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# ABSTRACT

# Intimate Partner Violence and the Business Cycle

We examine the impact of business cycle variation on intimate partner violence using representative data from thirty one developing countries, through 2005 to 2016. We distinguish male from female unemployment rates, identifying the influence of each conditional upon the other. We find that a one percent increase in the male unemployment rate increases the incidence of physical violence against women by 0.50 percentage points, or 2.75 percent. This is consistent with the financial and psychological stress generated by unemployment. Increases in female unemployment rates (corresponding to decreases in women's employment opportunities), conditional upon rates of male unemployment *reduce* the incidence of violence; a one percent increase being associated with a decrease in the probability of victimization of 0.52 percentage points, or 2.87 percent. This is consistent with 'male backlash'. These patterns of behaviour are stronger among better educated women and weaker among women who have had at least one son.

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# 1. Introduction

Violence against women is increasingly being recognised as an important part of the development agenda (WHO 2014, Michau et al. 2015, UN Women 2015a). While there were no targets for violence against women in the Millennium Development Goals, the new Sustainable Development Goals explicitly call for the "elimination of all forms of violence against women and girls" (UN, 2015). Estimates of intimate partner violence (IPV) generated by a major multi-agency effort show that 30% of women have experienced physical and/or sexual violence at the hands of an intimate partner, and this figure is much higher in Central Sub-Saharan Africa (65.64%) and South Asia (41.73%) (Devries et. al. 2013). Evidence of the deleterious implications of IPV for the wellbeing of women and children (Ellsberg et al. 2008, Aizer, 2011, Devries et al. 2013, Rawlings and Siddique, 2014) also make it important to understand its causes. In the last decade, many countries have implemented laws criminalising IPV, but the extent to which such laws are upheld varies hugely (OECD Development Centre, 2014), not least because women are reluctant to report domestic violence to the police.

In this paper, we consider how IPV responds to macroeconomic variation in male and female unemployment rates using comparable data for thirty one developing countries. In particular, we investigate how violence against women responds to improved employment prospects for women. This is important because many interventions in developing countries are designed to increase women's employment. However the direction of any impact is unclear *a priori*. On the one hand, we might expect increased women's employment to be associated with their empowerment and thus lower violence and on the other, it may challenge gender norms leading to increased violence.

Using comparable data from repeated cross-sections of the Demographic and Health Surveys for thirty one countries we find that a 1 percent increase in the male unemployment rate increases the incidence of physical violence against women by 0.50 percentage points (or 2.75 percent) while a one percent increase in female unemployment rates reduces the incidence of violence by 0.52 percentage points (or 2.87 percent). We find these effects to be stronger among better educated women and weaker among women who have had at least one son. These results are robust to a number of checks, including alterations of our measure of business cycle variation and sample composition.

This study makes a number of important contributions to the existing literature. It is the first to contribute estimates on a wide scale, covering thirty one developing countries. Second, in a departure from many earlier isolated studies that document the response of male partner violence to an *individual* woman working (e.g. Bowlus and Seitz, 2006; Chin, 2012; Tertilt and Van den Berg, 2015), it investigates impacts of macroeconomic shocks. These are more likely to be exogenous to violence at the individual level, whereas employment of the individual woman may be the cause *or* the effect of violence. Also, the unemployment rate captures impacts of changes in women's opportunities on all women, including those who do not work. Third, we model male and female unemployment shocks, each conditional upon the other. Since these are correlated with one another but may have different impacts on violence, omitting either one will tend to bias the coefficient on the other. Independent variation in male relative to female unemployment rates may arise for instance because recessions have larger impacts on sectors of the economy that are more intensive in male-labour[1] or there are added worker effects that lead to more women seeking work during recessions (Bhalotra and Umana-Aponte 2015 and references therein). A fourth contribution of this study is that it examines if the impacts of male and female unemployment rates vary by the education of the woman, her individual employment status, whether she has had a son, the number of children, and her religion. Finally, by virtue of focusing on variation in IPV over time, this study differs from studies that explain familial or regional variation in IPV with reference to childhood experiences or the historical shaping of gender norms respectively (Alesina et al. 2016; Tur Prats 2015).

Closely related to our approach are two recent studies, set in the US and the UK respectively. Using demand driven variation in female relative to male wages at the county level in the United States, Aizer (2010) shows that IPV is decreasing in women's relative wages. Anderberg et al. (2016) similarly find that improvements in the relative employment rates of women in the UK are associated with lower rates of IPV, and that male unemployment acts to inhibit IPV. Other studies that similarly highlight the beneficial impacts of women's employment and income for IPV include

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[1] In richer countries manufacturing has tended to be harder hit in recessions and a larger share of men than women are in manufacturing (Eaton et al. 2016). In poorer countries, this is because of the added worker effect whereby (married) women who otherwise may not work seek employment to meet household subsistence needs in recessionary times when their husband's income tends to fall (Bhalotra and Umana Aponte 2015).

Bowlus and Seitz (2006), Tauchen et al. (1991), Farmer and Tiefenthaler (1997) and Pronyk et al. (2006). These findings can be rationalized with reference to a household bargaining model in which better labour market prospects for women relative to men increase their bargaining power by improving their outside options. The higher the threat point of women, the more averse men are to committing violence that may enhance the risk of marital dissolution (Farmer and Tiefenthaler, 1997).[2]

However, in many low and middle income countries, social norms and embedded economic disadvantage decrease women's outside options. Women tend to have weaker property rights and fewer economic opportunities than men and are more likely to be stigmatized by divorce (Agarwal 1994, Bloch and Rao 2002, Anderson and Eswaran, 2009). This limits the extent to which divorce can act as a margin of adjustment and leaves women within marriage in a more vulnerable position even when their economic position improves. In these circumstances, increases in male unemployment could increase domestic violence for any of the following reasons. First, unemployment creates financial stress and this is likely to be stronger in poorer countries, where income levels are closer to subsistence. Second, it reduces the opportunity cost of time (Blattman and Miguel 2010)[3], and increases exposure of the woman to the man if he spends more time at home (Chin, 2002).[4] Third, male unemployment can cause psychological stress and, importantly, this can be exacerbated by improvements in female employment prospects, especially where the male breadwinner stereotype holds. Indeed, this is what we find.

Our findings are corroborated in two studies emerging in parallel with ours, both of which use Spanish data. Alonso-Borrego and Carrasco (2017) find that male employment lowers the risk of

[2] In the UK and the USA, where these two studies are set, the fact that divorce is a real option (and not uncommon) implies endogenous changes in the composition of surviving marriages. In other words, if the most violent partnerships dissolve, IPV will be measured on a lower risk sample. Schaller (2013) and Stevenson and Wolfers (2016) present evidence for the United States that divorce (like marriage) is pro-cyclical. However there is contrasting evidence from the UK, showing that unexpected improvements in financial circumstances lower the risk of divorce (Böheim and Ermish, 2001). If one thinks of divorce as a limiting case for domestic violence, then one might imagine that business cycle variation in divorce proxies business cycle variation in domestic violence. However, the relationship may flip if the costs of divorce are high.

[3] The literature on civil conflict emphasizes the opportunity cost of time as a causal factor. It argues that economic shocks that leave men without jobs leave them vulnerable to being drawn into soldiering (Blattman and Miguel 2010).

[4] The idea that exposure or inadvertent increases in time that the partners spend together increases IPV is analogous to the idea in the wider crime literature that incarceration reduces crime.

physical violence against women, but female employment only lowers it if the male partner is employed. Similarly, Tur Prats (2017) finds that, in areas in which deep-rooted social norms support the male breadwinner stereotype, decreases in female relative to male unemployment increase violence. She rationalizes this result as evidence that cultural identity matters. Although the result is observationally similar, we emphasize that our result derives from barriers to exiting marriage in developing countries.

The next section describes the data we employ including the construction of our intimate partner violence measures and business cycle measures. Section 3 lays out the methodology we adopt to investigate the relationship between intimate partner violence and the business cycle. Section 4 gives our estimation results. Section 5 describes robustness checks, and section 6 provides a discussion and conclusion of our findings.

## 2. Data

We use the Demographic and Health Surveys (DHS) in our analysis. These are large scale, often repeated, cross-sectional household surveys collected in a large number of countries, using standardised questionnaires which are comparable across countries.

### 2.1 Intimate partner violence measure

Since 1998 the DHS has included a standardised domestic violence module which collects information on physical, emotional and sexual abuse that a woman has ever experienced. Since 2005, the DHS also asks women if they experienced any of these three forms of violence in the twelve months preceding the survey date. We analyse reports of abuse in the last twelve months so as to exploit the timing of unemployment shocks towards achieving causal identification of the relationship of interest. The estimation sample includes thirty one and twenty six countries for which physical and sexual violence data are available (respectively), for 2005-2016 (see Table A1). We report estimates for each of physical and sexual violence and their sum. . We do not use emotional

abuse as it is a more subjective measure of abuse. There is substantial variation in the incidence in physical and sexual violence across countries; see Figures 1 and 2.[5]

## 2.2 Business cycle measures

Data on male and female unemployment rates are obtained from the World Development Indicators (WDI), sourced from the ILOSTAT database.[6] Although we have violence measures for the period 2005 to 2016, we use a longer time series going back to 1991 to model the trend in unemployment rates and, thereby, to extract the cyclical component of unemployment using a Hodrik-Prescott Filter (Hodrik and Prescott, 1997).[7] As an alternative, we also compute the year-on-year change in the logarithm of each of the male and female unemployment rates. Figures A1a and A1b plot these variables over time, for all countries in the sample from 2000-2016. Shocks to male and female unemployment are positively correlated as we may expect[8] but the shocks to female unemployment are larger and there is considerable variation in the extent to which the two are related over time (Figures A1c and A1d).

## 3. Methodology

### 3.1 Baseline specification

The baseline equation of interest is:

$$IPV_{ijt-1}^{k} = \alpha + \beta_1 \ln U^f_{ijt-1} + \beta_2 \ln U^m_{ijt-1} + \pi X_{ijt} + \gamma_j + \gamma_t + \varepsilon_{ijt} \qquad (1)$$

The dependent variable, $IPV_{ijt-1}^{k}$ is an indicator for whether a woman i in country j at interview time t experienced intimate partner violence in the last twelve months, indicated by one of the three variables defined earlier. The variables of interest are $\ln U^f_{ijt-1}$ and $\ln U^m_{ijt-1}$ which are de-trended log female and male unemployment in the previous year, respectively. Note that we use the lagged

[5] There is significant coincidence of physical and sexual violence: 19.81 percent of women reported experiencing some form of violence over the last twelve months; of these women, 24.23 percent report both physical and sexual violence. Of the sample of women who reported suffering some form of violence in the last twelve months, 65.81 (9.96) percent reported physical (sexual) violence only.
[6] The ILO estimates are based on either household labour force surveys or population census data, with the restriction that they must be representative of the whole country, with no geographic limitation. More information on the construction of the estimates is given in Bourmpoula et al. (2015).
[7] We use the stata command –tsfilter hp- with a smoothing value of 6.25 which is the recommended value for yearly data. Our results are robust to using instead either 25 or 100 as alternative smoothing parameters.
[8] The correlation (covariance) between the cyclical male and female rates is 0.8463 (0.015) and that of the difference in the log rate is 0.855 (0.0427).

value of de-trended unemployment because surveys conducted in year t query violence in the twelve months up until t, which is contemporaneous with unemployment shocks in t-1. As a robustness check in section 5, we investigate whether results are sensitive to instead if we use the first-difference of log female and male unemployment.

The control variables $X_{ijt}$ in equation (1) include the woman's and her partner's educational levels, her age, and an indicator for whether she resides in an urban location. Country ($\gamma_j$) and year ($\gamma_t$) fixed effects are included; to capture all country-specific factors affecting domestic abuse that are constant over time, and all shocks in a particular year that are common across countries and potentially correlated with both the business cycle and the incidence of domestic violence. We do not include country specific trends in the main specification since unemployment is already de-trended, and we only have multiple years of data for twenty one of the thirty one countries in our sample. However, we check robustness of our results to their inclusion (Section 5). Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. We use OLS, estimating a linear probability model.

### 3.2    Heterogeneity

We investigate heterogeneity in the relationship between domestic violence and the business cycle by estimating the following regressions:

$$IPV_{ijt-1}^k = \alpha + \beta_{11} \ln U^f{}_{ijt-1} + \beta_{12}\left(\ln U^f{}_{ijt-1}\right) \times Z_{ijt} + \beta_{21} \ln U^m{}_{ijt-1} + \beta_{22}\left(\ln U^m{}_{ijt-1}\right)$$
$$\times Z_{ijt} + \tau Z_{ijt} + \pi X_{ijt} + \gamma_j + \gamma_t + \varepsilon_{ijt} \qquad (2)$$

$Z_{ijt}$ is a dummy variable indicating the characteristic by which we test variation in the relationship. First, we investigate differences by the woman's education, possibly the most widely used measure of empowerment. We define this as 1 if her years of education are in the 75th percentile of the country specific distribution of education and 0 if her education falls below the 25th percentile, with intermediate observations removed from the sample). Country-specific education percentiles are in Table A2. In robustness checks discussed in Section 5, we consider alternative measures. The relationship between education and employment among women is often non-linear, especially in poor countries where the least educated women often work in order to make ends meet (e.g.

7

Bhalotra and Umana-Aponte 2015).[9]  We therefore also investigate heterogeneity by whether the woman was employed in the 12 months preceding the survey date. The third characteristic we investigate is whether she has at least one living son. There is some evidence, for instance from India and Pakistan, that women have more control over resources if they have a son (Milazzo 2014; Baranov et al. 2017), and evidence from the United States indicates that shotgun marriages are more likely to happen if the woman is pregnant with a son (Dahl and Moretti 2008). It is also possible that the son may (if sufficiently grown up) help protect his mother. We therefore hypothesize that having a son confers a protective influence against violence toward women (also see Bloch and Rao, 2002). Related to this, we also investigate whether the number of living children the woman had in the year in the year of the survey affects the relationship. This could matter for different reasons. It may suppress the chances that a woman leaves an abusive relationship and thus encourage violence, or it may tame men.

We also investigate moderation of the relationship by the woman's stated son preference in fertility (i.e. the number of sons she desires, relative to the number of daughters, normalizing on fertility). In general, men desire more children than women (Ashraf et al. 2014) and more sons than women (our estimates for India). Our hypothesis is that women with higher stated son preference will have preferences more closely aligned with those of men and that this will reduce conflict. Finally, we investigate whether the relationship is different between Muslim and non-Muslim women, given that social norms restricting women's work outside the home are stronger among Muslims (we confirmed this is the case using the World Values Survey).

## 4. Results

### 4.1    Baseline specification

Estimates of equation (1) show that an increase in male unemployment rates, holding female unemployment constant, is associated with *increase*s in the incidence of physical violence (second row in column III of Panel A, Table 1). In contrast, an increase in female unemployment rates, holding male unemployment constant, is associated with *reduction*s in the incidence of physical violence (first row in column III of Panel A, Table 1). We find similar effects on physical and/or sexual violence

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[9] In our sample, 66.6% of women are in the 75th percentile of the education distribution worked in the last 12 months, compared with 62.6% of women in the 25th percentile.

(Panel C, Table 1), driven by physical violence. The coefficients for sexual violence are of the same sign but are not statistically significant (Panel B, Table 1).

A challenge to identifying causal effects of unemployment on interpersonal violence is potential reverse causality (for example, women subject to violence may be more or less likely to seek employment) or omitted variables (for example, the personality traits of men that lead them to commit IPV may also lead them to be unemployed). As discussed earlier, we mitigate this problem by studying economy-wide unemployment shocks (deviations of unemployment from trend). Our strategy nevertheless falls short of the ideal of using experimental variation, and potential confounders may remain. However, our finding that male and female unemployment shocks have opposing influences on IPV allows us to set aside concerns about all confounders that have same-signed correlations with male and female unemployment rates. It seems plausible that most likely confounders will satisfy this condition.

Holding female unemployment rates constant, a rise in male unemployment relative to trend by one percent is associated with an increase in the probability that a woman is a victim of physical violence by 0.50 percentage points, or an increase of 50 cases per 10,000. This translates to 2.75% of the mean prevalence rate of physical violence in the sample. There is no statistically significant effect on sexual violence.[10] An upswing in female unemployment from trend of one percent is associated with the risks of physical violence decreasing by 0.52 percentage points, or a decrease of 52 cases per 10,000. This translates to 2.86% of the mean prevalence rate of physical violence in the sample. Again, no statistically significant effects are found for sexual violence.[11]

It is striking that the opposing effects of male and female unemployment rates are of a very similar magnitude. Our estimated effects are much larger and, for female employment, of opposite sign to those reported by Anderberg et al. (2016) for the UK; they find that a one percentage point increase in female (male) unemployment in the UK (holding male unemployment constant) is associated with

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[10] Driven by the effects on physical violence, a rise in male unemployment relative to trend by one percent is also associated with an increase in the probability that a woman is a victim of physical and/or sexual violence by 0.53 percentage points, or an increase of 53 cases per 10,000. This translates to 2.66% of the mean prevalence of physical and/or sexual violence in the sample.

[11] A rise in female unemployment from trend by one percent is also associated with the risk of physical and/or sexual violence decreasing by 0.58 percentage points, or a decrease of 58 cases per 10,000. This translates to 2.93% of the mean prevalence of physical and/or sexual violence in the sample.

an *increase* (*decrease*) in risk of experiencing IPV of 0.097 (0.090) percentage points. They motivate their results with a model in which, when women have improved outside options (higher employment prospects), and the possibility of dissolution of the marriage union, men have an incentive to hide their violent nature. However, we argue that social norms in many of the countries in our sample limit the extent to which divorce can act as a margin of for women so that men are less likely to be "tamed" by the threat of divorce.

On the other hand, our results for male and female unemployment are similar to those found by Turs-Prats (2017); she finds that a one percent increase in female (male) unemployment in Spain is associated with a decrease (increase) in risk of experiencing violence by 0.56 (0.37) percentage points, amongst provinces in which local historical gender identity norms prescribed men as main contributors to the household.[12]

In our context, the finding that men react adversely to improvements in women's employment prospects conditional upon their own is consistent with models of 'male-backlash' (Macmillan and Gartner 1999, Akerlof and Kranton, 2000). The most likely explanation is that when men feel traditional gender roles (male breadwinner) being threatened through elevation of women's relative status, they react negatively, attempting to reassert their authority through violence or other means (Schuler et al 1996, Atkinson et al. 2005, Mani 2011, Gagliarducci and Paserman 2012, Gangadharan et al 2015). Whilst a number of recent studies have documented the negative effects of an aversion to improved economic position of women in the household relative to men, these have tended to focus on developed nations (e.g. Bertrand et al. 2015, Alonso-Borrego and Carrasco 2017, Tur-Prats 2017). Our results are therefore important in highlighting the role of changes in relative position in the household in developing country contexts where outside options from marriage (i.e. divorce) can be low.[13]

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[12] When using an IV strategy, Turs-Prats (2017) results are strikingly similar to ours; a one percent increase in female (male) unemployment is associated with an increase in risk of experiencing violence by 0.56 (0.37) percentage points amongst provinces in which local gender identity norms prescribed men as main contributors to the household.

[13] In an extension of the main analysis, we investigated whether IPV today is a function of unemployment rates in the year of marriage. If unemployment in the year of marriage determines selection on the marriage market (i.e. who an individual marries), then it may be the case that unemployment in year of marriage determines IPV-patterns (or power balance) within a marriage. However, we found no statistically significant effects (results available on request).

4.2      Heterogeneity


Estimates of equation (2) reveal that the relationship between male and female unemployment and domestic violence is stronger among women with relatively high levels of education (see Table 4A). For the less educated women in the sample, increases in male unemployment from trend of one percent are associated with an increase in the risk of physical violence of 0.30 percentage points ($\beta_{12}$), with no statistically significant effect on sexual violence. For more educated women, the corresponding effect ($\beta_{12} + \beta_{21}$) is an increase in the risk of physical violence of 0.78 percentage points. We also now find statistically significant effects on sexual and physical and/or sexual violence of 0.18 (column (II)) and 0.55 (column (III)) percentage points respectively. Thus, education of women, instead of insulating them from patriarchy seems instead to make them more threatening to men's position in society. This is consistent with recent work by Erten and Kerskin (2018), who exploit a compulsory schooling reform in Turkey and find that increases in female education in Turkey raise the incidence of psychological violence and financial control behavior against women.

For less educated women, increases in female unemployment rates from trend of one percent are associated with a reduction in the risk of victimization of physical violence, and physical and/or sexual violence of 0.32 and 0.36 percentage points, respectively. In contrast, the estimated effects for high educated women are a reduction of 0.83 percentage points for physical violence, 0.16 percentage points for sexual violence, and 0.96 percentage points for physical and/or sexual violence. Although the interactions with the individual employment status of women are largely not statistically significant (see Table 2A), the results are similar to those for women's education, with marginal impacts of unemployment rates tending to be larger among employed women.

As for having a son, consistent with expectation, we find this is protective. Increases in male unemployment result in smaller increases in IPV for women with a son and although this interaction is not statistically significant (see Table 2B), the interaction with female unemployment, which, on average, reduces IPV, is significant at the 5% level with the expected sign. A fall in the unemployment rate below trend (i.e. an increase in women working) by one percent is associated

with an increase in the probability that a woman without a son is a victim of physical abuse by 0.60 percentage points, or an increase of 60 cases per 10,000; the corresponding effect for a woman with at least one son is 0.5 percentage points or an increase of 50 cases per 10,000.

In line with this we find that the woman's stated son preference in fertility (i.e. the number of sons she desires, relative to the number of daughters, normalizing on fertility) mitigates the effect of employment fluctuations. In particular, the effect of (female) unemployment fluctuations on physical violence against women was diminished by the woman's stated son preference, i.e. desiring more sons seems to protect women against the backlash that increased female employment opportunities initiates (Table A3), although this effect is not statistically significant. We found a small and statistically significant interaction effect between the number of living children a woman has and female unemployment (Table A3), with living children reducing the effect of unemployment on IPV, suggesting that the presence of children tames men. Finally, we found that the coefficients on unemployment were 50-60% smaller for Muslim women for physical violence, and not statistically significant (Table A4). On the other hand, the effect of unemployment on sexual violence is statistically significant for Muslim women, but not Non-Muslim women. We therefore cannot draw any firm conclusions.

## 5. Robustness checks

Here, we discuss robustness of our results to replacing the cyclical component of the logarithm of the two gender specific unemployment rates with the first difference in the logarithms of these rates, inclusion of country-specific trends, sample composition, and alternative measures of heterogeneity in education.

We replaced de-trended log female and male unemployment in equation (1) with the (lagged) first difference in the logarithm of the unemployment rate:

$$DA_{ijt}^{k} = \alpha + \beta_1 \Delta \ln u^f{}_{ijt} + \beta_2 \Delta \ln u^m{}_{ijt} + \pi X_{ijt} + \gamma_j + \gamma_t + \gamma_j t + \varepsilon_{ijt} \qquad (3)$$

The results point in the same direction (see Table 3). Increases in male unemployment raise physical violence against women and increases in female unemployment lower it. In addition, we now find

statistically significant effects of changes in male unemployment on sexual violence (as reported in column (II) of Table 3).

Our findings are also robust to including country-specific trends (Table 4). For physical violence, the coefficient is attenuated but retains significance. Using the original measure of the business cycle (the cyclical component), we continue to find no statistically significant effects of changes in male or female unemployment on sexual violence.

Since 23.3% of our sample of women are Indian and 20.4% Colombian, one concern might be that these countries are driving the observed effects. In fact, we find this is not the case. Figures 3-4, and A2, generalize this, showing the estimated coefficients when we drop one country at a time from the sample, and re-estimate. As may be seen from these figures, our estimates are robust to changes in sample composition.

We investigated two alternative measures of women's education to investigate heterogeneity by this characteristic. The first replaces the dummy variable for whether a woman has education above the 75th percentile with a dummy for whether education is above the 50th percentile. The reference group is women with education less than the 25th percentile, and we omit individuals in the range 25-50th percentile from the analysis. We continue to find that the impact of unemployment on violence is driven by effects on more highly educated women (see Table A5). Next, we investigate including all individuals in the analysis, and specify a set of dummies for whether the woman has education above the 75th percentile, and for whether the woman has education in the interquartile range. The reference group in this case are women with education less than the 25th percentile. All interaction terms are significant, and the sign of the estimated effects is larger for the most educated women (see Table A6). So our finding that changes in violence driven by unemployment become more pronounced the more educated a woman is continues to hold.

## 6.  Discussion and Conclusion

The literature has considered alternative explanations for why men perpetrate violence against women partners. Among these are that men gain self-esteem or an enhanced sense of control from committing violence (Farmer and Tiefenthaler, 1997); that they have strategic motivations, such as

to use violence to extract resources from the woman or her family (Bloch and Rao, 2002); and that violence occurs almost inadvertently in response to emotional cues (Card and Dahl, 2011). Other studies have highlighted psychological drivers of abuse such as a history of childhood trauma, personality and relationship dysfunctionality (Heise and Kotsadam, 2015), or early life exposure to domestic violence (Pollak 2004). Finally, there are studies showing that regional variation in IPV today reflects cultural factors rooted in historical customs (Alesina et al. 2016; Tur Prats 2015).

We used comparable and representative repeated cross-sections of survey data from up to thirty one countries containing women's reports of violence committed against them in the preceding year. We identified a systematic contemporaneous impact of unemployment shocks (deviations of unemployment from trend) on interpersonal violence. Male and female unemployment rates co-vary but nevertheless exhibit considerable independent variation over time. We find that changes in male and female unemployment rates have opposing influences on IPV; these effects are large, at between 2.66 – 2.93% of the mean IPV prevalence rates in the sample. Interpersonal violence is higher when men are more likely to be unemployed and, holding constant male unemployment rates, it is higher if women are more likely to be employed. The finding that male vs female unemployment shocks have diverging impacts on IPV helps disentangle the behavioural mechanisms driving violence.

Our findings contrast sharply with recent results for the US and the UK (Aizer 2010, Anderberg et al. 2015) where IPV has been seen to be decreasing in the gender wage gap and in increased employment rates of women respectively. These are countries in which women's labour force participation has risen considerably in past decades and stabilized, weakening the male breadwinner norm. In developing countries, patriarchal norms are much stronger and women's employment is still on the rise, creating a potential clash between economic changes and norms, which may increase the probability of violence.

Our findings highlight that male unemployment and female employment may each generate psychic responses over and above income effects. The finding that increases in male unemployment rates lead to increased violence against women is consistent with both the stresses of financial insecurity and psychic costs of unemployment (the latter being larger for men who grow up with the expectation that they will be the providers). However the finding that women are more likely to be subject to violence from a partner when employment prospects for women improve is almost

certainly a psychic response (i.e. since improved employment chances for women reduce financial stress, we can reject that the income channel is at play for this result) [14] Our findings also reject the 'exposure reduction' model which predicts increasing violence in response to both male and female unemployment, explained by unemployment increasing time spent together, which is assumed to increase the potential for conflict (Dugan et al. 1999, Yoo-Mi Chin (2012)).

Overall, the evidence we present suggests that the standard bargaining model, which emphasizes how the power balance within the household is sensitive to outside options may be of more limited empirical significance in poorer countries where the outside option is not readily exercised because of social constraints. In her seminal analysis of IPV in the United States, Aizer (2010) challenges the backlash hypothesis as being problematic because it "ignores the individual rationality constraints faced by women in abusive relationships... as their income increases, women are more likely to end the partnership if transfers decline and abuse continues". The evidence is that in many developing countries, women do not have the financial means or the social support to end partnerships. Indeed, a stylized fact concerning IPV on a global scale is that it tends to repeat within a couple, suggesting that across the world, women do not readily leave a relationship once subject to violence (Davis and Taylor 1997; Woodhouse and Dempsey 2016). However the perception (on the part of both men and women) that they *can* may still be effective.

Our results are topical given strong global trends in women's education and, in many parts of the world, in married women's labour force participation. In Latin America, many countries, including Mexico and Brazil, have witnessed large increases (ILO 2016). Although the large increases in married women's work participation in richer countries occurred earlier, there is contemporary business cycle variation in the relative participation rates of men and women. In particular, the recent recession has hit men harder than women, narrowing the gender gap. There is a similar tendency in poorer countries, driven by subsistence targets strengthening the added worker effect. In other words, women who may otherwise not work tend to take work in recessions in order to make up for the decline in male income (Bhalotra and Umana-Aponte 2010).

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[14] Recall that the thought experiment simulated by our regression model is that women's employment prospects change with men's prospects held constant.

A recent UN publication outlining a framework to reduce violence against women suggests a range of potential approaches, including the empowerment of women and the changing of social norms to foster mutual respect between men and women (UN Women, 2015b). Our results show that simply increasing employment opportunities for women, as done by several microcredit programmes in developing countries, may backfire. Future work should look more carefully at whether implementing women's rights across multiple domains including property rights, custodial rights and divorce may better protect against IPV. Community empowerment approaches that attempt to change social norms may generate sustained reductions in IPV (More et al. 2017).

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## Tables and Figures
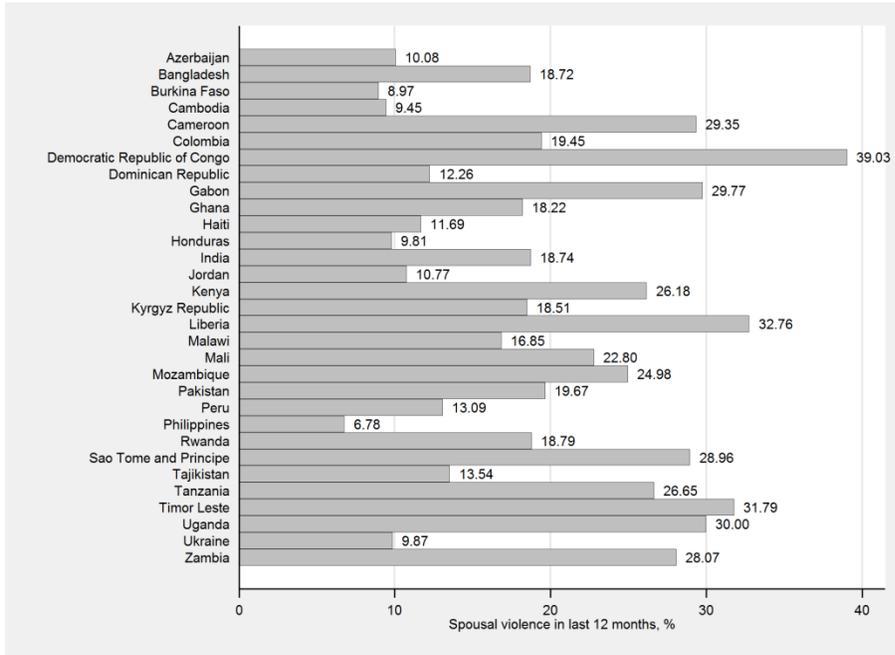


**Figure 1: Incidence of physical violence across countries**
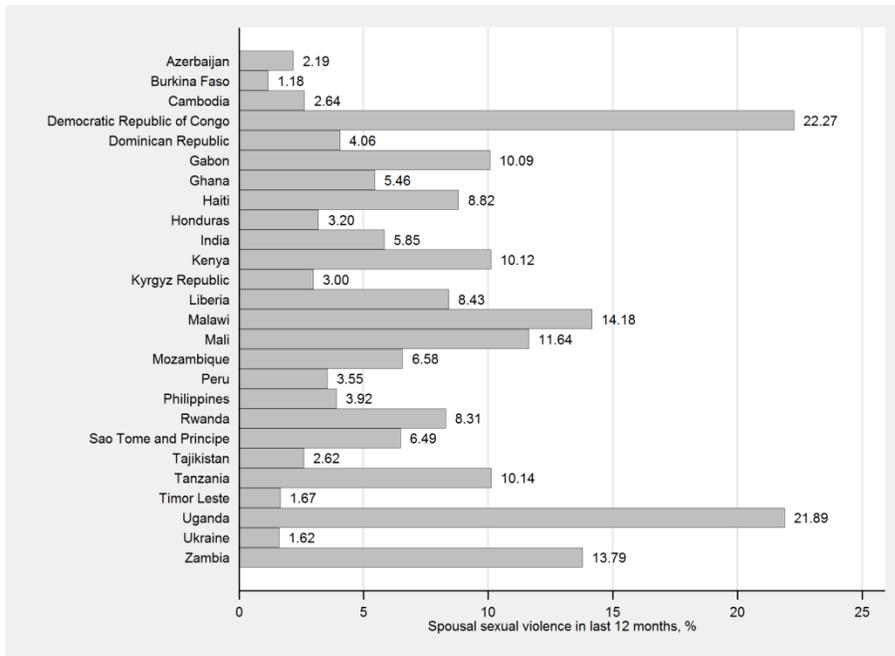


**Figure 2: Incidence of sexual violence across countries**
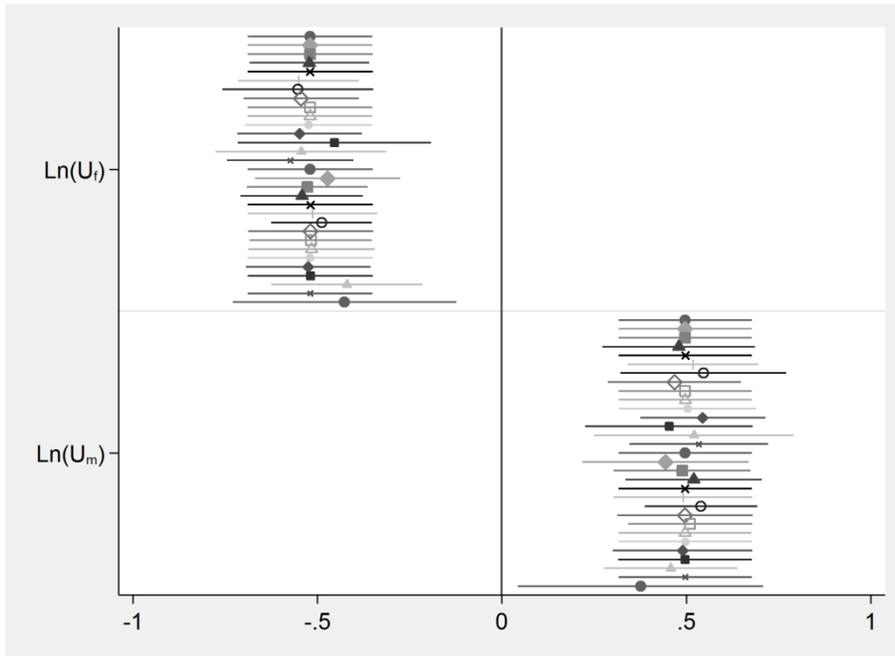
**Figure 3: Variation in estimated coefficients across sample – physical violence**
Notes:
1. Figure shows estimated coefficients, and 95% confidence intervals.
2. Estimations include individual level controls, and country and year fixed effects.
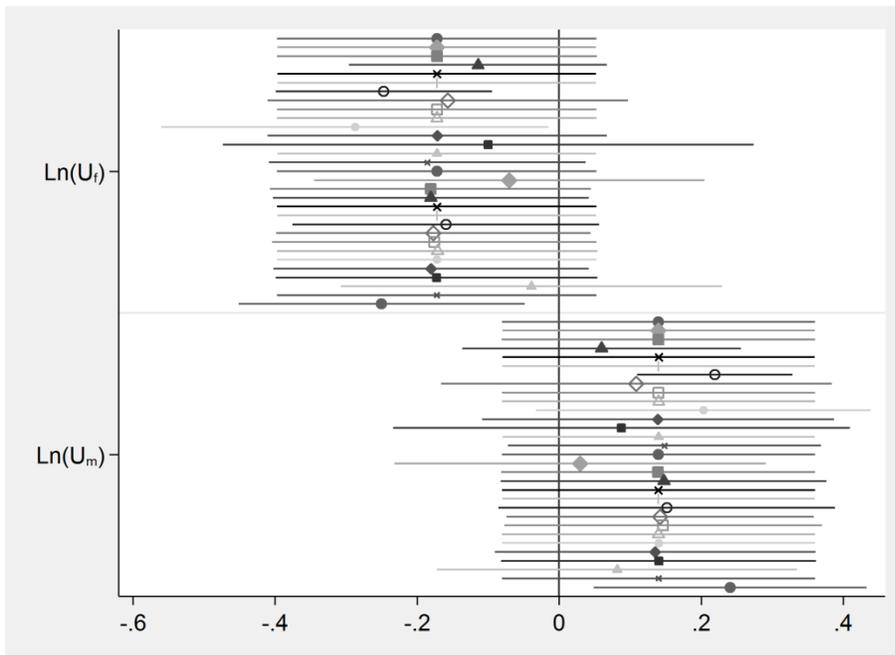


**Figure 4: Variation in estimated coefficients across sample – sexual violence**
Notes:
1. Figure shows estimated coefficients, and 95% confidence intervals.
2. Estimations include individual level controls, and country and year fixed effects.

23

**Table 1: Impact of cyclical fluctuations in male and female unemployment rates on IPV**

|  | (I) | (II) | (III) |
|---|---|---|---|
| **Panel A: Physical Violence** | | | |
| $\ln(U_f)$ | 0.171 | 0.171 | -0.519*** |
|  | (0.148) | (0.148) | (0.083) |
| $\ln(U_m)$ | -0.312** | -0.312** | 0.497*** |
|  | (0.151) | (0.151) | (0.088) |
| Observations | 381729 | 381729 | 348164 |
| Mean Violence | 0.182 | 0.182 | 0.181 |
| Mean ln(female U) | 0.018 | 0.018 | 0.024 |
| Mean ln(male U) | 0.008 | 0.008 | 0.012 |
| **Panel B: Sexual Violence** | | | |
| $\ln(U_f)$ | 0.037 | 0.037 | -0.172 |
|  | (0.126) | (0.126) | (0.109) |
| $\ln(U_m)$ | -0.149 | -0.149 | 0.140 |
|  | (0.112) | (0.112) | (0.107) |
| Observations | 275717 | 275717 | 268172 |
| Mean Violence | 0.068 | 0.068 | 0.068 |
| Mean ln(female U) | 0.021 | 0.021 | 0.023 |
| Mean ln(male U) | 0.002 | 0.002 | 0.003 |
| **Panel C: Any Violence** | | | |
| $\ln(U_f)$ | 0.204 | 0.204 | -0.581*** |
|  | (0.176) | (0.176) | (0.153) |
| $\ln(U_m)$ | -0.401** | -0.401** | 0.527*** |
|  | (0.178) | (0.178) | (0.159) |
| Observations | 274001 | 274001 | 266516 |
| Mean Violence | 0.198 | 0.198 | 0.198 |
| Mean $\ln(U_f)$ | 0.021 | 0.021 | 0.022 |
| Mean $\ln(U_m)$ | 0.002 | 0.002 | 0.003 |
| X controls | N | Y | Y |
| Country and Year FE | N | N | Y |

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of physical violence (Panel A), sexual violence (Panel B) or physical and/or sexual violence (Panel C) over the last twelve months. All estimates are results from estimating equation (1). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location.

## Table 2A: Heterogeneity in the effect of unemployment on violence

| | Woman's education | | | Woman employed in last 12 months | | |
|---|---|---|---|---|---|---|
| | (I) Physical Violence | (II) Sexual Violence | (III) Any Violence | (IV) Physical Violence | (V) Sexual Violence | (VI) Any Violence |
| $Ln(U_f)$ | -0.316*** (0.111) | -0.127 (0.132) | -0.356** (0.170) | -0.551*** (0.110) | -0.145 (0.107) | -0.595*** (0.144) |
| $ln(U_f)*$High Education | -0.509*** (0.114) | -0.163*** (0.036) | -0.603*** (0.101) | | | |
| $Ln(U_f)*$Employed | | | | 0.031 (0.049) | -0.035 (0.026) | 0.038 (0.046) |
| $Ln(U_m)$ | 0.303** (0.126) | 0.074 (0.136) | 0.320* (0.181) | 0.538*** (0.134) | 0.148 (0.102) | 0.569*** (0.158) |
| $Ln(U_m)*$High Education | 0.472*** (0.148) | 0.182*** (0.050) | 0.549*** (0.144) | | | |
| $Ln(U_m)*$Employed | | | | -0.037 (0.076) | -0.012 (0.031) | -0.070 (0.071) |
| High Education | -0.007 (0.011) | -0.001 (0.006) | 0.002 (0.012) | | | |
| Employed | | | | 0.046*** (0.006) | 0.019*** (0.003) | 0.043*** (0.005) |
| Observations | 236331 | 178192 | 177119 | 337722 | 268135 | 266481 |
| X controls | Y | Y | Y | Y | Y | Y |
| Country and Year FE | Y | Y | Y | Y | Y | Y |

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I), (IV) physical (II), (V) sexual or (III), (VI) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (2). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location.. 'High Education' is a dummy variable taking the value one if the woman's education is in the 75th percentile for their country. The control group is women in the 25th percentile or below. Individuals with education between the 25th and 75th percentile are excluded from the analysis. 'Employed' is a dummy variable taking the value one if the woman was employed in the last twelve months.

**Table 2B: Heterogeneity in the effect of unemployment on violence**

|  | Woman has at least one son | | |
|---|---|---|---|
|  | (I) | (II) | (III) |
|  | Physical Violence | Sexual Violence | Any Violence |
| ln(U$_f$) | -0.601*** | -0.149 | -0.649*** |
|  | (0.082) | (0.106) | (0.151) |
| ln(U$_f$)*Sons | 0.102** | -0.028** | 0.089* |
|  | (0.048) | (0.011) | (0.045) |
| ln(U$_m$) | 0.570*** | 0.123 | 0.588*** |
|  | (0.076) | (0.102) | (0.151) |
| ln(U$_f$)*Sons | -0.083 | 0.021 | -0.073 |
|  | (0.061) | (0.014) | (0.060) |
| Has at least one living son | 0.015*** | 0.007*** | 0.014*** |
|  | (0.002) | (0.002) | (0.003) |
| Observations | 348165 | 268173 | 266517 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (2). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location. 'Sons' is a dummy variable taking the value one if the woman has at least one living son.

**Table 3: Use of first difference in the logarithm of the unemployment rate**

| | (I)<br>Physical<br>Violence | (II)<br>Sexual<br>Violence | (III)<br>Any Violence |
|---|---|---|---|
| $\Delta\ln(u_f)$ | 0.181*** | 0.059 | 0.272*** |
| | (0.055) | (0.040) | (0.057) |
| $\Delta\ln(u_m)$ | -0.123*** | -0.061** | -0.203*** |
| | (0.036) | (0.025) | (0.037) |
| Observations | 348165 | 268173 | 266517 |
| | | | |
| Mean Abuse | 0.181 | 0.068 | 0.198 |
| Mean $\Delta\ln(u_f)$ | 0.015 | 0.017 | 0.017 |
| Mean $\Delta\ln(u_m)$ | -0.011 | -0.023 | -0.024 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |
| Country Specific Trends | Y | Y | Y |

Notes:
* $p<0.10$, ** $p<0.05$, *** $p<0.01$. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of that (I) physical (II) sexual or (III) physical and/or sexual violence over the last twelve months. All regressions are results from estimating equation (3). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location.

**Table 4: Robustness of results to inclusion of country-specific trends**

|  | (I) Physical Violence | (II) Sexual Violence | (III) Any Violence |
|---|---|---|---|
| $\ln(U_f)$ | -0.369*** | 0.113 | 0.822 |
|  | (0.051) | (0.420) | (0.666) |
| $\ln(U_m)$ | 0.440*** | -0.108 | -0.550 |
|  | (0.123) | (0.355) | (0.557) |
| Observations | 348164 | 268172 | 266516 |
| Mean Violence | 0.181 | 0.068 | 0.198 |
| Mean $\ln(U_f)$ | 0.024 | 0.023 | 0.022 |
| Mean $\ln(U_m)$ | 0.012 | 0.003 | 0.003 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |

Notes:
* $p<0.10$, ** $p<0.05$, *** $p<0.01$. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All regressions are results from estimating equation (1), with the addition of country-specific trends. Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location.

**Figure A1: Variation in unemployment rate measures over time**
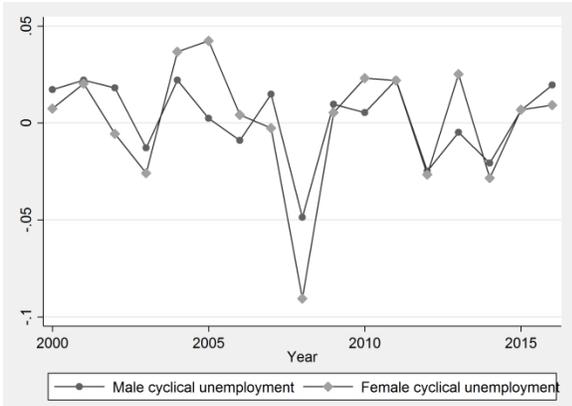


**A: Cyclical log male ($lnU_m$) and female unemployment ($lnU_f$) over time**
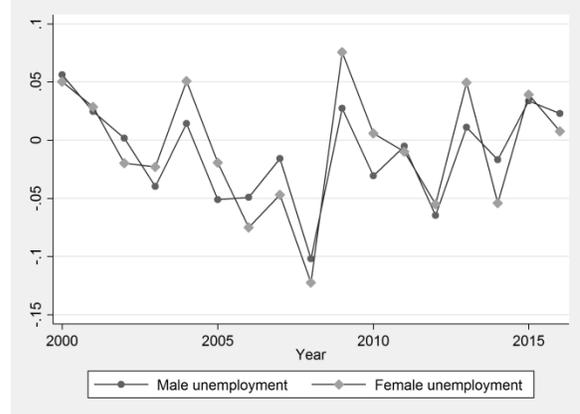


**B: Differenced log male employment, $\Delta ln(u_m)$ and female unemployment $\Delta ln(u_f)$ over time**
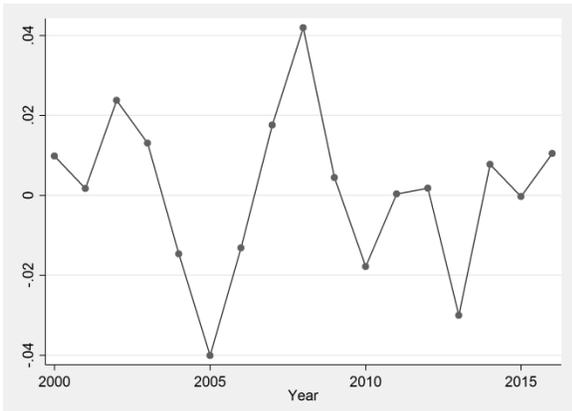


**C: Difference in cyclical log male and female unemployment ($lnU_m - lnU_f$) over time**
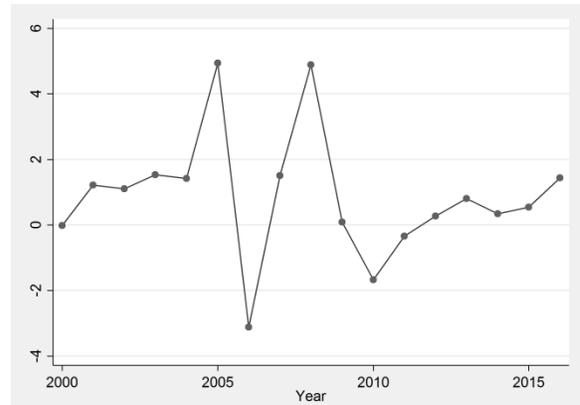


**D: Ratio of cyclical log male to log female unemployment ($\frac{lnU_m}{lnU_f}$) over time**
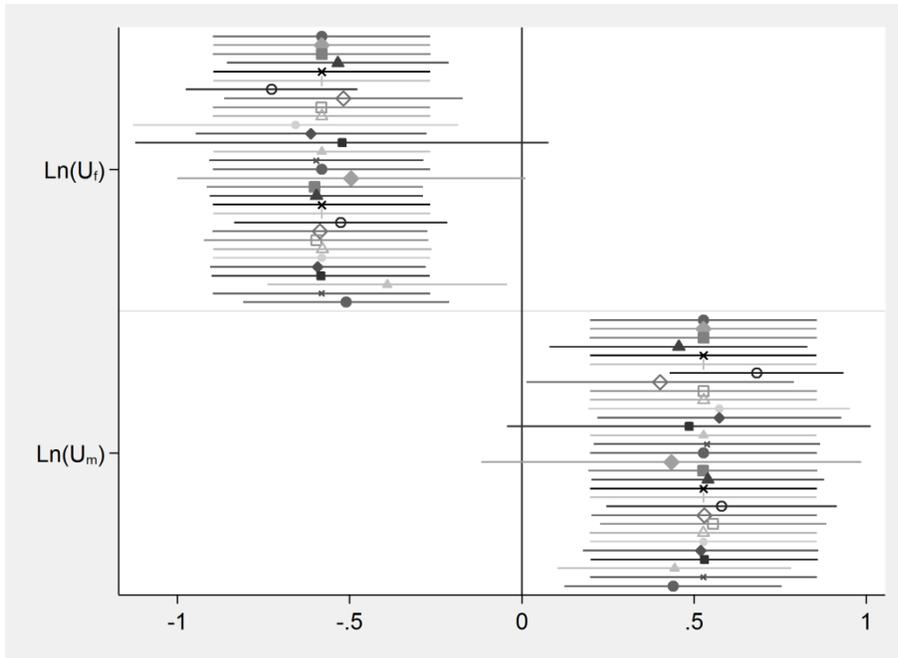
**Figure A2: Variation in estimated coefficients across sample – physical and/or sexual violence**

Notes:
1. Figure shows estimated coefficients, and 95% confidence intervals.
2. Estimations include individual level controls and country and year
fixed effects.

**Table A1: Countries in sample**

| Physical Violence Sample | Sexual Abuse Sample |
|---|---|
| Azerbaijan; 2006 | Azerbaijan; 2006 |
| Bangladesh, 2007 | Burkina Faso; 2010 |
| Burkina Faso; 2010 | Cambodia; 2005, 2006, 2014 |
| Cambodia; 2005, 2006, 2014 | Democratic Republic of Congo; 2007, 2013, 2014 |
| Cameroon, 2011 | Dominican Republic; 2007 , 2013 |
| Colombia 2004, 2005, 2009, 2010 | Gabon; 2012 |
| Democratic Republic of Congo; 2007, 2013, 2014 | Ghana; 2008 |
| Dominican Republic; 2007 , 2013 | Haiti; 2005, 2006, 2012 |
| Gabon; 2012 | Honduras; 2011, 2012 |
| Ghana; 2008 | India; 2005, 2006 |
| Haiti; 2005, 2006, 2012 | Kenya; 2008, 2009, 2014 |
| Honduras; 2011, 2012 | Kyrgyz Republic; 2012 |
| India; 2005, 2006 | Liberia; 2006, 2007 |
| Jordan, 2007, 2012 | Malawi; 2010, 2015, 2016 |
| Kenya; 2008, 2009, 2014 | Mali; 2012, 2013 |
| Kyrgyz Republic; 2012 | Mozambique; 2011 |
| Liberia; 2006, 2007 | Peru;  2010, 2011, 2012 |
| Malawi; 2010, 2015, 2016 | Philippines; 2008 , 2013 |
| Mali; 2012, 2013 | Rwanda; 2014, 2015 |
| Mozambique; 2011 | Sao Tome and Principe; 2008, 2009 |
| Pakistan, 2012, 2013 | Tajikistan; 2012 |
| Peru;  2010, 2011, 2012 | Tanzania; 2009, 2010, 2015, 2016 |
| Philippines; 2008 , 2013 | Timor Leste; 2009, 2010 |
| Rwanda; 2014, 2015 | Uganda; 2006, 2011 |
| Sao Tome and Principe; 2008, 2009 | Ukraine; 2007 |
| Tajikistan; 2012 | Zambia; 2007 , 2013, 2014 |
| Tanzania; 2009, 2010, 2015, 2016 | |
| Timor Leste; 2009, 2010 | |
| Uganda; 2006, 2011 | |
| Ukraine; 2007 | |
| Zambia; 2007 , 2013, 2014 | |

**Table A2: Country-specific 25<sup>th</sup> and 75<sup>th</sup> percentiles of female education**

| Country | 25th percentile | 75th percentile |
|---|---|---|
| Azerbaijan | 10 | 12 |
| Bangladesh | 0 | 7 |
| Burkina Faso | 0 | 2 |
| Cambodia | 1 | 7 |
| Cameroon | 3 | 9 |
| Colombia | 5 | 11 |
| Democratic Republic of Congo | 2 | 9 |
| Dominican Republic | 5 | 12 |
| Gabon | 5 | 9 |
| Ghana | 0 | 9 |
| Haiti | 1 | 8 |
| Honduras | 4 | 10 |
| India | 0 | 10 |
| Jordan | 9 | 14 |
| Kenya | 6 | 10 |
| Kyrgyz Republic | 10 | 14 |
| Liberia | 0 | 6 |
| Malawi | 3 | 8 |
| Mali | 0 | 0 |
| Mozambique | 0 | 7 |
| Pakistan | 0 | 8 |
| Peru | 6 | 11 |
| Philippines | 8 | 12 |
| Rwanda | 4 | 7 |
| Sao Tome and Principe | 4 | 7 |
| Tajikistan | 5 | 8 |
| Tanzania | 5 | 8 |
| Timor Leste | 0 | 13 |
| Uganda | 2 | 7 |
| Ukraine | 11 | 16 |
| Zambia | 5 | 9 |

**Table A3: Heterogeneity in the effect of unemployment on violence**

| | Women's stated son preference | | | Number of living children woman has | | |
|---|---|---|---|---|---|---|
| | (I) Physical Violence | (II) Sexual Violence | (III) Any Violence | (IV) Physical Violence | (V) Sexual Violence | (VI) Any Violence |
| $\ln(U_f)$ | -0.591*** | -0.161 | -0.654** | -0.653*** | -0.164 | -0.715*** |
| | (0.132) | (0.142) | (0.281) | (0.092) | (0.104) | (0.150) |
| $\ln(U_f)$Son Preference | 0.193 | 0.092 | 0.209 | | | |
| | (0.155) | (0.075) | (0.170) | | | |
| $\ln(U_f)$No. of Children | | | | 0.042* | -0.003 | 0.043** |
| | | | | (0.022) | (0.006) | (0.020) |
| $\ln(U_m)$ | 0.545*** | 0.136 | 0.568* | 0.587*** | 0.133 | 0.613*** |
| | (0.142) | (0.142) | (0.312) | (0.086) | (0.100) | (0.148) |
| $\ln(U_m)$Son Preference | -0.138 | -0.122 | -0.150 | | | |
| | (0.162) | (0.078) | (0.174) | | | |
| $\ln(U_m)$No. of Children | | | | -0.026 | 0.003 | -0.026 |
| | | | | (0.025) | (0.007) | (0.024) |
| Son Preference | 0.006 | 0.005 | 0.006 | | | |
| | (0.008) | (0.006) | (0.013) | | | |
| No. of Children | | | | 0.010*** | 0.004*** | 0.010*** |
| | | | | (0.001) | (0.000) | (0.001) |
| Observations | 274669 | 210389 | 209106 | 348165 | 268173 | 266517 |
| X controls | Y | Y | Y | Y | Y | Y |
| Country and Year FE | Y | Y | Y | Y | Y | Y |

Notes:

* $p<0.10$, ** $p<0.05$, *** $p<0.01$. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (2). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location. 'Sons' is a dummy variable taking the value one if the woman has at least one living son.

**Table A4: Differences between Muslim and Non-Muslim respondents**

|  | (I) Physical Violence | (II) Sexual Violence | (III) Any Violence |
|---|---|---|---|
| A: Muslim | | | |
| $\ln(U_f)$ | 0.166 | -0.351* | 0.014 |
|  | (0.339) | (0.168) | (0.276) |
| $\ln(U_m)$ | 0.255 | 0.382* | 0.338 |
|  | (0.280) | (0.207) | (0.275) |
| Observations | 32557 | 28021 | 27861 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |
| | | | |
| B: Non-Muslim | | | |
| $\ln(U_f)$ | -0.529*** | -0.169 | -0.594*** |
|  | (0.097) | (0.117) | (0.166) |
| $\ln(U_m)$ | 0.518*** | 0.142 | 0.545*** |
|  | (0.107) | (0.117) | (0.178) |
| Observations | 308600 | 236772 | 235334 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |

Notes:

* $p<0.10$, ** $p<0.05$, *** $p<0.01$. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (1). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location. 'Sons' is a dummy variable taking the value one if the woman has at least one living son.

**Table A5: Heterogeneity by education of women; high education is classified as above the median**

|  | (I) Physical Violence | (II) Sexual Violence | (III) Any Violence |
|---|---|---|---|
| $\ln(U_f)$ | -0.316*** | -0.127 | -0.356** |
|  | (0.111) | (0.132) | (0.170) |
| $\ln(U_f)$*Educ > 50th Pct | -0.509*** | -0.163*** | -0.603*** |
|  | (0.114) | (0.036) | (0.101) |
| $\ln(U_m)$ | 0.303** | 0.074 | 0.320* |
|  | (0.126) | (0.136) | (0.181) |
| $\ln(U_m)$*Educ > 50th Pct | 0.472*** | 0.182*** | 0.549*** |
|  | (0.148) | (0.050) | (0.144) |
| Educ > 50th Pct | -0.007 | -0.001 | 0.002 |
|  | (0.011) | (0.006) | (0.012) |
| Observations | 236331 | 178192 | 177119 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |

Notes:
* $p<0.10$, ** $p<0.05$, *** $p<0.01$. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (2). Controls include education of respondent and her spouse, age of respondent, spousal age, and dummies for country, year, and urban location. 'Educ > 50th Pct' is a dummy variable taking the value one if the woman's education is larger than the 50th percentile for their country. The control group is women in the 25th percentile or below. Individuals with education between the 25th and 50th percentile are excluded from the analysis.

**Table A4: Heterogeneity by education of women; including the interquartile range in the analysis**

|  | (I)<br>Physical Violence | (II)<br>Sexual Violence | (III)<br>Any Violence |
|---|---|---|---|
| $\ln(U_f)$ | -0.281** | -0.096 | -0.308* |
|  | (0.102) | (0.118) | (0.167) |
| $\ln(U_f)$*25th Pct < Educ < 75th Pct | -0.317*** | -0.115*** | -0.373*** |
|  | (0.051) | (0.030) | (0.058) |
| $\ln(U_f)$*Educ > 75th Pct | -0.506*** | -0.158*** | -0.601*** |
|  | (0.112) | (0.038) | (0.104) |
| $\ln(U_m)$ | 0.299** | 0.069 | 0.313 |
|  | (0.128) | (0.126) | (0.191) |
| $\ln(U_m)$*25th Pct < Educ < 75th Pct | 0.245*** | 0.090* | 0.272*** |
|  | (0.076) | (0.048) | (0.081) |
| $\ln(U_m)$*Educ > 75th Pct | 0.463*** | 0.173*** | 0.535*** |
|  | (0.149) | (0.053) | (0.148) |
| Educ > 75th Pct | -0.016 | -0.007* | -0.013 |
|  | (0.010) | (0.004) | (0.010) |
| Observations | 348101 | 268119 | 266465 |
| X controls | Y | Y | Y |
| Country and Year FE | Y | Y | Y |

Notes:
* p<0.10, ** p<0.05, *** p<0.01. Standard errors are robust to arbitrary forms of heteroscedasticity and are clustered at the country level. The dependent variable in each regression is a binary dummy variable taking the value one if the respondent was a victim of (I) physical (II) sexual or (III) physical or sexual violence over the last twelve months. All estimates are results from estimating equation (2). Controls include education of respondent and her spouse, age of respondent, and dummies for country, year, and urban location. 'Educ > 75th Pct' is a dummy variable taking the value one if the woman's education is larger than the 75th percentile for their country. '25th Pct < Educ < 75th Pct' is a dummy variable taking the value one if the woman's education lies between the 25th and the 75th percentile in their country. The control group is women in the 25th percentile or below.