$ is the female suicide rate (number of female suicides per 100,000 women) in state s in year t. Because suicidal behavior can be associated with domestic violence, $suicide_{st}$ is calculated for women between the ages of 15 and 54, a group that has been shown to be most

affected by domestic violence.[5]

$$suicide_{st} = \alpha + \phi_1 penalcode_{st} + \phi_2 divorcelaw_{st} + \phi_3 assistlaw_{st} + \varphi_1 oportunidades_{st} + \varphi_2 seguropopular_{st} + X'_{st}\pi + \eta_s + \nu_t + \varepsilon_{st} \quad (1)$$

In Eq. (1), φ_k, for $k = 1, 2, 3$, is the coefficient of a dummy indicator that captures the effect of a given policy before and after adoption. Specifically, *penalcode* is equal to one if the Penal Code Reform is in place in a given state s and year t and equal to zero otherwise. The variables *divorcelaw* and *assistlaw* are defined similarly for the Divorce and Assist Laws, respectively. The model predicts that a decrease in suicide rates would occur if policies reduce the cost of conflict during intra-household bargaining. Thus, if a policy is associated with reductions in conflict during the intra-household bargaining process, $\hat{\phi}_k < 0$.

In addition to the policies of interest, the model considers two other policies captured by the variables *oportunidades* and *seguropopular*. The variable *oportunidades* is an indicator equal to one if state s implemented Oportunidades in year t. Similarly, *seguropopular* is a dummy variable equal to one if state s had implemented Seguro Popular in year t. Oportunidades is a conditional cash transfer program that has been shown to be associated with reductions in domestic violence (e.g., Angelucci 2009; Bobonis et al. 2013), and since suicide rates are linked to acts of domestic violence, omitting this could confound the results. Seguro Popular provided free or subsidized health insurance to residents of the adopting state based on income (Campos-Vazquez and Knox 2013), which is correlated with violent behavior and potentially with policy adoption.

$\mathbf{X}_{st}$ includes time varying measures of GDP per capita and percent of population enrolled in an undergraduate degree program. GDP per capita captures the extent to which wealthier states are more or less likely to adopt these policies, as well as to the extent to which per capita wealth determines the propensity to reject or perpetuate conflict or violent behavior. $\mathbf{X_{st}}$ also includes a set of four variables that capture the sex ratio in the following age groups: under 14, 15–34, 35–54, and over 55. Finally, the model includes state (η_s) and year (ν_t) fixed effects. To address concerns of serial correlation (Bertrand et al. 2009) standard errors are clustered at the state level.

4.2.2 Model specification using cross-sectional data on partner violence against women

To further examine whether conflict is a possible mechanism through which suicide occurs, I use non-fatal measures of domestic violence, and run a variation of Eq. (1) using cross-sectional survey data that capture self-reported incidence of partner violence against women. Specifically, I estimate Eq. (2) where $violence_{ihst}$ is a

[5] I estimated the suicide rates for the state of Tlaxcala using linear interpolation because the data showed no suicides for the entire year in 2000. The results do not change when this state is excluded entirely from the analysis.

dummy variable that is defined in five different ways. It is equal to one if individual i living in household h located in state s at the time of the survey date (t) reported to have experienced one form of domestic violence. Domestic violence could be (1) physical and sexual abuse, (2) physical abuse, (3) sexual abuse, (4) threat without physical violence, and (5) emotional violence. These outcomes are defined in Supplementary Appendix A.

$$violence_{ihst} = \alpha + \beta_1 penalcode_{st} + \beta_2 divorcelaw_{st} + \beta_3 assistlaw_{st} + \delta_1 oportunidades_{ihst} + \delta_2 seguropopular_{st} + X'_{ihst}\pi + \eta_s + \nu_t + \varepsilon_{st} \quad (2)$$

The impacts of the policies are captured by the dummy indicators, *assistlaw*, *divorcelaw*, and *penalcode*, which are set to one if the individual resided in a state that implemented each of these laws at the time of the survey. In this specification, *oportunidades* is a dummy variable that is equal to one if individual i residing in household h in state s reported being a beneficiary of Oportunidades at the time of the survey t, and zero otherwise. Similarly, *seguropopular* is a dummy variable that is equal to one if the individual resided in a state that at the time of the survey had implemented Seguro Popular. The vector $\mathbf{X}_{\text{ihst}}$ includes individual and household specific controls such as female's age, female's indigenous background, female's schooling level, female's experience of family violence during childhood, partner's age, partner's schooling, partner's experience of family violence during childhood, partner's indigenous background, partner's age at time of union, and family size. Household characteristics include whether the home has dirt or firm floors, access to water, electricity, number of rooms, number of bedrooms, and whether there is a kitchen.

4.3 Data

I use multiple sources of data covering the period 1994–2006. By ending the period of analysis in 2006, I exclude potential confounders associated with increased violence in Mexico due to drug trafficking and government strategies to combat organized crime. The data sources are discussed in more detail below.

4.3.1 Reform adoption

Data on timing of policy adoption was gathered by reviewing historical statutes of civil codes, penal codes and administrative laws for each of the 32 states available on the Mexican National Supreme Court of Justice's web site (https://www.scjn.gob.mx) and by conducting internet searches. The year of policy adoption was determined using the date in which the policy was published in Mexico's official gazette of the Federal government (Diario Oficial de la Federacion). To allow for the possibility that it takes time for information to disseminate or for implementation to occur, I code the adoption of the legal reform to have occurred in the current year if it has

been published for at least six months, otherwise the year of implementation is the following year.[6]

4.3.2 Suicide data

Data on suicides come from administrative records of Mexico's Mortality and Vital Statistics provided by the National Institute of Statistics and Geography (INEGI), which are compiled from the death certificates of all deceased persons in Mexico. The data provide information on the age, gender, marital status, and cause of death. In the case of violent deaths Mexican law requires that a coroner or forensic authority must certify the cause of death before burial proceedings can take place; thus, it is unlikely that under-reporting is a major concern in this database.

4.3.3 ENDIREH: survey of violence against women

Self-reported measures of violence against women come from INEGI's 2003 National Survey on Relationships within the Household (ENDIREH), a nationally representative household survey intended to measure the prevalence and intensity of partner violence against women (INEGI 2003). In addition, the survey captures data on household demographics, socioeconomic characteristics, marital histories, and household decision making. The questions that capture partner violence cover physical, sexual, and emotional abuse in the twelve months preceding the interview, and it is administered to women 15 years or older living with a husband or partner. The measures are described in further detail in Bobonis et al. (2013), as well as in Supplementary Appendix A.

4.3.4 Other data sources

I also use state-level data drawn from each state's Statistical Yearbook (Anuario Estadistico), which includes all divorces and marriages in Mexico during the period of study. These data as well as real gross domestic product are provided by Mexico's INEGI. Furthermore, time-varying state level population counts come from Mexico's Population Council (CONAPO) and educational measures come from Mexico's Ministry of Education (SEP). Finally, crime and homicide data come from INEGI's Judicial Statistics in Penal Matter (Estadisticas Judiciales en Materia Penal).

4.4 Select demographic and population characteristics

Table 1 presents the incidence rates of suicides and select socioeconomic characteristics considered for the entire sample, and then separately for those states that have at least one of the three policies and those that do not. The average suicide rate is 2 per 100,000 women. States that adopted at least one of the reforms had lower

[6] The states of Colima and San Luis Potosi are excluded from the analyses because their publication dates for the adoption of Penal Code could not be verified. Separate analysis (not shown) shows that using an alternative definition of policy adoption does not alter the results.

Table 1 Suicide rate and select characteristics of individuals committing suicide

Variable	All (1)	Non-adopting states (2)	Adopting states (3)	Difference in means (4)
Female suicide rate	1.835	1.935	1.778	−0.157
Suicide occurred at home	0.668	0.658	0.674	0.015***
Age (years)	29.873	29.722	29.967	0.245**
Single (%)	0.469	0.455	0.477	0.022***
Married or cohabiting (%)	0.475	0.487	0.468	−0.019***
Divorced/Separated	0.037	0.038	0.035	−0.002
No education (%)	0.061	0.053	0.065	0.012**
Primary and middle school (%)	0.691	0.718	0.673	−0.045***
Secondary school (%)	0.119	0.110	0.120	0.010**
College or higher	0.066	0.061	0.068	0.007***
Female (%)	0.167	0.160	0.170	0.010**
Male (%)	0.833	0.840	0.830	−0.010**
GDP (per capita)	13.421	14.060	13.052	1.008
Marriage rate	726.844	772.180	729.544	−7.364
Divorce rate	62.034	65.717	59.902	5.814

Notes States of Colima and San Luis Potosi are excluded. Suicide rate is the annual number of suicides per 100,000 females between the ages 15 and 54. Period 1994–2006. Divorce and marriage rates are the number of divorces or marriages per 100,000 population. Adopting states includes states that have adopted at least one of the policies. Age (years) denotes the mean age. Column (4) denotes the difference in means between columns (2) and (3)

Sources Author's analysis from Mexico's Mortality and Vital Statistics (INEGI), Mexico's Statistical Yearbooks (INEGI), Mexico's Ministry of Education (SEP), and Mexico's Population Council (CONAPO)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

rates of suicide compared to states that did not adopt any of the policies, but the difference is not statistically significant.

When I examine key demographic characteristics of individuals who committed suicide, the data indicate that individuals who committed suicide and were residing in a state where at least one of the policies had been adopted were slightly older and were more likely to commit suicide at home than those who committed suicide in non-adopting states. These differences are statistically significant at the 5% level. Furthermore, the proportion of individuals with no education was higher in adopting states. State level characteristics suggest that per capita GDP, divorce and marriage rates are lower in adopting states although the differences are not statistically significant. Even though the state-level data do not provide evidence that the states differ in terms of per capita GDP, marriage rates, or divorce rates, the characteristics of those who committed suicide point to differences between individuals residing in adopting and non-adopting states. Specifically, the differences highlight some characteristics that are typically associated with traditional gender role views, such as low educational attainment and low income, in states that have adopted at least one of the policies (Angelucci 2009; Rivera-Rivera et al. 2003).

This pattern is also observed in ENDIREH 2003 where adopting states have higher proportion of women reporting lower educational attainment (see Supplementary Appendix Table 2). ENDIREH data also show that 15% of women who were in a union reported experiencing physical and sexual abuse from their male partner, and more than 30% experienced some sort of emotional abuse. The rates of physical and sexual violence, physical violence, and emotional violence are lower among individuals living in states that have at least one policy in place compared to those residing in non-adopting states, but a test of the difference in means is not statistically significant except for emotional violence. In sum, these statistics suggest that characteristics of individuals residing in policy-adopting states may parallel those of individuals with traditional gender roles.

5 Results

5.1 Main results: impact of policies on female suicide rates

Supplementary Appendix Table 3 presents the results from estimating Eq. (1), which shows that only the Penal Code reform had a statistically significant impact on female suicide rate across the chosen specifications. For brevity, I focus on the impact of the Penal Code Reform in this section and throughout the paper (see Table 2). The first column of Table 2 shows the results of Eq. (1) controlling only for state and year fixed effects. The estimated coefficient of *penalcode* (−0.483) indicates that states that adopted the Penal Code Reform had suicide rates that were 26% lower than those that did not. The specification in column (2) considers two other policies implemented during the period of analysis, Oportunidades and Seguro Popular, targeted at improving family wellbeing. The results in column (2) show that the estimated coefficient of *penalcode* does not really change (it goes from −0.483 to −0.484), suggesting that these two policies do not explain the estimated effect of the Penal Code Reform.

Because the summary statistics suggested that non-adopting states differ across several characteristics compared to adopting states, in column (3) I present the results from the specification that add a new set of controls. The set of controls include the proportion of individuals with a college degree, per capita GDP, and the female-to-male age composition of the population. These variables attempt to capture some differences in the demographic profile of the state population as well as income levels. Controlling for these state-specific-time-varying variables leads to a slightly smaller coefficient, −0.395, that is statistically significant at the 5% level. This estimate represents 22% of the mean female suicide rate over the period of analysis, and suggests that these sociodemographic characteristics matter, but still leads to qualitatively similar conclusion based on the results in column (2). That is, adoption of the Penal Code Reform led to a reduction in female suicide rates. The specification shown in column (4) includes state-specific linear trends to allow for the possibility there are omitted time-invariant linear trends that differ across states. The estimated coefficient of *penalcode* goes from −0.395 to −0.629, and it remains statistically significant at the 5% level. The estimated coefficient represents 34% (−0.629/1.835) of the decline in female suicide rates. I conduct a Wald test to test the significance of

Table 2 Effect of penal code reform on female suicide rates, ages 15–54

	Female suicide rate (1)	Female suicide rate (2)	Female suicide rate (3)	Female suicide rate (4)	Lee lower bound (5)	Lee upper bound (6)
Penal Code Reform	−0.483** (0.201)	−0.484** (0.208)	−0.395** (0.195)	−0.629** (0.309)	−0.628** (0.309)	−0.901** (0.399)
Mean of dependent variable	1.835	1.835	1.835	1.835	1.835	1.835
State and year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Oportunidades and Seguro Popular	No	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	Yes	Yes
State-specific time trends	No	No	No	Yes	Yes	Yes
Observations	390	390	390	390	390	390

Notes Period 1994–2006. Standard errors clustered at state level in parentheses. States of Colima and San Luis Potosi are excluded. The dependent variable is the annual number of suicides per 100,000 females between the ages 15 and 54. "Other Controls" include state GDP per capita, percent of population enrolled in an undergraduate degree program, and male-female ratio for under 14, 15–34, and 35–54 years of age. All regressions include categorical variables indicating the presence of each of the policies—*penal code*, *assistlaw, divorcelaw*, *oportunidades, and seguropopular*— and zero otherwise. Lee bounds are estimated by constructing suicide rates that are adjusted by the estimated impact of each of the policies on marriage and divorce rates as presented in Supplementary Appendix Table 5

Sources Author's analysis from Mexico's Mortality and Vital Statistics (INEGI), Mexico's Statistical Yearbooks (INEGI), Mexico's Ministry of Education (SEP), and Mexico's Population Council (CONAPO)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

the state-specific trends collectively, which results in rejection of the null hypothesis that these state-specific linear trends are zero (F-test = 139.79, p-value = 0.000). Thus, column (4) is considered the preferred specification.[7]

5.2 Did the policies affect union formation or dissolution?

The results so far point to a reduction in female suicide rates due to the adoption of the Penal Code Reform. A concern that arises is whether the estimates are affected by changes in marital formation or marital dissolution associated with the adoption of the Penal Code Reform. That is, the extent to which this reform facilitates separation of certain relationships (e.g., more violent relationships dissolve or better quality unions form), then the estimates would be biased (Rasul 2006). To examine whether these reforms have altered union formation or dissolution I re-estimate columns (1)–(4) of Table 2 but replace the outcome variable by either the divorce rate (number of divorces per 100,000 population), or the marriage rate (number of marriages per 100,000 population) (see Supplementary Appendix Table 5).

The results shown in Panel A of Supplementary Appendix Table 5 suggest that there are no changes in marriage formation associated with the adoption of *penalcode*, as the coefficient is not statistically significant in any of the specifications. On the other hand, when I examine the impact of these policies on divorce rates (Panel B of Supplementary Appendix Table 5), most of the estimated coefficients are negative but the coefficient of *penalcode* is only statistically significant at the 10% level in the preferred specification (column 4). The estimated coefficient represents a 9% reduction from the mean divorce rate. The negative coefficient for *penalcode* on divorce rate seems surprising, as it would suggest that divorce rates are decreasing when the Penal Code Reform facilitates the incarceration of the aggressor. But this negative coefficient, when there is no change in the flow of marriages as shown by the results of Panel B, would suggest that the quality of the unions may be improving vis-à-vis separation of the most violent relationships.

Although the statistical evidence of changes in marital formation and dissolution is weak, I use the estimated coefficients from each of the specifications in column (4) of Supplementary Appendix Table 5 to estimate the upper and lower bounds (following Lee (2009)), as presented in columns (5) and (6) of Table 2. The bounds (-0.628 and -0.901) form a tight range around the estimated coefficient of -0.629, and both the upper and lower bound are statistically significant at the 5% level. This result indicates that the estimated coefficient falls within the estimated bounds even after adjusting for possible selection issues. I also estimate the bounds using the specification in column (3) of Table 2, and results (not shown) leads to a similar conclusion. The bounds (-0.529 and -0.395) form a tight range around the estimate of -0.395, with both estimates being statistically significant at the 5% level. These estimates provide further evidence to the robustness of the results.

[7] I also conduct the same analysis using homicides as the dependent variable but the estimates are imprecisely estimated (see Supplementary Appendix Table 4).

5.3 Dynamic specification

The specification estimated by Eq. (1) includes a single dummy that captures the full adjustment of the policy shock and does not estimate the dynamic response of the policy adoption on the outcome. It is possible that it takes time for information about the Penal Code Reform to be disseminated or for the information to be understood and acted upon. To further investigate the dynamics of the Penal Code Reform, I estimate a (dynamic) specification that includes a set of coefficients that captures the effect of each policy before and after policy adoption (3–4 years before, 2–1 years before, 0 years, 1–2 years after, 3–4 years after and 4+ years after). Figure 1 shows the estimated coefficients under the dynamic setting for the Penal Code Reform only (results for the other two policies are shown in Supplementary Appendix Figs. 2–3). Because the results of a dynamic specification such as this can depend not only on the variation but also on the number of observations in each of the pre- and post-period bins, I consider the following specifications: states that adopted a policy during 2000–2003 (middle-adopting states, Panel A), and states that adopted a policy before 2000 (early-adopting states, Panel B).

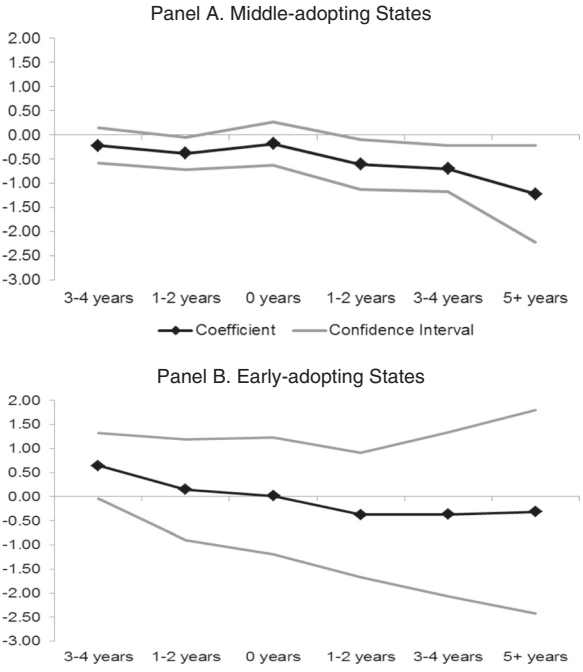

Fig. 1 Impact of Penal Code Reform on Female Suicide Rate before and after Policy Adoption: Dynamic Specifications. *Notes* Figure 1 presents the estimated coefficients and corresponding 95% confidence interval of a dynamic specification where the dependent variable is female suicide rate (per 100,000 women) and the independent variables include a set of dummy variables indicating the time before and after the Penal Code Reform was implemented. Panel A Includes middle-adopting states, which are defined as those states that adopted a policy during 2000–2003. Panel B Includes early-adopting states, which are defined as those states that adopted a policy pre-2000. All the dynamic specification includes year and state fixed effects

Panel A of Fig. 1 shows coefficients that are non-negative and close to zero before the Penal Code Reform was adopted. This result provides some evidence against the possibility that the decline in suicide rates is due to pre-existing trends. The average of the estimated coefficients for 1–2 years, 3–4 years and 5+ years, which are statistically significant at the 5% level, is −0.675. The magnitude of the estimates for the post-policy categories also indicates that the effect of the policy increases over time. Examination of Panel B of Fig. 1 points to a small but negative effect of the Penal Code Reform on suicide rates after the policy was implemented, but the estimates are imprecise. In the following sub-section I discuss additional analyses that can shed light on the robustness of the results.

5.4 Additional robustness checks

The dynamic specification in Fig. 1 suggests a causal interpretation of the estimates since the coefficients before the adoption of the Penal Code Reform were close to zero. I further investigate the validity of the estimates by examining whether the effects are driven by pre-existing trends using lags of suicide rates. Specifically, I regress the contemporaneous policy indicator on the first four lags of the outcome (see Supplementary Appendix Table 6). If higher (lower) suicide rates led to adoption of any of the policies, the coefficient should be positive (negative) and statistically significant. I do this using three different scenarios that estimate the preferred specification with all policies, controls, and state-specific linear trends. In column (1), the dependent variable is "any policy", defined equal to one if the state had any of the three policies in a given year and zero otherwise, and the sample is limited to states that had 4 years of pre-policy adoption data. In columns (2) and (3) the outcome is a dummy set to one if a state had the Penal Code Reform in a given year, and zero otherwise, but in column (3) the sample is limited to states that adopted the policy in 2000–2003, while in column (2) the sample includes states that had 4 years of pre-policy adoption data. The results of column (1) show that except for the fourth lag of the female suicide rate, none of the coefficients is statistically significant. The fourth lag of the female suicide rate is positive and statistically significant at the 10% level. However, because the sign of the potential effect would make it more difficult to detect if the reforms reduced female suicide rates, this does not pose a major threat to the identification. The estimates in column (2) are all positive but none is statistically significant. Finally, the coefficients presented in column (3) continue to show lack of statistical significance and small positive coefficients. These results suggest that adoption of the Penal Code Reform was not preceded by increases or decreases in suicide rates.

I also conduct a falsification test to further examine the robustness of the results (see Table 3). In column (1) of Table 3 I use homicides committed in the workplace against women and men for whom the marital status is unknown. This outcome shares some of the determinants of suicide rates in that 30% of murders have been shown to be murder-suicide (Campbell et al. 2003) with more than 50% of these cases involving a gun in the home. However, I would expect homicides committed against those whose marital status is unknown and where the place of occurrence is work to not be affected by the policies under investigation. In other words, I should find no effect when estimating Eq. (1) but using

Table 3 Robustness checks: effect of penal code reform on various outcomes

	Homicides against women committed at woman's place of work (1)	Suicide rate of single women ages 14 and under (2)	Suicide rate of married women ages 15–54 (3)	Suicide rate of cohabiting women ages 15–54 (4)
Penal Code Reform	−0.047 (0.043)	0.077 (0.133)	−0.413** (0.141)	−0.187 (0.150)
Mean of dependent variable	0.026	0.214	0.615	0.316
State and year fixed effects	Yes	Yes	Yes	Yes
Oportunidades and Seguro Popular	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes
State-specific time trends	Yes	Yes	Yes	Yes
Observations	390	390	390	390

Notes Period 1994–2006. Standard errors clustered at state level in parentheses. States of Colima and San Luis Potosi are excluded. The dependent variable is the annual number of suicides (or homicides) per 100,000 females. Controls include state GDP per capita, percent of population enrolled in an undergraduate degree, and male-female ratio of under 14, 15–34, 35–54. All regressions include dummy variables for *penalcode, assistlaw, divorcelaw, oportunidades, and seguropopular*. Oportunidades and Seguro Popular are dummy variables equal to one if a state implemented Oportunidades or Seguro Popular, respectively, in given year and zero otherwise

Sources Author's analysis from Mexico's Mortality and Vital Statistics (INEGI), Mexico's Statistical Yearbooks (INEGI), Mexico's Ministry of Education (SEP), and Mexico's Population Council (CONAPO)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

homicides committed in the workplace as the outcome. This is precisely what I find. The coefficient of interest is −0.047, and is not statistically significant.

Furthermore, I estimate Eq. (1) separately for the following outcomes: (i) suicide rate of individuals who are 14 and under and are single (column 2); (ii) suicide rate of individuals who are married and are between the ages of 15 and 54 (column 3); (iii) suicide rate among women who are cohabitating (column 4). Recall that the Penal Code Reform includes a definition of domestic violence that does not require individuals to be married. Thus, by selecting individuals 14 and under I minimize capturing suicides that may due to dating violence, and as such I would expect to find no effects on the policy on this outcome. As expected, the results (column 2) show the Penal Code Reform has no effect on the suicide rate of singles 14 and under. On the other hand, I should expect to find a larger effect among married individuals (column 3) than those that are cohabitating (column 4) since separation may be more difficult for those who are legally married. The estimates of the model that uses suicide rates of married individuals show results that are consistent with those of Table 2, namely, adoption of the Penal Code Reform led to a decrease in female suicide rate (representing about 23% of the mean suicide rate), and this effect is significant at the 5% level. The estimated coefficient in column (5) is negative, but it

is not statistically significant indicating that the effects are mostly concentrated among married women.

5.5 Decrease in violence against women as a possible mechanism

The results so far point to a decrease in female suicide rates in states that adopted the Penal Code Reform compared to those that did not, and that effect is concentrated among women who are married. The estimated coefficients are robust to a series of sensitivity checks, including adjusting for potential selection arising from union formation or dissolution. Anderson and Genicot's model predicts that policies that improve women's wellbeing can reduce suicide rates if they reduce family conflict associated with intra-household bargaining. To investigate the plausibility of this channel, I utilize ENDIREH data that include self-reported measures of violence against women. The assumption here is that self-reported measures of violence capture (reported) conflict in the household. As such, if conflict decreases, one would expect the coefficient of interest estimated from Eq. (2) to be negative and statistically significant. The results of this exercise are shown in Table 4, where each column represents one of the five different measures of violence against women reported by the respondents: physical and sexual violence, physical violence, sexual violence, threats, and emotional violence. Recall that in this specification, the treatment group includes all the states that already had implemented a given policy by 2003, the control group includes all the states that had no policy, and each specification includes a set of dummy variables, one per policy considered. In Table 4, however, I only show the estimated coefficient of the Penal Code Reform.

The first column of Table 4 shows that women residing in a state where the Penal Code Reform was implemented reported lower incidence of physical and sexual abuse, and this is statistically significant at the 5% level. The coefficient -0.031 represents a 22% ($=-0.031/0.143$) reduction from the reported incidence of physical and sexual abuse. The estimated coefficients of columns (3) and (4) suggest that physical violence accounts for most of the impact that is observed in column (1); the estimated coefficient of -0.028 shown in column (3) represents 24% of the incidence reported in the survey. Although the coefficient is only marginally significant, the estimated impact shown in column (4) represents 17% of the reported incidence of sexual violence against women in our sample. The estimated coefficients of columns (4) and (5) have the anticipated negative sign but are imprecisely estimated. The results suggest that there was a decrease in the level of violence against women in states that had adopted the Penal Code Reform policy relative to the states that did not, providing evidence that conflict decreased.

6 Discussion and conclusion

In this paper I investigate the impact of three different policies, which took different approaches to address domestic violence, on female suicide rate in Mexico. I hypothesize that these policies can alter suicide rates through their impact on reducing or increasing conflict in the household. I apply a model introduced by Anderson and Genicot (2015), which predicts that policies that reduce (increase) conflict

Table 4 Effect of penal code reform on self-reported measures of domestic violence among married and cohabiting women, ages 15–54

	Physical and sexual (1)	Physical (2)	Sexual (3)	Threat (4)	Emotional (5)
Penal Code Reform	−0.031** (0.012)	−0.028** (0.009)	−0.011* (0.005)	−0.003 (0.003)	−0.040 (0.035)
Mean of dependent variable (%)	0.143	0.115	0.065	0.277	0.293
Oportunidades and Seguro Popular	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes

Notes Period 1994–2006. Standard errors clustered at state level in parentheses. All regressions include individual and household specific characteristics. Individual specific controls include female's age, female's indigenous background, female's schooling level, female's experience of family violence during childhood, partner's age, partner's schooling, partner's experience of family violence during childhood, partner's indigenous background, partner's age at time of union, and family size. Household characteristics include whether the home has dirt or firm floors, household's access to water, electricity, number of rooms, number of bedrooms, and whether there is a kitchen. All specifications include a dummy variable that controls for *penalcode, assistlaw, and divorcelaw*. The control period is defined as those states that had not adopted a policy by 2003. The treatment group includes states that had adopted a policy by 2003. Appendix A provides further details on how the dependent variables are constructed

Source Author's analysis of ENDIREH (INEGI 2003)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

associated with intra-household bargaining can lead to reductions (increases) in the female suicide rate. The results consistently show that only the policy that criminalized domestic violence was associated with reduced female suicide rates.

A natural question that arises is why effects are found for the Penal Code Reform, but not for the Divorce Law or the Assist Law. The evolving family and social dynamics in Mexico makes this a difficult question to answer because during the period of analysis, both domestic violence and divorce were topics that were not culturally or socially well-accepted.[8] Moreover, even though the Divorce Law facilitates legal separation, the process itself requires that the victim go through the judicial process to prove his or her claim, and in some cases may require the victim to first report the act to the authorities, but reporting the act to the authorities is also facilitated by the Penal Code Reform. Similarly, although the Assist Law is meant to provide resources, e.g., information and assistance about managing conflict, its net effect may be captured in other outcomes that are associated with incarcerating or divorcing the aggressor.

Suicide rates represent a costly way of exiting a violent relationship, and a comparison of the results in this paper with other studies reveals that the estimated effect of 22–34% is non-trivial. The estimated effect of criminalizing domestic violence is more than double the 8–16% effect of adopting unilateral divorce laws in the US (Stevenson and Wolfers 2006). Analysis of separate data suggests that conflict in the household, as captured by self-reported measures of violence against women, decreased in states that adopted the Penal Code Reform, which provides

[8] Data shown in Supplementary Appendix Fig. 4 suggests that this may be changing as the number of crimes associated with domestic violence and sexual abuse has increased since the early 2000s.

some evidence of the mechanism through which suicide rates could have decreased. The estimated effect suggests that women residing in states that adopted the Penal Code Reform were 20% less likely to report having experienced physical and sexual abuse by their partners. This estimate represents about half (37–40%) the reduction in violence against women that Angelucci (2009) and Bobonis et al. (2013) estimated to be associated with Oportunidades, and half the effect (27–36%) of facilitating divorce in Spain estimated by Brassiolo (2016). Further research to examine the long-term effects of these policies is needed, but the findings of this paper shed some light on the important role that legal institutions play in improving family wellbeing.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

References

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 poverty, violence, and health: The impact of domestic violence during pregnancy on newborn health. *Journal of Human Resources*, *46*(3), 518–538.

Anderson, S., & Genicot, G. (2015). Suicide and property rights in India. *Journal of Development Economics*, *114*, 64–78.

Angelucci, M. (2009). Love on the rocks: Alcohol abuse and domestic violence in rural Mexico. *The B.E. Journal of Economic Analysis & Policy*, *8*, Article 43.

Bertrand, M., Duflo, E., & Mullainathan, S. (2009). How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics*, *119*, 249–275.

Bloch, F., & Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, *92*(4), 1029–1043.

Bobonis, G. J. (2009). Is the allocation of resources within the household efficient? New evidence from a randomized experiment. *Journal of Political Economy*, *117*(3), 453–503.

Bobonis, G. J., Gonzalez-Brenes, M., & 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.

Bowlus, A. J., & Seitz, S. (2006). Domestic violence, employment, and divorce. *International Economic Review*, *47*, 1113–1149.

Brassiolo, P. (2016). Domestic violence and divorce law: When divorce threats become credible. *Journal of Labor Economics*, doi:10.1086/683666.

Campbell, J. C., Webster, D., & Koziol-McLain, J., et al. (2003). Assessing risk factors for intimate partner homicide. *National Institute of Justice Journal*, *250*, 15–19.

Campos-Vazquez, R. M., & Knox, M. A. (2013). Social protection programs and employment: The case of Mexico's seguro popular program. *Economia Mexicana*, *22*(2), 403–448.

Carrell, S. E., & Hoekstra, M. L. (2010). Externalities in the classroom: How children exposed to domestic violence affect everyone's kids. *American Economic Journal: Applied Economics*, *2*, 211–228.

Castillo-Manzano, R., & Arankowsky-Sandoval, G. (2008). Violencia Intrafamiliar como Factor de Riesgo para Transtorno Depresivo Mayor en Mujeres: Estudio de Casos y Controles. *Revista Biomedica*, *19*, 128–136.

Diette, T.M., Goldsmith, A.H., Hamilton, D., and Darity, W. (2016). Adult happiness and prior traumatic victimization in and out of the household. *Review of Economics of the Household*, doi:10.1007/s11150-016-9334-0.

Di Tella, R., MacCulloch, R. J., & Oswald, A. J. (2003). The macroeconomics of happiness. *The Review of Economics and Statistics*, *85*(4), 809–827.

Eternod Aramburu, M. (2013) Encuesta Nacional sobre la Dinamica de las Relaciones en los Hogares. *ENDIREH 2011*, INMUJERES Presentation to the Comision de Equidad y Genero de la LXII Legislatura de la Camara de Diputados: Investigaciones sobre la Violencia Contra las Mujeres en Mexico, April 26, 2013.

Instituto Nacional de Estadistica y Geografia (INEGI). (2003). *Encuesta Nacional sobre la Dinamica de las Relaciones en los Hogares: ENDIREH 2003*. Mexico: INEGI.

Instituto Nacional de Estadistica y Geografia (INEGI). (2005). *Estadisticas de Intentos de Suicidio y Suicidios*. Mexico: INEGI. Cuaderno Numero 11.

Instituto Nacional de Estadistica y Geografia (INEGI). (2013). *Panorama de Violencia contra las Mujeres en Mexico: ENDIREH 2011*. Mexico: INEGI.

Instituto Nacional de Salud Pública (INSP). (2009). *Encuesta Nacional sobre Violencia contra las Mujeres (ENVIM)*. Cuemavaca, México D.F.: Centro Nacional de Equidad de Genero y Salud Reproductiva.

Lee, D. S. (2009). Training, wages, and sample selection: Estimating sharp bounds on treatment effects. *Review of Economic Studies*, *76*, 1071–1102.

Lundberg, S., & Pollak, R. (1993). Separate spheres bargaining and the marriage market. *Journal of Political Economy*, *101*, 988–1010.

Lundberg, S., & Pollak, R. (1994). Noncooperative bargaining models of marriage. *American Economic Review AEA Papers and Proceedings*, *84*, 132–137.

Lundberg, S., & Pollak, R. (1996). Bargaining and distribution in marriage. *Journal of Economic Perspectives*, *10*, 139–158.

McElroy, M. B., & Horney, M. J. (1981). Nash-bargained household decisions: Toward a generalization of the theory of demand. *International Economic Review*, *22*, 333–349.

Manser, M., & Brown, M. (1980). Marriage and household decision-making: A bargaining analysis. *International Economic Review*, *21*, 31–44.

Pollak, R. A. (2004). An intergenerational model of domestic violence. *Journal of Population Economics*, *17*, 311–329.

Rasul, I. (2006). Marriage markets and divorce laws. *Journal of Law, Economics and Organization*, *22*(1), 30–69.

Rivera-Rivera, L., Lazcano-Ponce, E., Salmeron-Castro, J., & Salazar-Martinez, E., et al. (2003). Prevalence and determinants of male partner violence against Mexican women: A population-based study. *Salud Publica de Mexico*, *46*, 113–122.

Sanchez-Pages, S. (2009). Conflict as a part of the bargaining process. *The Economic Journal*, *119*(359), 1189–1207.

Stevenson, B., & Wolfers, J. (2006). Bargaining in the shadow of the law: Divorce laws and family distress. *Quarterly Journal of Economics*, *121*(1), 267–288.

World Health Organization. (2005). *WHO Multi-country Study on Women's Health and Domestic Violence Against Women*. Geneva: World Health Organization.