

The Effect of Civil Conflict on Domestic Violence: the Case of Peru

Jose V. Gallegos^a

Italo A. Gutierrez^b

Abstract

We investigated the relationship between women's exposure to the civil conflict violence that occurred in Peru between 1980 and 2000 and their probability of being a victim of DV during the years 2005-2008. We find strong positive effects of exposure to civil conflict violence, especially during a woman's late childhood and early teenage years, on the probability of experiencing DV as a wife. Our results also suggest that exposure to the civil conflict affects women's attitudes towards violence: women who were more exposed to civil conflict violence are more likely to report that it is justified for men to beat women for various reasons. Finally, we argue that an implication of the findings in this paper is that civil conflicts may have long lasting effects on increasing the level of DV in the society, not only for generations that were exposed to those conflicts, but for future generations as well.

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^a Doctoral Candidate, Department of Economics, Syracuse University. Address: 110 Eggers Hall – Syracuse, NY 13244, USA
Email: jvgalleg@maxwell.syr.edu; Telephone number: +44 778 604 1084

^b Corresponding author. Doctoral Candidate, Department of Economics, University of Michigan. Address: 611 Tappan Street, Ann Arbor, MI 48109, USA. . Email: italo@umich.edu; Telephone number: +1-734-709-7003

1. Introduction

There is ample evidence that adult domestic violence (DV) is more likely to occur among persons who were exposed to DV as children. Many studies have provided support for the link between growing up in an aggressive family and being a perpetrator of spouse abuse (see for example Caesar 1988 , Barnett, et al. 2005, and Stith, et al. 2000), as well as being a victim of spouse abuse (see for example Cappell and Heiner 1990, Mihalic and Elliott 1997 Simons, et al. 1993 and Stith, et al. 2000).

In contrast, the relationship between exposure to any type of social violence and experience of subsequent DV has been less well-established empirically (Buvinic, et al. 1999). This paper is the first to examine this relationship. Specifically, we study the effect of women's exposure to the civil conflict events that took place in Peru between 1980 and 2000 on their probability of being victims of violence from their partners in the years between 2005 and 2008. We do so by linking pooled cross-sections of the Peruvian Demographic and Health Survey (DHS), which provides information on DV, with a rich database that record, by location and year, the conflict-related events that occurred in Peru.

Our results suggest that exposure to conflict violence, especially during a woman's late childhood and early teenage years, is associated with an increased risk of her becoming a victim of DV by her partner. These results are important for two reasons. Our results also confirm prior evidence in the literature that observing DV in one's childhood home is a strong predictor of experiencing DV as an adult, .Adding these two findings implies that the outbreak of conflict may have long-lasting effects on the overall level of DV in a society, not only for generations that were directly exposed to it, but for future generations as well.

The second section of this paper presents some background information on the civil conflict in Peru during the 1980s and 1990. Section 3 discusses the relevant literature in psychology and economics on social violence and domestic violence and previous studies about the consequences of the civil conflict in Peru. Section 4 describes the data sources. Section 5 discusses the empirical approach and presents the estimation results. Section 6 discusses the validity of the estimates and section 7 presents the conclusions.

2. The Civil Conflict in Peru

According to the Truth and Reconciliation Commission (CVR) in Peru, nearly seventy thousand people died between 1980 and 2000 due to the armed conflict. The conflict started in 1980 when the Peruvian Communist Party – Shining Path (PCP-SL) declared war against the Peruvian State. The first symbolic action that started the conflict was the burning of the election ballots in the district of Chuschi (in the region of Ayacucho, south of Peru) on May 17, 1980 (CVR 2004). Initially, the PCP-SL carried out isolated attacks against public and private property and different propaganda actions in favor of the conflict. The government perceived them as marginal events, concentrated in the poorest regions of the country and perpetrated by a small group of left wing insurgents. However, the violence of the attacks systematically escalated between 1980 and 1982, including the killing of police. The government answered by increasing the severity of its response; and in 1983 the Peruvian army mounted a war against the PCP-SL. During the following years the level of violence and unrest continued to increase. The

PCP-SL created its People Guerrilla Army and continued to attack police posts and military patrols as well as to commit numerous targeted murders. In 1984, the Revolutionary Movement Tupac Amaru (MRTA), a self-proclaimed left-wing group, also joined the war against the State. By 1986, the conflict had spread to other parts of the country including the regions of Puno, Junin, the Huallaga Valley and Lima, the capital. By the early 1990s the violence peaked. The intensity of the attacks in Lima increased, especially in the form of murders and terrorists attacks. By 1991, more than half of the population in Peru lived under a curfew system and with restricted civil rights.

In September 1992 the leader of the PCP-SL, Abimael Guzman, was captured in Lima. In the years that followed the level of violence decreased substantially. A peace agreement was proposed by Guzman in October 1993. Although an agreement was not reached, it was a key factor in the Government propaganda strategy and many militants of the PCP-SL decided to abandon the armed conflict against the State. Additional arrests of important leaders from the PCP-SL and the MRTA further weakened these movements. By the second half of the 90s the conflict had largely subsided with only a few significant isolated violent events taking place.

3. Relevant Literature

The outbreak of civil conflicts is known to have long term effects. Specifically, in the case of Peru, previous research has found effects on schooling, height and earnings capacity. Leon (2009) found that “the average person exposed to the political violence [in Peru] before starting school accumulated about 0.21 less years of education as an adult. This effect is more important for women than for men and for Spanish speakers than for native speakers”. Sanchez (2010) found robust evidence that the conflict had an impact on child nutrition: “a one percent increase in conflict intensity reduced average height-for-age by about 3.0% of the standard deviation”. And Galdo (2010) found that a one standard deviation increase in civil war exposure during the first 36 months of life leads to a four percent fall in adult monthly earnings.

We examine another possible long-term outcome of the civil conflict in Peru. Our empirical investigation is based upon the hypothesis that exposure to social violence (or violence in the community) can increase the likelihood of experiencing violence within households. Although there is no prior direct evidence of this link, there are many studies in the field of psychology that suggest that violence is a learned behavior or asocial norm and would support the prediction that people that were exposed to social violence may be more likely to resort to violence when dealing with their own partners. According to Fowler, et al. (2009), “social cognition theories propose that exposure to community violence normalizes the use of aggressive behavior. As a result, youths learn that violence is an effective method of problem solving, and therefore, are more likely to engage in violent acts themselves” Guerra, et al. (2003) also find that exposure to community violence among urban elementary school children in Chicago increases normative beliefs approving aggression and aggressive fantasies. Schwab-Stone, et al. (1995) find that, among 6th, 8th and 10th graders, exposure to violence is associated with greater willingness to use physical aggression, diminished perception of risk (of risky activities), lower personal expectations, alcohol use and diminished academic achievement. And Scarpa, et al. (2006a) explore the consequences of lifetime community violence exposure and

find that the incidence of depressed mood, post-traumatic stress symptoms, aggressive behavior, and interpersonal problems was higher among individuals who had been exposed to community violence during their early adulthood.

In addition, there is evidence that not only being a victim, but witnessing or hearing about violent events also impacts child development (Fowler, et al. 2009, Scarpa, et al. 2006b). Living in constant fear of violence may also result in severe psychological damage and affect child development. According to Williams (2007) “the negative developmental effects appear more likely if children experience repeated or repetitive 'process' trauma or live in unpredictable climates of fear”. Irritability, interpersonal conflict and anger are mentioned as normal reactions to trauma. This evidence is important for our research because even though we cannot identify in our data direct victims of the armed conflict in Peru, we can measure the level of violence in their area of residence

Within economics, most of the relatively small literature on DV attempts to explain DV based upon non-cooperative household models. Tauchen, et al. (1991) use a non-cooperative household model to include violence as a source of gratification and as an instrument for controlling behavior. They find that the equilibrium in this model depends on family income (see also Farmer and Tiefenthaler 1997). Tauchen, et al. (1991) empirical results suggest that wives' income and other financial resources will have a negative effect on the level of violence within a household. As noted by Pollak (2004), this paper may be the most serious attempt to account for domestic violence within the framework of a bargaining model of marriage. Similarly, Angelucci (2007) examines the effects of exogenous changes in wives' and husband's income on husbands' alcohol abuse and alcohol-induced violence in rural Mexico. She found that wives use higher income to reduce the consumption of goods that lower their utility and that welfare programs may have beneficial effects in reducing alcohol dependence and domestic violence.

The previous papers provide a useful framework to analyze domestic violence. However, they neglect a very important aspect: how domestic violence is transmitted through time and through generations. Although Tauchen and Witte (1995) provide a dynamic analysis, their concern is more focused on a more “short term” dynamics. In the most rigorous attempt so far to fill this gap in the literature Pollak (2004), proposes an intergenerational model of domestic violence. In particular, he focuses on how violent behaviors are transmitted from parents to children. His model is based in three main assumptions: (i) the probability that a husband will be violent depends on whether he grew up in a violent home, (ii) the probability that a wife will remain with a violent husband depends on whether she grew up in a violent home, and (iii) individuals who grew up in violent homes tend to marry individuals who grew up in violent homes.

Pollak (2004) did not provide an empirical test of his predictions. In this paper, we provide evidence that that a woman who grew up in violent homes is more likely to be victim of DV. More interestingly, we extend Pollak (2004) model predictions by incorporating in exposure to social violence. If exposure to violence in the childhood home is associated higher risk of DV in adulthood, it is possible that exposure to violence in the childhood community may also be associated with higher risk of DV in adulthood. We investigated the effects of a woman's exposure during childhood and teenage years to civil-conflict-related violence on her probability of being victim of DV from her partner (either a husband or a cohabiter).

4. Data Description

We use two main sources of data. The first is the Peruvian Demographic and Health Survey (DHS) 2005-2008 (pooled cross-sections). It provides us with a random sample of around 23,000 women between 15 and 49 years of age. Although the DHS may be regarded as a survey that is not specialized in domestic violence, it includes an extensive set of questions to determine if the respondent has ever been a victim of domestic violence. Also, it is perhaps one of the few surveys that collect this information using a random sample. The available information allows us to distinguish between three types of violence: physical, psychological and sexual violence. In our analysis we will use only physical and sexual violence¹

One limitation of the DHS is the absence of information about individuals' income level. The respondent is asked for her participation in the labor force and the type of work she does. However, no information is collected about her income or the amount of time she allocates to her job. In the case of married women, or women in a present or past relationship, they are asked about their partners' or former partners' labor force participation. Still, there are no direct measures of household or respondent income. However, the respondent does report on the presence of a large list of assets in her household. Based on these assets (such as televisions and bicycles, materials used for housing construction, and types of water access and sanitation facilities) a wealth index is calculated using a principal components technique.

Another important limitation of this survey is the lack of complete information about women's migratory history. Thus, in our main analysis we focus our attention on those women who have always lived in their current province of residence (non-migrant women), which is about 52% of the total sample. We do this so that we can construct a reliable measure of exposure to conflict violence. Also, we focus on the incidence of violence, in the last 12 months, among partners only. Thus our estimations only include women who are either married or cohabit with a male. Each sample selection restriction can introduce bias. Women who did not migrate may be different than women who did (for example, also could have been affected differently by the civil conflict). And being married or cohabiting can be endogenous to exposure to civil conflict and to experiencing DV. Each of these potential biases is discussed in section 6. In the end, after combining both sample selection restrictions we ended up with around 30% of the original sample (or around 6,400 observations).

The second source of data is a detailed description on the conflict-related events that occurred between 1980 and 2000 in Peru. These data were collected by the Truth and Reconciliation Commission (TRC) and provide rich information on the location, year of occurrence, damages, victims, and the perpetrator group associated with each event. This allows us to construct exposure intensity indicators at the province level². In general, we define a violent event as an assassination, a kidnap, a sexual assault, or an attack on a public or private facility or institution that occurred in a particular province of Peru. Based upon the timing of the event, the woman's year of birth and

¹ The DHS provides information on whether the husband or partner engages or have engaged in verbal abuse, threats of physical violence or threats about leaving her or withdrawing economic support. Constructing an accurate indicator of psychological violence based on these variables is difficult since it is based on the woman's of what constitutes a verbal abuse or a threat

² Peru is comprised of 24 departments, 194 provinces and 1,818 districts.

province of residence, we constructed measures of intensity of exposure, following the methodology used by Leon (2009)³. Our measures record the total number of civil-conflict-related violent (CV) events that occurred in the province of residence at different periods of each respondent's life: between 0 and 8 years of age (CVtot8), between 9 and 16 years of age (CVtot16), and at age 17 or older (CVtot17+).

Table 1 shows that women in the sample were exposed on average to 20 events related to the civil conflict when they were between 0 and 8 years old. This figure increases to 31 average events when they were between 9 and 16 years old, reaching a maximum of 51 events on average when they were 17 years old or more. Notice that the distribution of exposure seems to be at odds with the fact that the conflict died down after 1990. However, this is just an artifact of the age composition in the sample. The average woman in the sample is 33 years old, which means that the average woman was in their late teenage years when the conflict violence peaked by the end of the 80s. Table 1 also shows that all three variables of exposure have very extreme values indicating that some areas were severely struck by the conflict. In fact, the distribution of all three variables is much skewed to the right (not shown). Finally, Table 1 also shows that 15% of women in the sample have been a victim of DV in the last 12 months.

Table 2 presents a first glance at the potential relation between exposure to conflict violence and the experience of DV. The incidence of women who have experienced DV in the last 12 months reaches 16% among women affected at all by the civil conflict. This incidence decreases to 12% if the woman was not affected. The difference is statistically significant at the 1% level

As mentioned in the previous section, Pollak (2004) work and the literature in psychology suggest that the household environment in which a child grows up can affect their social behavior later on. The DHS asks women about whether their fathers used to batter their mothers. Our data suggests that women affected by the civil conflict were more likely to observe DV at home (46%) than women not affected by the conflict (40%). This also suggests that one of the potential mechanisms through which exposure to conflict violence may affect women's later propensity to experience DV within their own marriage could be by increasing the level of violence in their households when they were young. However, as will be discussed later, the effects of women's exposure to conflict violence on later DV are relatively similar controlling and without controlling for different measures of violence observed in their families while growing up.

5. Empirical strategy and estimation results

The civil conflict struck different geographic areas at different times and with different intensity as was described in the first section of the paper. Graph 1 provides two examples: it depicts the incidence of deaths and reported missing people in the departments of Ayacucho (one of the most affected regions) and Lima. The violence started in Ayacucho, reached its peak by 1984, and slowly declined after that. In contrast, the violence peaked in Lima relatively late, in the early 90s, and declined towards the end of the decade. We use this geographic and temporal variation in the occurrence of conflict-related events to identify the effect of exposure to conflict violence on DV. More specifically, the identification strategy relies on the variation of the timing of the civil-conflict-related events

³ We worked with the non-migrant sample to be able to make these calculations accurately.

within a province (since we include province fixed effects) and of a woman's date of birth, which can be taken as an exogenous event. Moreover, women born in the same province at different times were not only exposed to different amounts of civil conflict events, but they were exposed to them at different points in their lives. We also exploit this additional source of variation since, for instance, exposure as a children or teenager may have different implications than exposure as an adult.

Our reduced form regressions are specified as follows:

$$y_{i,j,t} = \alpha + \beta V_{i,j,t} + \gamma X_i + \delta_j + \phi_t + \tau_{jt} + \epsilon_i \quad (1)$$

In regression (1) i indexes individuals, j indexes provinces and t indexes year of birth. The variable $y_{i,j,t}$ measures whether the woman has been a victim of DV from their partners in the last 12 months (1=yes and 0=no). $V_{i,j,t}$ is a vector that contains the variables measuring exposure to conflict violence (CVtot8, CVtot16 and CVtot17+) Thus, the coefficients in β are the main coefficient of interest. X_i is a vector that contains factors that can affect the occurrence of domestic violence They include: i) the woman's education level, her husband or partners' education level, and the education level of the woman relative to her husband; ii) whether the woman works and the woman's income relative to her partner's income (more, less and, about the same); iii) woman's health indicators (BMI and anemia test); iv) age at which the woman got married or started the union; v) woman's ethnicity; vi) wealth index; vii) number of children five years old or younger. In some specifications we also control for whether women were battered by their fathers or by their mothers or whether their fathers battered their mothers. The term δ_j represents provinces fixed effects and ϕ_t represents year of birth fixed effects.

Two assumptions are embedded in equations (1) that are worth discussing. The first assumption is that the effect of the exposure variables is additive separable. In other words, the effect of the number of civil-conflict events the woman was exposed to between the ages 9 and 16 on her probability of being a victim of DV is independent of the level of exposure before she was 9 years old and of the level of exposure after she was 16 years old. We relax this assumption by also estimating a model with interactions of the three variables of exposure, which results in doubling the number of conflict exposure variables from three to six. The second assumption is to allow the effect of exposure to vary depending on whether it occurred when the women was between 0 and 8 years old, between 9 and 16 years old, and at 17 years old or later. In a previous version of the paper, we tried a more flexible specification, allowing for different effects for exposure between 0-4 years old, between 5-10 years old, between 11-15 years old, between 16-20 years old and at 21 years old or older. The main conclusions are similar to the one presented here. So we preferred the more parsimonious model with only 3 variables (or 6 variables after introducing interactions) rather than the model with 5 variables (or 15 variables after introducing interactions).

Table 3 shows the estimation results of equation (1). The model specification in the first column considers only the main effects of each exposure variable, whereas in the second column it includes also the interactions terms. We draw two main conclusions from Table 3. First, as suggested by the psychology literature, women who grew up being victims of violence (from parents) and especially those who observed violence between their parents at home, are more likely to report being victim of domestic violence and to justify violence as an acceptable behavior. The

sizes of the estimated effects are noticeable. For example, a woman whose father used to batter her mother is 7.9 percentage points more likely to have experienced DV in the last 12 months than a woman who did not have that experience. This effect is important considering that the average incidence of DV in the last 12 months is only 15%.

The second conclusion that we can draw from Table 3 is that exposure to conflict violence, especially during a woman's late childhood and early teenage years (from 9 to 16 years old, variable CVtot16), is associated with an increased probability of her becoming a victim of DV. In fact, the sizes of the effects are also substantial. For example, using the coefficient from column 1, a one-standard-deviation-increase in CVtot16 (equivalent to an additional exposure to 90 events) leads to an increase in the probability of suffering DV in the last 12 months by 2 percentage points. This is a large effect if we consider either the average incidence rate (15%) or the increase in the probability associated to observing her father battering her mother mentioned in the previous paragraph (7.9 percentage points). In other words, the effect of a one standard deviation increase in CVtot16 is about one quarter the effect of having grown up in a household where the father battered the mother.

It is plausible that the additional exposure to conflict violence during the ages 9-16 would have a smaller effect on the probability of later being a victim on DV if the person has been exposed to conflict violence since an earlier age. The results of Table 3 corroborate this hypothesis since the main effect of CVtot16 gets larger when the interaction terms are introduced (column 2). The main effects for CVtot16 in column 2 can be interpreted as the effect of additional exposure to 100 conflict-related events when a woman was between 9 and 16 years old given that she did not were exposed to any conflict violence between the ages of 0 and 8 years old and at age 17 or later. Most of the other covariates included in the model were statistically insignificant, as seen also in Table 3. The probability of being a victim of DV decreases with age and the probability of thinking that husbands beating wives can be justified decreases with education.

Interestingly, women who have relatively more education than their partners are more likely (by three percentage points) to be victims of DV. This association suggests that violence may have an instrumental value for husbands, meaning that it is a means to control the wife's resources⁴.

6. Discussion

The psychology literature has found that women that grew up in violent homes are more likely to be a victim of DV (see for example Stith, et al. 2000). Thus, it is not surprising that women exposed to conflict violence are also more likely to be victims of DV. However, the mechanisms are not entirely clear. In particular, women who grew up in a violent environment may become more aggressive and initiate discussion or fights or become more tolerant towards violence from their partners. Also, assortative mating may exist in the marriage market and thus men who are more violent may tend to marry women who are more tolerant to violence (as suggested also in Pollak 2004). It is difficult

⁴ For example, following the same logic, Bloch and Rao (2002) found that women who pay smaller dowries in Southern India suffer an increased risk of marital violence, as do women who come from richer families. This suggests that husband's may use (the threat of) violence to extract economic resources from the families of richer women.

to disentangle the importance of each of these suggested channels, and of others that may exist as well. However, there is some evidence that support the hypothesis that violence is a learned social norm and those women that grew up in a more violent environment are more likely to support violence as a way to resolve problems. The DHS asked women in what circumstances they believe it is justified that a husband beats his wife (in general, not about their own husbands). They were asked this question before the domestic violence module. Possible reasons for justified beating were: “She goes out without telling the husband” (2.1%), “She neglects the children” (4.4%) , “She argues with husband” (1.4%), “She refuses to have sex with husband” (1%), “She burns the food” (1.4%). In total, 6% of our sample said that beating was justified by any of these reasons. We construct a variable that takes the value of 1 if the woman answered that beating is justified by any of the previous reasons and 0 otherwise and. estimated a model similar to equation (1) but using this variable as the dependant variable. Table 4 shows the estimation results. From column 1 indicates that exposure to conflict events during the ages 9 to 16 years old (CVtot16) have a strong significant effect on the woman’s perception of violence. An additional exposure to 90 events (one standard deviation) during this age period results in an increase of 1.2 percentage points in the probability that a woman thinks that violence from husbands to wives can be justified. This is a strong effect if we benchmark it against the unconditional mean (6%) or against the estimated effect of observing the woman’s father battered her mother (1.9 percentage points). When adding the interactions term (column 2) the main effect of CVtot16 gets larger although it is not statistically significant. However, we reject the hypothesis that the coefficients for all six variables of exposure are jointly equal to zero. To summarize, there is evidence that one mechanism through which exposure to conflict violence affects the probability of being a victim of DV is by changing women’s attitude towards violence.

A threat for the validity of the results is the sample selection restrictions discussed in Section 4: working only with non-migrant women who are married or are cohabiting with a male. Regarding migration, we cannot identify in the DHS the place of residence during childhood and teenage years of women that migrated from somewhere else. Information on the place of residence is crucial for matching the person with the appropriate data on exposure to civil conflicts events. Thus, for our estimation sample, we selected only those women who reported living all of their lives at the place of their current residence (i.e. non-migrant women). By doing this, we reduced our sample size by half. This selection can introduce biases in our estimates, and it is not clear a priori what direction the bias would take. In order to investigate the issue further, Table 5 provides a comparison of means between migrant and non-migrant women. The latter group has on average a *lower* incidence of DV and is less likely to have witnessed DV at home when growing up. Non-migrant women are also more educated and less likely to have lower education attainment than their partners. This suggests that our sample may be comprised of women who are in a better bargaining position within their households. Given that exposure to civil conflicts is likely to be positively related to migration (for example, families displaced by the conflict), then being able to work only with non-migrant women would introduce downward bias in our estimates⁵. However, the bias does not seem to be severe for two reasons.

⁵ To see this, let work with the following sample selection model, where M equals the propensity to migrate and, for facilitating the argument, DV equals a continuous measure of domestic violence. Let’s assume that ϵ_1 and ϵ_2 are jointly normally distributed

First, according to information in the DHS, the most important reasons for migrating (among migrant women) were: family reasons (48%), employment reasons (27%), and educational reasons (11%). Being displaced by insecurity or violence was only mentioned in 0.5% of the cases. Taken at face value, this suggests that at least our selection process is not correlated with the treatment of interest (i.e. exposure to civil-conflict-related violent events), and thus our results would not suffer from this bias. Second, migrant and non-migrant women are different in many characteristics as shown in Table 5. However, these characteristics don't seem to have an important effect on the probability of being a victim of DV, as was previously shown in Table 3, with the exception of the violence observed at home while growing up. Table 6 shows a sensitivity analysis of the robustness of the results when controlling for different covariates. Adding the woman's and partner's characteristic (columns 2 and 3) increases the estimated coefficients for the exposure variables, as was expected, but only slightly. Thus, it is reassuring that even though migrant and non-migrant women are different in many observable aspects, it does not make much difference whether we control for those characteristics or not for our estimates.

Regarding the restriction of being married or cohabiting, Table 7 only slightly shows the results of running an equation like (1) but with two different outcomes: i) a dummy equal to one if the woman is married and zero otherwise and ii) a dummy equal to one if the woman is divorced or separated from a previous partner and zero otherwise. The exposure variables have negative effects on the probability of being married or cohabiting and positive effects on the probability of being divorced or separated. However the effects are not statistically significant even at the 10% level. Moreover, they are also very small. For example, from column 1, an additional exposure to 100 conflict-related events between the ages 8-16 (CVtot16) decreases the probability of being married or cohabiting by only 1.2 percentage points. This is a very small effect (and not statistically significant) given that when evaluated at the average probability of being married or cohabiting (which is 0.86) it implies a percentage change of only 1.4%. Similarly, from column 3, the same change in CVtot16 is associated to an increase of 1.2 percentage points in the probability of being divorced or separated. Although the size of this effect, when evaluated at the average probability of being divorced or separated (0.12), is larger (a change of 9.7%), it is still not statistically significant. Thus, the restriction of observing DV only among women who were married or cohabiting at

with mean zero. From evidence provided in Table 5, the covariance between ϵ_1 and ϵ_2 is positive ($\sigma_{12} > 0$). Also, $\theta > 0$ (displacement effect).

$$M = \theta V + \epsilon_1$$

$$DV = \beta V + \epsilon_2$$

We also assume that a woman migrates if $M > 0$, or equivalently if $\epsilon_1 > -\theta V$. Thus, the estimation sample of non-migrant women would consist of women for whom $\epsilon_1 \leq -\theta V$. It can be shown that $E[M|V, \epsilon_1 \leq -\theta V] = \beta V - \frac{\sigma_{12}}{\sigma_1^2} \frac{\phi(-\theta V/\sigma_1)}{\Phi(-\theta V/\sigma_1)}$, where $\phi(\cdot)$ and $\Phi(\cdot)$ denotes the probability density function and the cumulative density function of the standard normal distribution, respectively. Since $\frac{\phi(-\theta V/\sigma_1)}{\Phi(-\theta V/\sigma_1)}$ is positively correlated with V , ignoring this correction term in the regression would result in a downward bias for the estimate of β .

the time of the interview does not seem to introduce severe bias on the estimated effects of exposure to the civil conflict on the incidence of DV.

As discussed above, the identification strategy of the effects of exposure to civil-conflict-related events on DV relies on comparing women born at different times within the same province. This strategy would be invalid if there were underlying trends (within province) that are not accounted for and that were correlated with the occurrence of civil-conflict events. For example, if the civil conflict violence occurred in times of high social unrest, then our estimated coefficients will be picking up not only the effect of the conflict but also the effect of underlying social violence. Thus our estimates would be biased upwards. In order to test for the severity of this threat, the last column of Table 6 shows the results of estimating equation (1) but adding a set of dummies resulting from the combination of decade of birth and department of residence. They are included to capture trending effects at the department level. After including these dummies, the estimated effects become not only larger but also more statistically significant. This result is coherent with the fact that conflict seems to have started and spread earlier to those regions that were relatively more peaceful and thus had a lower presence of police and military forces (CVR 2004). Thus, if anything, our previous estimates seem to be potentially underestimating rather than overestimating the effects of exposure to conflict violence.

Another threat to the validity of the results is measurement error. On one hand, measuring exposure to civil conflict violence is a complicated task. We use simple but ad hoc measures. Further research could use the available information to produce better measures of exposure. On the other hand, the information on civil-conflict-related events may also be incomplete in a systematic way. Leon (2009) highlights also this point: “One of the drawbacks of using the information gathered by the CVR to measure the intensity of violence is that it comes from a non-random sample. (...) If there is any bias implied from the self-selection into reporting human rights violations to the CVR, it is plausible that the underreporting present in the data is coming from the group that was more affected by violence (...) Further, the testimonies were collected in relatively bigger cities, which implies that for some of the most vulnerable populations -for whom the opportunity cost of reporting the violence were binding- were not able to report human rights violations. This possible selective under reporting of the violence data is likely to underestimate our results (...)” We agree with Leon (2009) that the potential selective underreporting may produce an underestimation of the effects of exposure to civil conflict violence on later DV, since it is likely that those that were affected most and had more severe post-traumatic effects were not reached by the CVR.

7. Conclusions

We find that exposure to conflict violence, especially during a woman’s late childhood and early teenage years, increases her probability of becoming a victim of DV within her marriage or union. In fact, the effects are noticeable: an additional exposure to 90 conflict-related events (one standard deviation) between the ages of 9 and 16 (CVtot16) leads to an increase in the probability of suffering DV in the last 12 months by 2 percentage points. The size of this effect is important if we consider that witnessing the father battering the mother while growing up is

associated with an increase in the probability of being a victim of DV by 7.9 percentage points. The effect is also considerable if we compare it to the average probability of DV in the sample, which is 15%.

In conclusion, this paper suggests that civil conflicts may have long lasting effects, not only on educational attainment and health status as it has been documented in other studies, but also on increasing the level of domestic violence in the society. And since evidence presented here also suggests that women that witness DV at home when children are more likely to experience it within their own marriages, then the breakout of violent civil conflicts can increase the level of DV not only for generations that were directly exposed to those conflicts but for future generations as well. This paper is the first one to explore these long lasting (and potentially intergenerational) effects of civil conflicts on DV. Potentially avenues for further research should include studying the impact of civil conflicts on other forms of violence and aggressive behavior, and evaluating policy alternatives to prevent the intergenerational transmission of violent patterns that this paper suggests can occur.

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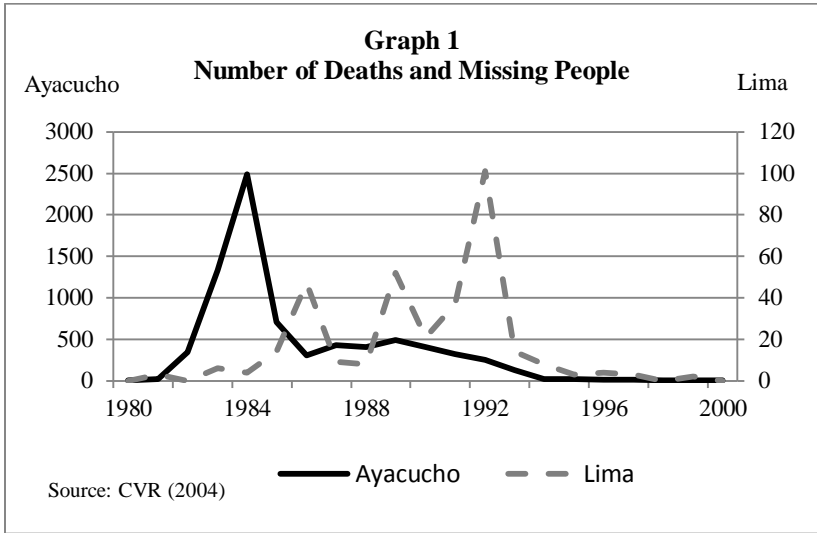


Table 1: Descriptive statistics of outcomes and regressors

Variable	Mean	Std. Dev	Min	Max
<i>Domestic violence against women</i>				
Physical or sexual violence from partner (last 12 months)	0.15	0.36	0.00	1.00
Beating can be justified	0.06	0.24	0.00	1.00
<i>Exposure to Civil Conflict Violence</i>				
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	0.20	0.82	0.00	11.48
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	0.30	0.90	0.00	10.71
Number of events (in hundreds) after 16 years of age (CVtot17+)	0.47	1.22	0.00	12.75
<i>Exposure to Violence at home when child</i>				
Battered by mother	0.04	0.20	0.00	1.00
Battered by father	0.05	0.21	0.00	1.00
Father used to batter mother	0.46	0.50	0.00	1.00
<i>Woman's demographic characteristics</i>				
Age	33.17	8.22	15.00	49.00
Spanish speaker	0.81	0.39	0.00	1.00
No education	0.05	0.21	0.00	1.00
Incomplete primary	0.24	0.42	0.00	1.00
Complete primary	0.12	0.32	0.00	1.00
Incomplete secondary	0.16	0.37	0.00	1.00
Complete secondary	0.21	0.41	0.00	1.00
Higher Education	0.23	0.42	0.00	1.00

Table 1: Descriptive statistics of outcomes and regressors (continued)

Variable	Mean	Std. Dev	Min	Max
<i>Woman's health characteristics</i>				
Body mass index	1,699.40	1,626.91	-999.00	5,420.00
Body mass index missing	0.26	0.44	0.00	1.00
Anemic	0.18	0.39	0.00	1.00
Anemic indicator missing	0.32	0.47	0.00	1.00
<i>Woman's labor market indicator</i>				
Worked last 12 months	0.77	0.42	0.00	1.00
No earnings from work	0.59	0.49	0.00	1.00
Woman earns more than husband	0.06	0.24	0.00	1.00
Woman earns less than husband	0.85	0.36	0.00	1.00
Woman earns about the same as husband	0.08	0.27	0.00	1.00
Other relative income category	0.00	0.05	0.00	1.00
Missing information on woman's income	0.01	0.10	0.00	1.00

Table 1: Descriptive statistics of outcomes and regressors (continued)

Variable	Mean	Std. Dev	Min	Max
<i>Partner's education</i>				
Woman less educated than him	0.34	0.48	0.00	1.00
Woman more educated than him	0.17	0.37	0.00	1.00
Relative education missing	0.00	0.03	0.00	1.00
No education	0.01	0.11	0.00	1.00
Incomplete primary	0.21	0.41	0.00	1.00
Complete primary	0.09	0.28	0.00	1.00
Incomplete secondary	0.16	0.37	0.00	1.00
Complete secondary	0.28	0.45	0.00	1.00
Higher Education	0.25	0.43	0.00	1.00
<i>Households characteristics</i>				
Number of children less than 5 years old	0.83	0.82	0.00	5.00
Wealth index	17,276.48	94,472.57	-	149,022.00 240,447.00
<i>Marriage information</i>				
Years of marriage	12.74	8.06	0.00	36.00
Age at marriage	20.01	4.60	11.00	44.00

Source: DHS Peru

Table 2: Comparison of means by exposure status

Variable	Exposed to Civil War Violence?		t-statistic of means difference
	No	Yes	
<i>Domestic violence against women</i>			
Physical or sexual violence from partner (last 12 months)	0.11	0.16	-3.32
Beating can be justified	0.06	0.06	0.111
<i>Exposure to Violence at home when child</i>			
Battered by mother	0.04	0.04	-0.23
Battered by father	0.05	0.05	0.14
Father used to batter mother	0.41	0.46	-2.87
<i>Woman's demographic characteristics</i>			
Age	33.18	33.17	0.03
Spanish speaker	0.86	0.80	3.98
No education	0.05	0.05	0.14
Incomplete primary	0.25	0.23	1.29
Complete primary	0.14	0.12	1.88
Incomplete secondary	0.14	0.16	-2.13
Complete secondary	0.20	0.21	-0.42
Higher Education	0.22	0.23	-0.56

Table 2: Comparison of means by exposure status (continued)

Variable	Exposed to Civil War Violence?		t-statistic of means difference
	No	Yes	
<i>Woman's health characteristics</i>			
Body mass index	1842.46	1677.33	2.77
Body mass index missing	0.22	0.26	-2.55
Anemic	0.20	0.18	1.40
Anemic indicator missing	0.29	0.32	-1.98
<i>Woman's labor market indicator</i>			
Worked last 12 months	0.74	0.77	-1.62
No earnings from work	0.64	0.58	3.01
Woman earns more than husband	0.05	0.06	-1.40
Woman earns less than husband	0.85	0.84	0.82
Woman earns about the same as husband	0.08	0.08	0.26
Other relative income category	0.00	0.00	-0.98
Missing information on woman's income	0.01	0.01	0.18
<i>Partner's education</i>			
Woman less educated than him	0.35	0.34	0.54
Woman more educated than him	0.16	0.17	-0.12
Relative education missing	0.00	0.00	-0.88
No education	0.01	0.01	0.33
Incomplete primary	0.21	0.21	-0.27
Complete primary	0.10	0.09	1.17
Incomplete secondary	0.16	0.16	-0.09
Complete secondary	0.28	0.28	0.19
Higher Education	0.24	0.25	-0.65

Table 2: Comparison of means by exposure status (continued)

Variable	Exposed to Civil War Violence?		t-statistic of means difference
	No	Yes	
<i>Households characteristics</i>			
Number of household members less than 5 years old	0.75	0.85	0.19
Wealth index	18876.54	17029.64	-3.37
<i>Marriage information</i>			
Years of marriage	12.67	12.76	-0.30
Age at marriage	20.08	20.00	0.49

Source: DHS Peru

Table 3: Regression Results - Effect of exposure to Conflict Violence on probability of being victim of Domestic Violence

	Outcome: Victim of DV in last 12 months (1=yes; 0=no)	
	Main effects only (1)	Main effects and interactions (2)
<i>Exposure to Civil Conflict Violence</i>		
<i>A. Main Effects</i>		
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	0.018** (0.009)	0.013 (0.011)
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	0.022** (0.010)	0.031* (0.016)
Number of events (in hundreds) after 16 years of age (CVtot17+)	0.020** (0.009)	0.021** (0.010)
<i>B. Interactions</i>		
CVtot8*CVtot16		0.003 (0.006)
CVtot8*CVtot17+		-0.068 (0.072)
CVtot16*CVtot17+		-0.003 (0.002)
<i>Exposure to Violence at home when child</i>		
Battered by mother	0.068** (0.032)	0.068** (0.032)
Battered by father	0.061* (0.031)	0.061* (0.031)
Father used to batter mother	0.079*** (0.009)	0.079*** (0.009)

Notes: Standard errors are clustered at the province level. Each regression includes controls for province dummies and year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 3: Regression Results - Effect of exposure to Conflict Violence on probability of being victim of Domestic Violence (continued)

	Outcome: Victim of DV in last 12 months (1=yes; 0=no)	
	Main effects only	Main effects and interactions
	(1)	(2)
<i>Woman's demographic characteristics</i>		
Age	-0.003 (0.010)	-0.003 (0.010)
Spanish speaker	0.009 (0.027)	0.010 (0.027)
No education	0.028 (0.051)	0.027 (0.051)
Incomplete primary	0.035 (0.041)	0.035 (0.041)
Complete primary	0.017 (0.036)	0.017 (0.036)
Incomplete secondary	0.034 (0.029)	0.034 (0.029)
Complete secondary	0.025 (0.020)	0.025 (0.021)
<i>Woman's labor market indicator</i>		
Worked last 12 months	-0.002 (0.013)	-0.002 (0.013)
No earnings from work	-0.024 (0.016)	-0.024 (0.016)
Woman earns more than husband	0.000 (0.024)	0.000 (0.024)
Woman earns about the same as husband	-0.029 (0.018)	-0.028 (0.018)
Other relative income category	0.119 (0.105)	0.119 (0.105)
Missing information on woman's income	-0.023 (0.038)	-0.023 (0.039)

Notes: Standard errors are clustered at the province level. Each regression includes controls for province dummies and year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 3: Regression Results - Effect of exposure to Conflict Violence on probability of being victim of Domestic Violence (continued)

	Outcome: Victim of DV in last 12 months (1=yes; 0=no)	
	Main effects only	Main effects and interactions
	(1)	(2)
<i>Partner's education</i>		
Woman less educated than him	-0.013 (0.018)	-0.013 (0.018)
Woman more educated than him	0.032* (0.019)	0.032* (0.019)
Relative education missing	-0.039 (0.187)	-0.040 (0.187)
No education	-0.055 (0.056)	-0.056 (0.056)
Incomplete primary	-0.016 (0.038)	-0.016 (0.038)
Complete primary	-0.035 (0.036)	-0.034 (0.036)
Incomplete secondary	-0.002 (0.028)	-0.001 (0.028)
Complete secondary	0.001 (0.018)	0.001 (0.018)
<i>Woman's health characteristics</i>		
Body mass index	-0.000* (0.000)	-0.000* (0.000)
Body mass index missing	-0.059 (0.043)	-0.060 (0.043)
Anemic	-0.000 (0.012)	-0.000 (0.012)
Anemic indicator missing	-0.035* (0.018)	-0.035* (0.018)

Notes: Standard errors are clustered at the province level. Each regression includes controls for province dummies and year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 3: Regression Results - Effect of exposure to Conflict Violence on probability of being victim of Domestic Violence (continued)

	Outcome: Victim of DV in last 12 months (1=yes; 0=no)	
	Main effects only (1)	Main effects and interactions (2)
<i>Households characteristics</i>		
# of children less than 5 years old	0.004 (0.006)	0.004 (0.006)
Wealth index (standardized values)	-0.000 (0.000)	-0.000 (0.000)
<i>Marriage information</i>		
Years of marriage	0.000 (0.009)	0.000 (0.009)
Age at marriage	-0.001 (0.009)	-0.001 (0.009)
Observations	6,442	6,442
R-squared	0.034	0.034

Notes: Standard errors are clustered at the province level. Each regression includes controls for province dummies and year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 4: Regression Results - Effect of exposure to Conflict Violence on attitudes towards violence

	Outcome: Can husbands beating wives be justified? (1=yes; 0=no)	
	Main effects only	Main effects and interactions
	(1)	(2)
<i>Exposure to Civil Conflict Violence</i>		
<i>A. Main Effects</i>		
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	-0.002 (0.008)	-0.010 (0.008)
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	0.014*** (0.005)	0.012 (0.012)
Number of events (in hundreds) after 16 years of age (CVtot17+)	0.006 (0.005)	0.004 (0.007)
<i>B. Interactions</i>		
CVtot8*CVtot16		0.003 (0.003)
CVtot8*CVtot17+		-0.026* (0.014)
CVtot16*CVtot17+		-0.001 (0.004)
<i>Exposure to Violence at home when child</i>		
Battered by mother	-0.011 (0.015)	-0.011 (0.015)
Battered by father	-0.009 (0.015)	-0.009 (0.015)
Father used to batter mother	0.019*** (0.007)	0.019*** (0.007)

Notes: Standard errors are clustered at the province level. Each regression includes controls for: i) women and their partners' education level; ii) whether the woman works and their income relative to their partners' income; iii) women health indicators; iv) age at which the woman got married or started cohabiting; v) woman's ethnicity; vi) wealth index; vii) number of children five years old or younger, viii) province dummies and ix) year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 5: Comparison of means by migration status

Variable	Migrants	Non-migrants	t-statistic of means difference
<i>Domestic violence against women</i>			
Physical or sexual violence from partner (last 12 months)	0.17	0.15	4.35
Beating can be justified	0.06	0.06	-0.06
<i>Exposure to Violence at home when child</i>			
Battered by mother	0.04	0.04	0.65
Battered by father	0.05	0.05	1.43
Father used to batter mother	0.51	0.46	7.46
<i>Woman's demographic characteristics</i>			
Age	33.69	33.26	3.46
Spanish speaker	0.90	0.79	21.33
No education	0.05	0.06	-2.45
Incomplete primary	0.27	0.25	3.69
Complete primary	0.12	0.12	1.05
Incomplete secondary	0.17	0.16	2.90
Complete secondary	0.19	0.20	-2.06
Higher Education	0.19	0.22	-4.14
<i>Woman's health characteristics</i>			
Body mass index	1305.20	1276.49	1.07
Body mass index missing	0.37	0.37	-0.46
Anemic	0.16	0.16	1.34
Anemic indicator missing	0.41	0.43	-1.59

Source: DHS Peru

Table 5: Comparison of means by migration status (continued)

Variable	Migrants	Non-migrants	t-statistic of means difference
<i>Woman's labor market indicator</i>			
Worked last 12 months	0.74	0.77	-4.28
No earnings from work	0.55	0.60	-5.55
Woman earns more than husband	0.05	0.05	0.46
Woman earns less than husband	0.80	0.81	-2.61
Woman earns about the same as husband	0.07	0.07	1.48
Other relative income category	0.00	0.00	0.68
Missing information on woman's income	0.08	0.07	2.00
<i>Partner's education</i>			
Woman less educated than him	0.39	0.35	5.58
Woman more educated than him	0.15	0.16	-0.74
Relative education missing	0.00	0.00	1.67
No education	0.01	0.01	-1.04
Incomplete primary	0.21	0.22	-1.29
Complete primary	0.09	0.09	-0.16
Incomplete secondary	0.17	0.16	0.95
Complete secondary	0.28	0.27	0.67
Higher Education	0.24	0.24	-0.0359
<i>Households characteristics</i>			
Number of household members less than 5 years old	0.76	0.83	-5.73
Wealth index	21024.98	12741.28	6.09
<i>Marriage information</i>			
Years of marriage	13.40	12.89	4.19
Age at marriage	19.85	19.95	-1.40

Source: DHS Peru

Table 6: Sensitivity Analysis

	Outcome: Victim of DV in last 12 months (1=yes; 0=no)			
	(1)	(2)	(3)	(4)
A. Main effects only				
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	0.015 (0.009)	0.018** (0.009)	0.018** (0.009)	0.024** (0.011)
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	0.020* (0.011)	0.021* (0.011)	0.022** (0.010)	0.030*** (0.011)
Number of events (in hundreds) after 16 years of age (CVtot17+)	0.017* (0.010)	0.019** (0.010)	0.020** (0.009)	0.022** (0.010)
Constant	0.159 (0.102)	0.110 (0.093)	0.190 (0.120)	0.338 (0.209)
<i>R-squared</i>	<i>0.011</i>	<i>0.029</i>	<i>0.034</i>	<i>0.046</i>
B. Main effects and interactions				
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	0.009 (0.010)	0.014 (0.010)	0.013 (0.011)	0.023** (0.011)
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	0.027 (0.017)	0.029* (0.016)	0.031* (0.016)	0.044*** (0.016)
Number of events (in hundreds) after 16 years of age (CVtot17+)	0.016 (0.011)	0.019* (0.010)	0.021** (0.010)	0.024** (0.011)
CVtot8*CVtot16	0.004 (0.006)	0.003 (0.006)	0.003 (0.006)	0.002 (0.005)
CVtot8*CVtot17+	-0.071 (0.074)	-0.069 (0.071)	-0.068 (0.072)	-0.069 (0.070)
CVtot16*CVtot17+	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.004 (0.002)
Constant	0.161 (0.102)	0.111 (0.092)	0.192 (0.120)	0.301 (0.204)
<i>R-squared</i>	<i>0.011</i>	<i>0.029</i>	<i>0.034</i>	<i>0.046</i>
Observations	6,442	6,442	6,442	6,442
Year of birth dummies	Yes	Yes	Yes	Yes
Measures of violence at home while growing up	No	Yes	Yes	Yes
Rest of covariates	No	No	Yes	Yes
Interaction decade of birth and department of residence dummies	No	No	No	Yes

Notes: Standard errors are clustered at the province level. *** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.

Table 7: Regression Results - Effect of exposure to Conflict Violence on probability of Marriage/Cohabitation and on probability of Divorce/Separation

	Outcome: Married or Cohabiting (1=yes; 0=no)		Outcome: Divorced or separated (1=yes; 0=no)	
	Main effects only (1)	Main effects and interactions (2)	Main effects only (1)	Main effects and interactions (2)
<i>Exposure to Civil Conflict Violence</i>				
<i>A. Main Effects</i>				
Number of events (in hundreds) between 0 and 8 years old (CVtot8)	-0.007 (0.009)	-0.008 (0.012)	0.008 (0.009)	0.012 (0.014)
Number of events (in hundreds) between 9 and 16 years old (CVtot16)	-0.012 (0.008)	-0.006 (0.010)	0.012 (0.008)	0.009 (0.015)
Number of events (in hundreds) after 16 years of age (CVtot17+)	-0.005 (0.011)	-0.004 (0.011)	0.002 (0.012)	0.001 (0.014)
<i>B. Interactions</i>				
CVtot8*CVtot16		-0.001 (0.004)		-0.000 (0.004)
CVtot8*CVtot17+		0.012 (0.013)		-0.009 (0.011)
CVtot16*CVtot17+		-0.003 (0.002)		0.003 (0.003)
<i>Exposure to Violence at home when child</i>				
Battered by mother	0.006 (0.015)	0.006 (0.016)	-0.006 (0.016)	-0.006 (0.016)
Battered by father	-0.017 (0.015)	-0.017 (0.015)	0.018 (0.015)	0.019 (0.015)
Father used to batter mother	-0.005 (0.005)	-0.005 (0.005)	0.005 (0.005)	0.005 (0.005)

Notes: Standard errors are clustered at the province level. Each regression includes controls for: i) women and their partners' education level; ii) whether the woman works and their income relative to their partners' income; iii) women health indicators; iv) age at which the woman got married or started cohabiting; v) woman's ethnicity; vi) wealth index; vii) number of children five years old or younger, viii) province dummies and ix) year of birth dummies.

*** denotes statistical significance at 1% level; ** denotes statistical significance at 5% level; * denotes statistical significance at 10% level.