Harm and Harmony*

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Abstract

Intimate partner violence (IPV) affects a third of women worldwide. It is important to understand the key drivers of IPV. We focus on the relationship between female autonomy and IPV. We first demonstrate a robust U-shaped relationship between a wife's relative decision making power and IPV in a very large representative sample from 45 developing countries. We argue that current household bargaining models of IPV cannot reconcile this stylized fact. We posit an alternative theoretical framework which incorporates notions from behavioural economics into the household bargaining framework. We model IPV as the unintended consequence of male violence from conflictual family interactions. The model is consistent with the patterns we observe in the data. Moreover, it makes several new policy predictions. How IPV changes from shifts in women's outside options, will vary by who is the prevailing decision maker in the household. In some contexts, improving women's outside options can lead them to be doubly harmed by both increasing IPV and a worse household allocation. The magnitude of the policy change is also relevant. It is possible that for sufficiently small increases in relative bargaining power, IPV can fall, but for sufficiently large increases - it can instead increase. Policies aimed at adjusting gender biased norms, by successfully altering women's expectations or aspirations, can directly affect IPV, where again the ensuing effects vary by context. Moreover, short-term interventions can prove to have different impacts than long-term ones.

Key words: IPV, household bargaining, imperfect control

1 Introduction

Intimate partner violence (IPV) affects a third of ever-partnered women worldwide. The prevalence estimates range from 23% in high-income countries to 38% in poorer regions. Understanding the core determinants of this violence is essential for addressing the alarming phenomenon.

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Economists tend to use household bargaining models to understand IPV. The standard bargaining framework predicts that improving women's relative outside option should increase her relative household bargaining power and in turn reduce IPV (Aizer (2010), Farmer and Tiefenthaler (1997), Tauchen et al. (1991)). Many researchers have tested this relationship by examining the effects on IPV as a result of exogenous policy changes which shifted women's relative bargaining power. These range from increased access to wage employment (Aizer (2010), Anderberg et al. (2016), Bhalotra et al. (2021), Heath (2014)), conditional and unconditional cash transfers (Angelucci (2008), Bobonis et al. (2013, 2015), Hidrobo et al. (2016)), targeted micro-credit (De and Christian (2020)), and law changes (Garcia-Ramos (2021), Stevenson and Wolfers (2006), Anderson (2021)). In general, the resulting effects on IPV are ambiguous. Added to this, is the raising concern emerging of a "backlash" effect, whereby observed increases in women's outside option can induce more IPV (Luke and Munshi (2011), Bulte and Lensink (2019), Chin (2012), Atkinson et al. (2005), Erten and Keskin (2018), Field et al. (2016)). This backlash effect has been incorporated into the household bargaining framework by positing that perpetrators use violence to restore their relative bargaining power and regain control over household resources (Eswaran and Malhotra (2011), Ramos (2018), Bloch and Rao (2002), Haushofer et al. (2019)).

Therefore, the two existing economic approaches predict opposing linear effects on IPV. In the *bargaining* approach, IPV decreases as wives participate relatively more in decisions. In the *backlash* approach, IPV increases as wives participate relatively more in decisions.

In this paper, we reconsider this relationship between female autonomy and IPV. We will first uncover a new stylized fact that cannot be reconciled by the two existing theories. In particular, using a very large representative sample from 45 developing countries, we will demonstrate a seemingly robust U-shaped relationship between wives' relative decision making power and IPV. We will then posit an alternative theoretical framework to make sense of this stylized fact.

A main departure from the standard collective models will be in the way IPV enters into the household bargaining framework. In the existing *bargaining* approach, IPV directly enters into utilities, increasing that of husbands and decreasing that of wives. So a core assumption is that men gain a direct benefit from IPV. This is often referred to as the *expressive* motive for IPV. In the existing *backlash* approach, IPV instead directly augments the relative bargaining power of husbands. This is often referred to as the *instrumental* motive for IPV.

We instead borrow from the sociological/behaviour literature, and consider that IPV is the unintended consequence of male violence from conflictual family interactions (Straus, Gelles, and Steinmetz 1980).[1] We conceive of IPV as an example of imperfect control (Baumeister

[1]We do not focus on violence against men from women as it is a relatively rare occurrence. Sex differences in aggression is one of the most well-established findings in psychology (Del Giudice 2015), Campbell 2007)).

and Heatherton (1996), Bernheim and Rangel (2004), Lowenstein and O'Donoghue (2007)) or a response to stress (Card and Dahl (2011), Fox et al. (2002), Gelles (1976), Angelucci (2008)).

We model IPV in this manner for several reasons. First, the model can generate the U-shaped relationship that we observe in the data between IPV and relative female decision making power. Second, we think there is room in the literature for an alternative model, as in some senses it makes for more palatable assumptions than in the previous frameworks. In the bargaining framework, men enjoy violence. In the backlash framework, mere threats of IPV should be sufficient, we should not need to observe IPV, it is rather off the equilibrium path behaviour (Fearon 1995). In both cases, the observance of IPV follows from quite extreme assumptions. More to the point, however, our modelling of IPV, will not only be consistent with the stylized facts but it will make quite different policy predictions, which we we argue may prove very informative.

To incorporate IPV as the result of more behavioural motives, whereby it is the unintended consequence of family conflict, we introduce into a household bargaining framework the idea that conflict arises when agents feel aggrieved by the allocation. We posit that agents' aggrievement is high when household allocations are to their detriment relative to if they had been included in the decision. To do this, we depart from the standard collective model, which implicitly assumes that both partners are invovled in decision making, and instead allow for decision regimes whereby a sole main decision maker is possible. In doing so, we make a distinction between an initial *decision making regime* and *relative bargaining power*.

This distinction between *decision making regime* and *relative bargaining power* will be very relevant to policy. In particular, our framework illustrates how the effects on IPV from increasing women's outside options are nuanced. Depending on who is the prevailing decision maker in the household, IPV can increase, decrease, or remain unchanged, when wives' relative outside options exogenously improve. In a set of contexts, improving women's outside options can lead them to be doubly harmed by both increasing IPV and a worse household allocation. The magnitude of the policy change is also relevant. It is possible that for sufficiently small increases in relative bargaining power, IPV can fall, but for sufficiently large increases - it can instead increase. Further to this, policies aimed at adjusting gender biased norms in the form of altering women's expectations or aspirations, with regards to their inclusion in household decision making, can directly impact IPV, but again the ensuing effects are subtle and vary by context. Added to this, short-term interventions can prove to have different impacts than long-term ones.

The paper is organised as follows. The next section uncovers the empirical patterns in the data which motivate our theoretical framework. Section 3 introduces the model, followed by discussions of the policy implications in Section 4.

2 Empirical Patterns

In this section, we revisit the empirical correlation between IPV and relative female decision making power. Current research has generally uncovered an ambiguous relationship, which varies by local-level context. Our approach here is to instead focus on a systematic correlation which seems to persist across a very large sample of women (close to 750,000) spanning 45 low income countries.

2.1 Data Sample

To obtain individual-level information on IPV, we rely on the Demographic Health Surveys (DHS) which have been conducted in developing countries since the 1990s.[2] The DHS household surveys typically interview a nationally representative sample of between 10,000 to 20,000 women (aged 15-49) in each country.[3]

Since 2000, the DHS program has collected information on IPV. The DHS program undertakes many survey procedures to obtain accurate information on IPV and protect the privacy of respondents.[4] For the IPV module in the DHS questionnaires, only one woman is selected at random from the set of all eligible women in a given household (those women (aged 15 to 49) ever in a union (i.e., married or living with a man)). This IPV module is optional for countries, so that for a few countries in the total DHS sample, this module was never asked. This leaves us with a total sample of 744,354 women across 45 countries, surveyed between 2000 and 2019. The sample of countries includes 31 countries in Africa, 6 in Latin America and the Caribbean[5], and 8 in Asia[6].

As outcome variables, we use the five core measures of IPV available in the data. *Emotional Violence* is equal to one if a woman responds yes to being humiliated, threatened with harm, or insulted by their husband/partner. *Less Severe IPV* is equal to one if a woman responds yes being pushed, shook, slapped, punched, hit,arm twisted, hair pulled, or had something thrown at her by her husband/partner. *More Severe IPV* refers to being kicked, dragged, strangled, burnt or threatened with a weapon. *Sexual IPV* refers to forced unwanted sexual acts. *Injured due to IPV* is equal to one if a woman has had a lasting injury or had to go to a health facility as the result of their husband/partner's actions.

Figure 1 demonstrates the incidence of these different categories of IPV in our overall sample. The final variable *Any IPV* is equal to one if any of the above described variables is equal to one and zero otherwise. We see that *Less Severe IPV* is the most common, which 28% of women in our sample have experienced from their husband/partner. More than 36% of our

[2]These data can be downloaded from: https://dhsprogram.com/.
[3]The average female response rate is 96% for the DHS Surveys.
[4]Refer to Kishor and Johnson (2004).
[5]Colombia, Dominican Republic, Guatemala, Haiti, Honduras, Peru.
[6]Bangladesh, Cambodia, India, Myanmar, Nepal, Pakistan, Philippines, Timor-Leste.

sample have experienced at least one form of IPV, as reflected in the final bar of Figure 1. The highest estimates in our sample come from countries located in Central Africa, where almost half of the sample of women (48%) have experienced some form of IPV.

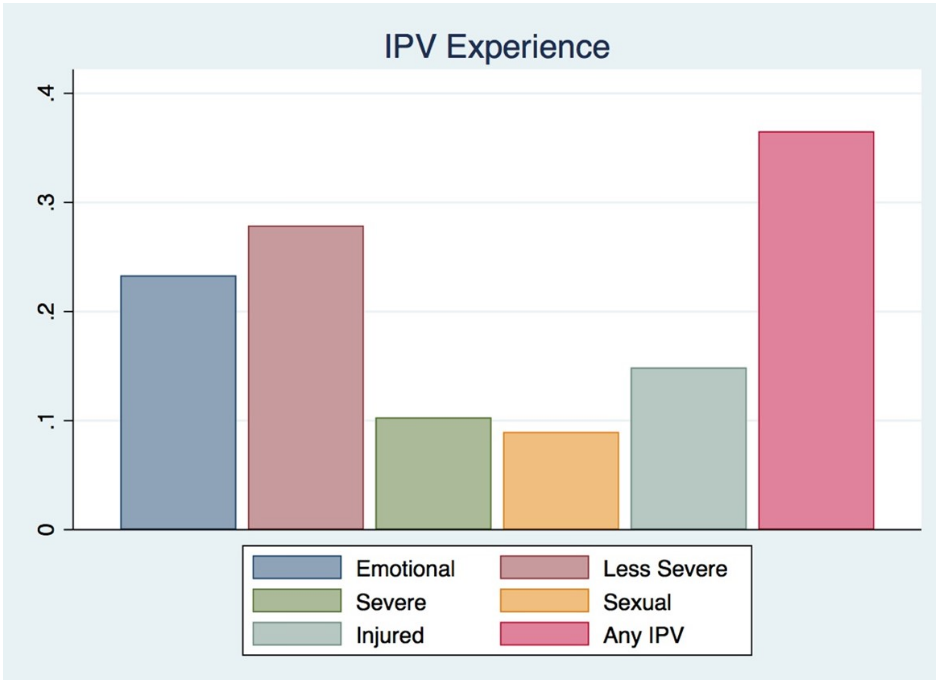

Figure 1: IPV Experience

For our key explanatory variables of interest we focus on decision making in the household. Female respondents are asked who usually decides on a set of decisions: Contraception; Wife's healthcare; Large household purchases; Purchases for daily needs; and Visits to family or relatives. The possible responses are: husband alone; jointly (husband and wife together); wife alone.

Figure 2 demonstrates the incidence of these responses for the five decisions. We see that there is significant variation across decision types. For decisions over contraception, it is much more likely to be a joint decision between husbands and wives. For decisions over wives' own healthcare, it is equally likely to be either the husband alone, the wife alone, or a joint decision. For large household purchases, it is more likely the husband who decides or a joint decision, whereas for daily purchases, husbands are relatively less involved.

The focus of our empirical analysis is the non-linear relationship between relative female household decision making and IPV. In particular the raw pattern in the data (and subsequently demonstrated in the estimation results) is that IPV is highest when women alone make decisions, followed by when husbands alone make decisions. Thus suggesting that joint decision making acts to a detriment to IPV. This pattern in the raw data is illustrated in a

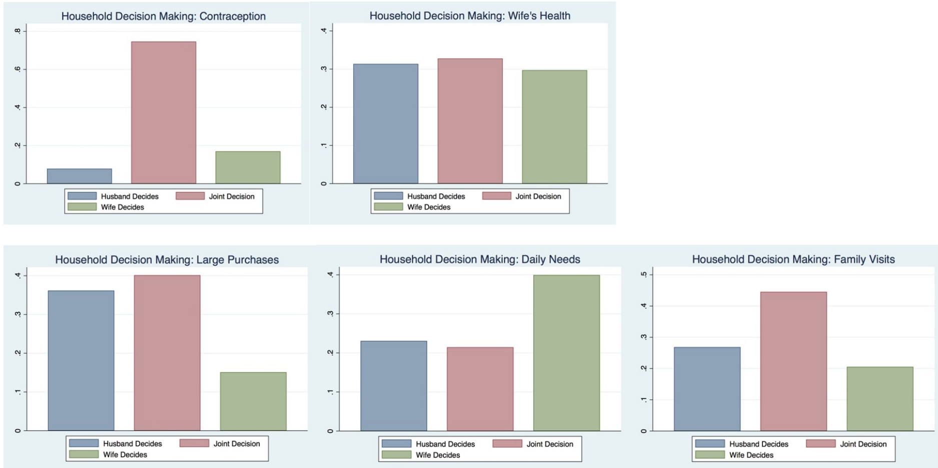

Figure 2: Decision-Making Across Domains

series bar charts depicted in Figure 3.

We see that despite the variation we observed in Figures 1 and 2, with regards to varying IPV prevalence depending on the type of IPV (Figure 1), or varying decision-makers depending on the type of household decision (Figure 2), that there is a systematic pattern of correlations consistently observed in the raw data. Figure 3 shows how irrespective of the type of decision or the type of IPV, the correlation between IPV and relative female decision making power is U-shaped, and moreover that the incidence of IPV is highest when the wife alone makes the decision (compared to husbands as the sole decision maker).

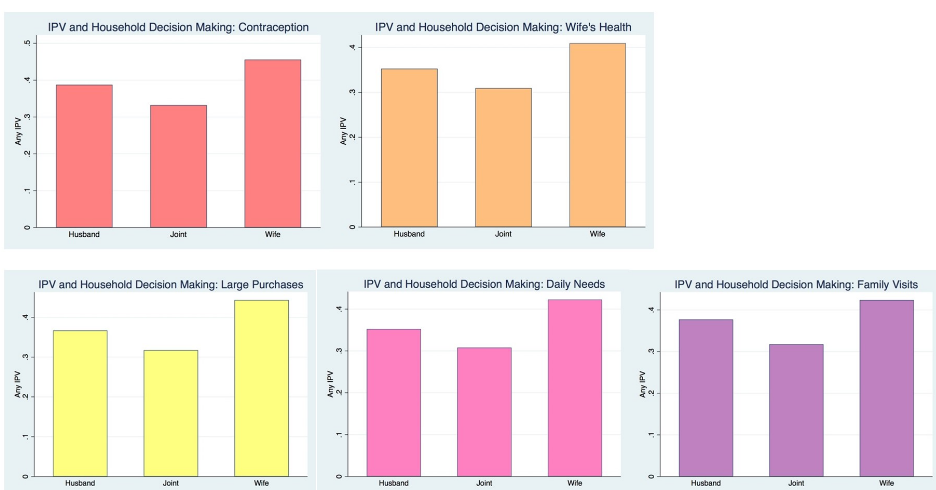

Figure 3: IPV Experience by Decision Regime

2.2 Estimation Results

In this section, we demonstrate the robustness of this pattern we observe in the raw data. To this end, we estimate the below equation.

$$Y_{ict} = \beta_0 + \beta_1 J_{ict} + \beta_2 W_{ict} + \beta_3 X_{ict} + \gamma_t + \delta_c + \varepsilon_{ict}$$

Y_{ict} captures our dummy variable measures of IPV prevalence. Our explanatory variables of interest pertain to household decision making: J_{ict} is equal to one if the couple makes a given decision jointly; W_{ict} is equal to one if the wife alone decides. The left out comparison category is the husband alone decides. X_{ict} reflects a basic set of controls: wife education, age, occupation, marital status, and household wealth. Survey year and country fixed effects are also included and standard errors are clustered at the country level. The estimation results are robust to not including any controls and also to including a more extensive set such as religion, indicators for monogamy and nuclear, as well as husbands characteristics. Including all these additional controls reduces the sample size, so we do not include them in our baseline estimations.

Figure 4 depicts the estimated coefficients β_1 and β_2 for the five sets of household decisions and for all five types of IPV. Table formats are found in the Data Appendix (refer to Table 1).

The estimated effects are significant in size. In the sample, 10.3% of women have suffered Severe IPV. The estimated coefficients imply that if a wife alone makes the decision over contraception use, then she is 4.0 percentage points more likely to suffer this type of violence. This reflects at 40% increase, relative to if the husband alone makes the decision. Relative to if the household makes a joint decision, the increase in IPV is 6.4 percentage points, in other words almost a 60% increase. These are very significant effects. The estimated coefficients vary across types of violence and the other household decisions but still reflect very significant magnitudes of change.

The above results suggest a non-monotonic correlation, they do not demonstrate a causal relationship from household-decision making to IPV. For our purposes here, we are not as concerned with causality, but focus on this correlation. To isolate this effect, we have included a host of individual and household controls that normally predict household bargaining. To explore this further, the next set of results takes into account core determinants of relative female decision-making power within the household. We run the same estimation on different samples of data according to different co-founding attributes. The figures below demonstrate that the non-linear relationship holds for these different samples, which would suggest that these co-founding factors are not driving the non-monotonic relationship we observe in the

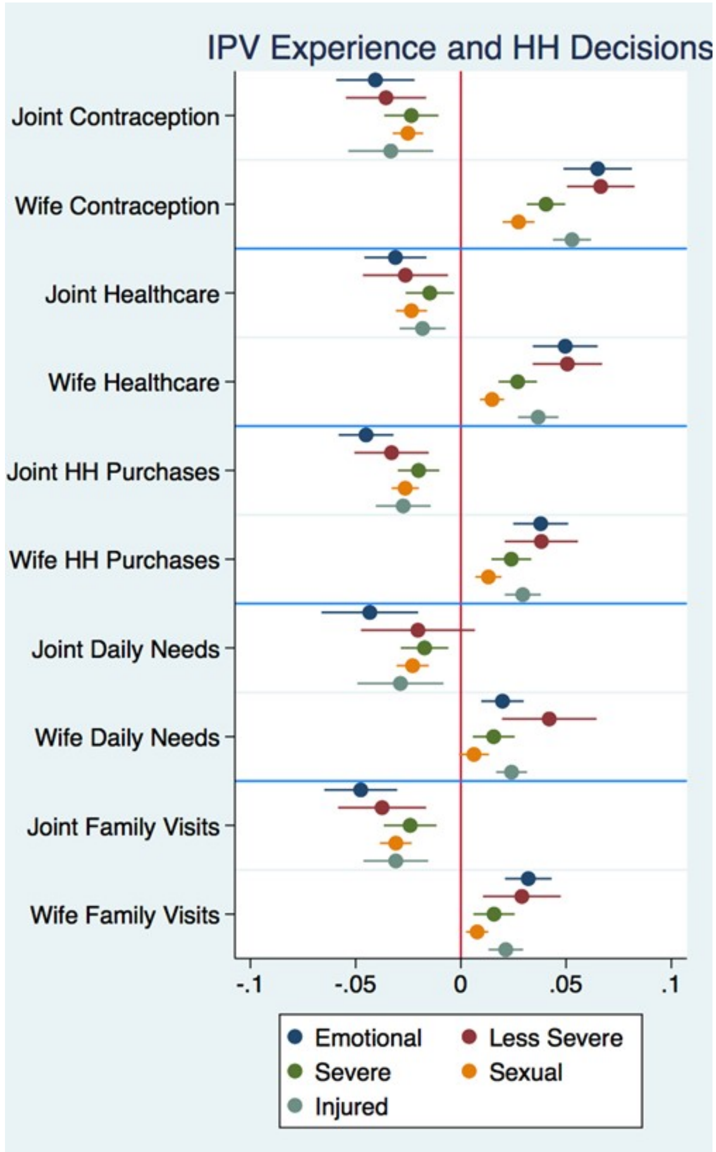

Figure 4: IPV Experience by Type and Decision Regime

data. In the figures, which follow, the dependent variable is *Any IPV* (as defined above). The key dependent variable is household decision-making over large purchases. The relationship holds for all five types of decision, as seen in the tables in the Appendix (Tables 2 through 6).

Figure 5 depicts the estimated coefficients β_1 and β_2 for household decision-making over large purchases, where the key outcome variable is *Any IPV*, for a series of sub-samples of data which vary by wives' characteristics. The first estimated coefficients (in dark blue) are those from an estimation where we restrict the sample to only women with no education. The next set of coefficients (in green) are the results when we restrict the sample to only women with only primary education. Then follows for women with at least secondary education. The next set of coefficients reflect occupation categories. The first set of estimation results is for women who do not work (in orange), next we have the estimated coefficients for women who work

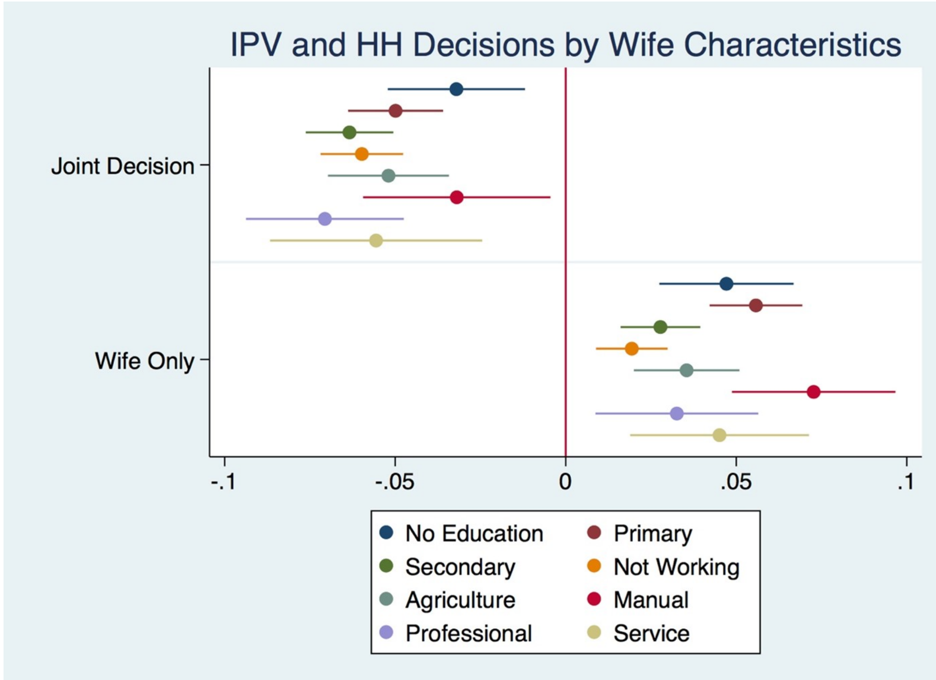

Figure 5: IPV by Decision Regime and Wife Characteristics

in agriculture, then manual labour, as a professional, and finally in the service sector. We see that for all these different sub samples, the same empirical pattern ensues, whereby the correlation between IPV and relative female decision making power is U-shaped, and moreover that the incidence of IPV is highest when the wife alone makes the decision (compared to husbands as the sole decision maker).

Figure 6 presents analogous results to Figure 5, except that the estimated coefficients are for different sub-samples of data which vary by husbands' characteristics. We see that the same empirical pattern ensues.

In Figure 7, we define sub-samples of data according to household characteristics. The first represents wealth levels. This variable is an index constructed by the DHS survey team using Principal Component Analysis (PCA) on easy-to-collect data on a household's ownership of selected assets and access to facilities. We also compare the estimated coefficients across rural and urban samples. The final set of sub-samples vary by the relative education of husbands and wives. We see that, for example, if we restrict our estimation sample to only households where husbands and more education than wives, compared to household where they have comparable education levels, that our same empirical pattern ensues.

The above estimations demonstrate that it cannot be these co-founding observable factors, wives' or husbands' education and occupation, household wealth, or relative education across husbands and wives that can be driving our observed empirical relationship between relative female decision making and IPV. In other words, it appears that we have uncovered quite a

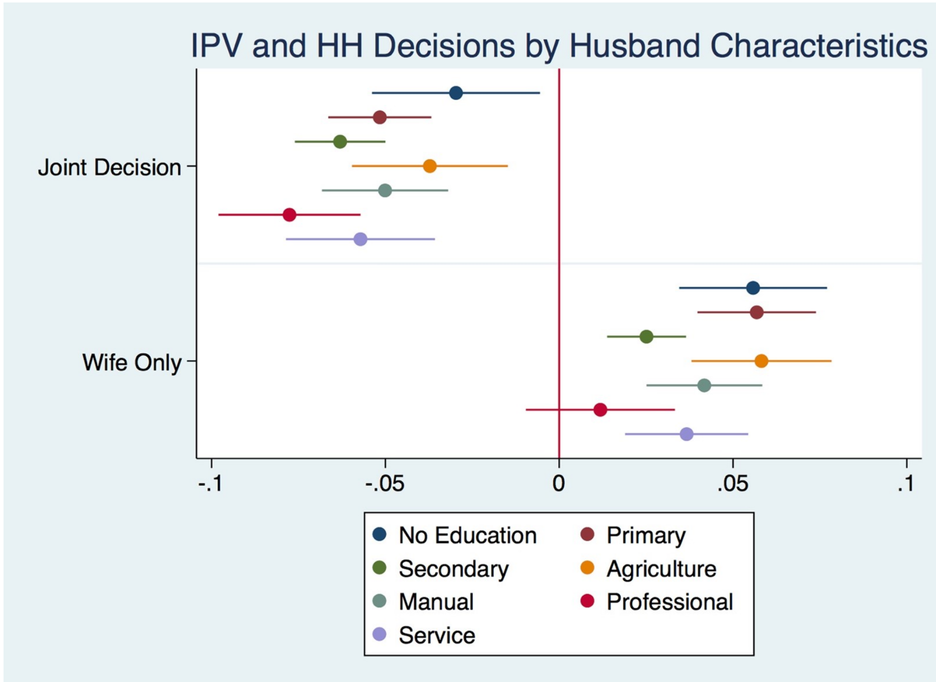

Figure 6: IPV by Decision Regime and Husband Characteristics

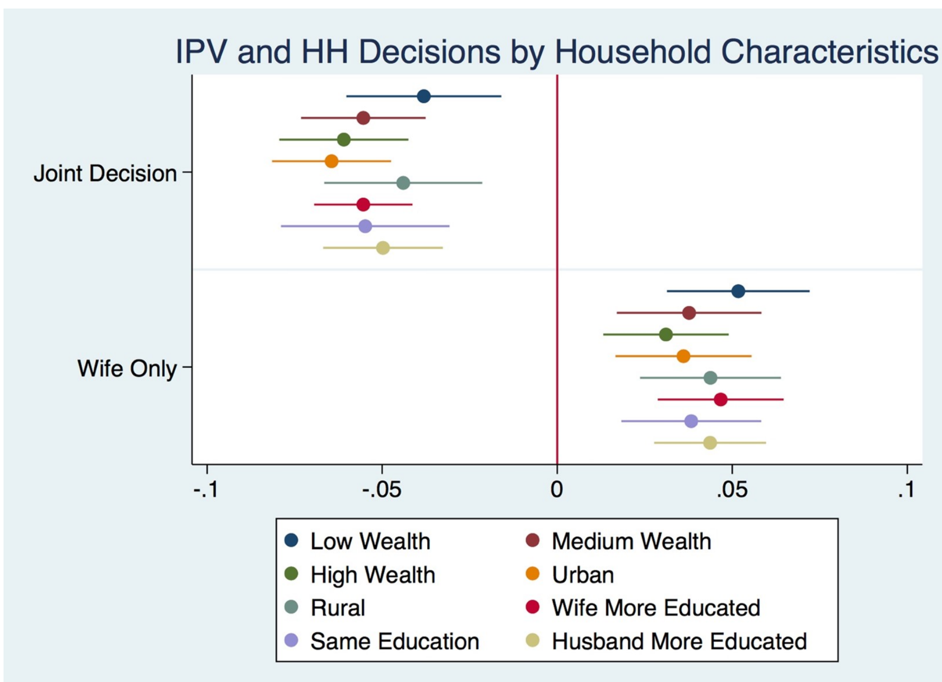

Figure 7: IPV by Decision Regime and Household Characteristics

robust pattern in the data.

We will now turn to developing a theoretical framework which, on the one hand, can make sense of these empirical patterns, but on the other hand is informed by these empirical patterns. The latter is in the sense, that we will posit that there are two dimensions to household decision making. In particular, we will consider a distinction between the standard notion of *relative bargaining power* and a *decision making regime*. Because, the above empirical patterns between household decision making and IPV persist, even when allowing for factors that typically determine relative bargaining power to vary, we posit that they could represent two distinct notions. In other words, we expect household decision making to be partly determined by household bargaining power, but that they are not necessarily synonymous. This distinction will be relevant to explain the incidence of IPV, using a behavioural motive, but also for selecting better policy instruments.

3 Model

We depart from the standard collective models of IPV in two ways. First, we borrow from the sociological/behaviour literature, and consider that IPV is the unintended consequence of family conflict. Second, we introduce into a household bargaining framework the idea that conflict arises when agents feel aggrieved by the allocation. This shares features with behavioural models (reciprocity, costly punishment; although we incorporate reference points the relationship to models of loss aversion (Kahneman Tversky (1979)), inequity aversion (Fehr Shmitt (1999); Botond Rabin (2006)), aspriations (Genicot Ray (2020)) etc are superficial). More similar to Akerlof Yellen (1991), Hart Moore (2008). Evidence; experimental (Fehr Gatchner (2000)) and field (Mas (2006)). From Akerlof Yellen (1991): "In simple English, if people do not get what they think they deserve, they get angry." In their model this is relevant because agents can take actions that can partially alleviate this anger (exerting less effort, performance shading). Just as employers adjust wages taking this effect into account, we suppose that household decisions are made mindful of aggrievement possibilities.

fairness models; inequity aversion (fehr shmitt (1999), botond rabib (2006)) and reciprocity. we are about the latter, which has the feature that payoffs depend not only on the allocation but *how* that allocation was arrived at (for us, whether the agent participated in the decision).

In a household setting, notions of aggrievement are present in Ashraf, Field, Lee (2014). They argue that a wife's secretive use of contraception induces aggrievement on the part of the husband, consistent with their finding that household harmony deteriorates as a result of providing access to concealable contraception.

3.1 Fundamentals

Consider a household consisting of a husband (h) and wife (w). A household decision is some $x \in [0, 1]$. We leave this general but it could, for instance, be thought of as a division of household wealth between spouses, the specifics of how to raise children, and so on.

The household decision is made by a (non-empty) set of decision-makers, $d \subseteq \{w, h\}$. We refer to $d = \{w\}$ as the wife-only regime, $d = \{w, h\}$ as the joint regime, and $d = \{h\}$ as the husband-only regime.

Associated with each decision regime is a pair of benchmark utilities, one for each spouse, denoted $\bar{u}^d = (\bar{u}^d_w, \bar{u}^d_h)$.

The payoff from allocation $x \in [0, 1]$ to agent $i \in \{w, h\}$ in decision regime $d \subseteq \{w, h\}$ is:

$$U_i(x|\bar{u}^d) = u_i(x) - C(x|\bar{u}^d) \cdot c_i.$$

Here $u_i(x)$ refers to a direct consumption utility, $C(x|\bar{u}^d)$ refers to the probability of household conflict, and $c_i \geq 0$ is the cost of such conflict.

We order allocations such that, in terms of direct consumption utility, w prefers higher values whereas h prefers lower values. In particular, we assume

$$u_w(x) = v(x)$$
$$u_h(x) = v(1 - x)$$

where $v : [0, 1] \to \mathbb{R}_+$ is a strictly increasing and strictly concave function with $v(0) = 0$ and $v'(0) = \infty$.

Household conflict can be (unintentionally) triggered by either husband or wife (or both). The probability that agent i triggers a conflict depends on how their consumption utility compares with their benchmark utility. Specifically, we denote the probability that agent i *does not* trigger a conflict by $\pi_i(u_i(x), \bar{u}_i)$, where $\partial\pi_i\partial u_i > 0$, $\partial^2\pi_i\partial u_i^2 \leq 0$, and $\partial\pi_i\partial\bar{u}_i < 0$. Thus we have

$$C(x|\bar{u}^d) = 1 - \pi_w(u_w(x), \bar{u}^d_w) \cdot \pi_h(u_h(x), \bar{u}^d_h).$$

We impose additional assumptions on π_i after presenting a set of initial results.

We take IPV to arise as a consequence of this conflict:

$$\text{IPV}^d(x) \propto C(x|\bar{u}^d)$$

We use a standard collective household set-up to model household decision-making. In the joint regime the allocation maximizes a weighted sum of spousal payoffs where $\mu \in (0, 1)$ is the weight on w's payoff. In the wife-only regime the allocation maximizes w's payoff and similarly in the husband-only regime the allocation maximizes h's payoff. This is summarized as follows.

Definition 1. *The* bargaining allocation *in regime $d \subseteq \{w, h\}$, given benchmark utilities $\bar{u}^d \equiv (\bar{u}^d_w, \bar{u}^d_h)$, satisfies:*

$$x^d \in \arg\max_x \left\{\tilde{\mu}^d \cdot U_w(x|\bar{u}^d) + (1 - \tilde{\mu}^d) \cdot U_h(x|\bar{u}^d)\right\}$$

where $\tilde{\mu}^{\{w\}} = 1$, $\tilde{\mu}^{\{w,h\}} = \mu \in (0, 1)$, $\tilde{\mu}^{\{h\}} = 0$.

We model an agent's benchmark utility as being that which would arise had agent been included in the decision-making process. We call this the agent's 'inclusion benchmark', defined as follows.

Definition 2. *The* inclusion benchmark *utility for agent $i \in \{w, h\}$ in decision regime $d \subseteq \{w, h\}$, given allocations $\{x^{\{w\}}, x^{\{w,h\}}, x^{\{h\}}\}$, is given by:*

$$\bar{u}_i^d = u_i \left(x^{d \cup \{i\}} \right).$$

For example, in the husband-only regime the wife takes her equilibrium utility in the joint regime as her benchmark ($\bar{u}_w^{\{h\}} = u_w \left(x^{\{w,h\}} \right)$) whereas the husband takes the equilibrium utility in the husband-only regime as his benchmark ($\bar{u}_h^{\{h\}} = u_h \left(x^{\{h\}} \right)$). Similarly, in the joint regime both spouses take their equilibrium utility in the joint regime as their benchmark ($\bar{u}_w^{\{w,h\}} = u_w \left(x^{\{w,h\}} \right), \bar{u}_h^{\{w,h\}} = u_h \left(x^{\{w,h\}} \right)$). For completeness, benchmark utilities in the wife-only regime are analogous to the husband-only regime (i.e. $\bar{u}_w^{\{w\}} = u_w \left(x^{\{w\}} \right), \bar{u}_h^{\{w\}} = u_h \left(x^{\{w,h\}} \right)$).

Given that allocations depend on benchmark utilities and benchmark utilities depend on allocations, our notion of equilibrium is defined as follows.

Definition 3. *An* equilibrium *is a set of allocations and benchmark utilities*

$$\begin{aligned} x^* &\equiv \{x^{\{w\}}, x^{\{w,h\}}, x^{\{h\}}\} \\ \bar{u}^* &\equiv \{(\bar{u}_w^{\{w\}}, \bar{u}_h^{\{w\}}), (\bar{u}_w^{\{w,h\}}, \bar{u}_h^{\{w,h\}}), (\bar{u}_w^{\{h\}}, \bar{u}_h^{\{h\}})\}, \end{aligned}$$

such that for each $d \subseteq \{w, h\}$:

1. *x^d is a bargaining allocation given benchmarks $\bar{u}^*$, and*
2. *$(\bar{u}_w^d, \bar{u}_h^d)$ are inclusion benchmarks given allocations x^*.*

3.2 Discussion of Modelling Assumptions

- choice of benchmark; e.g. why not have 'sole decision' as the benchmark in the joint case (would this be the benchmark in the case when the other agent is the sole decision-maker? seems arbitrary, at least ours is disciplined by the 'inclusion' operator.
- to be completed.

3.3 Analysis

We begin by establishing that an equilibrium exists and that it is unique. To do so, we start with the joint regime since the benchmark utilities are the same as the equilibrium utilities. The bargaining outcome, given benchmarks, in the joint regime, is the unique value of x that satisfies the first-order condition[7] :

$$\left[\mu + \pi_h \cdot \frac{d\pi_w}{du_w} \cdot c\right] \cdot v'(x) - \left[(1-\mu) + \pi_w \cdot \frac{d\pi_h}{du_h} \cdot c\right] \cdot v'(1-x) = 0 \tag{1}$$

where $c \equiv \mu c_w + (1-\mu)c_h$, $\pi_w = \pi_w(v(x)/\bar{u}_w)$ and $\pi_h = \pi_h(v(1-x)/\bar{u}_h)$. The equilibrium allocation in the joint regime, $x^{\{w,h\}}$, is the unique value of x that satisfies the first-order condition when evaluated at $\bar{u}_w = v(x)$ and $\bar{u}_h = v(1-x)$. It is straightforward to see that, at least when $c_w = c_h$, we have that $x^{\{w,h\}}$ is increasing in μ.[8] The equilibrium level of IPV in the joint decision regime is

$$\text{IPV}^{\{w,h\}} \propto 1 - \pi_w(1) \cdot \pi_h(1) \tag{2}$$

Once we have determined the joint-decision allocation, the allocation in the other two regimes can be derived. For instance, in the husband-decides regime we have that the bargaining outcome satisfies the first-order condition

$$\left[0 + \pi_h \cdot \frac{d\pi_w}{du_w} \cdot c\right] \cdot v'(x) - \left[1 + \pi_w \cdot \frac{d\pi_h}{du_h} \cdot c\right] \cdot v'(1-x) = 0 \tag{3}$$

where $\pi_w = \pi_w(v(x)/\bar{u}_w)$ and $\pi_h = \pi_h(v(1-x)/\bar{u}_h)$. The equilibrium allocation in the husband-decides regime is the unique value of x that satisfies this first-order condition when evaluated at $\bar{u}_w = v(x^{\{w,h\}})$ and $\bar{u}_h = v(1-x)$.

The equilibrium level of IPV in the husband-decides regime is

$$\text{IPV}^{\{h\}} \propto 1 - \pi_w\left(\frac{v(x^{\{h\}})}{v(x^{\{w,h\}})}\right) \cdot \pi_h(1) \tag{4}$$

Comparing (4) with (2), we see that whether IPV is higher in the joint regime or the husband-decides regime depends on the relative values of $x^{\{w,h\}}$ and $x^{\{h\}}$. In particular, $\text{IPV}^{\{h\}} > \text{IPV}^{\{w,h\}}$ if $x^{\{h\}} < x^{\{w,h\}}$ and $\text{IPV}^{\{h\}} \leq \text{IPV}^{\{w,h\}}$ otherwise.

Outcomes in the wife-decides regime can be derived in the analogous manner. The bargaining outcome satisfies the first-order condition

$$\left[1 + \pi_h \cdot \frac{d\pi_w}{du_w} \cdot c\right] \cdot v'(x) - \left[0 + \pi_w \cdot \frac{d\pi_h}{du_h} \cdot c\right] \cdot v'(1-x) = 0 \tag{5}$$

where $\pi_w = \pi_w(v(x)/\bar{u}_w)$ and $\pi_h = \pi_h(v(1-x)/\bar{u}_h)$. The equilibrium allocation in the wife-decides regime is the unique value of x that satisfies this first-order condition when evaluated at $\bar{u}_w = v(x)$ and $\bar{u}_h = v(1-x^{\{w,h\}})$. The equilibrium level of IPV in the wife-decides regime is

$$\text{IPV}^{\{w\}} \propto 1 - \pi_w(1) \cdot \pi_h\left(\frac{v(1-x^{\{w\}})}{v(1-x^{\{w,h\}})}\right). \tag{6}$$

[7]The first-order condition is sufficient since the term on the right is strictly decreasing, going from positive infinity to negative infinity as x goes from zero to one.

[8]Moreover, the allocation is less sensitive to μ relative to the case where the benchmark utilities did not endogenously respond.

Again, comparing (6) with (2), we have that $\text{IPV}^{\{w\}} > \text{IPV}^{\{w,h\}}$ if $x^{\{w,h\}} < x^{\{w\}}$ and $\text{IPV}^{\{w\}} \leq \text{IPV}^{\{w,h\}}$ otherwise.

The first result establishes that our set-up produces the intuitive relationship between inclusion in decision-making and equilibrium allocations.

Proposition 1. *Allocations are more favourable to an agent when they are included in the set of decision-makers:* $x^{\{h\}} < x^{\{w,h\}} < x^{\{w\}}$.

Given the preceding discussion, a consequence of this is the following result that aligns with the U-shaped pattern described in the previous section.

Proposition 2. *IPV is the least common in the joint regime:* $IPV^{\{w,h\}} < \min\{IPV^{\{h\}}, IPV^{\{w\}}\}$.

4 Policy Results

4.1 Wife Bargaining Power

Various policy interventions have the general effect of increasing μ. Our framework illustrates how the effects of such policies are highly contingent on the prevailing regime and that such policies could raise IPV and lead to household allocations that are less favourable to women.

To derive unambiguous results, we need to add more structure to the function π_i.

Assumption 1. *For each* $i \in \{w, h\}$, *the elasticity of* π_i *with respect to* u_i, $\frac{\partial \pi_i(u_i,\bar{u}_i)}{\partial u_i} \frac{u_i}{\pi_i(u_i,\bar{u}_i)}$, *is weakly decreasing in* $\bar{u}_i$.

This assumption is readily satisfied when aggrievement depends on the ratio $u_i/\bar{u}_i$.[9]

Proposition 3. *The effect of an increase in* μ *on IPV depends on regime. An increase in* μ *has no effect on* $IPV^{\{w,h\}}$, *raises* $IPV^{\{h\}}$, *and lowers* $IPV^{\{w\}}$.

This result is illustrated in the right panel of Figure 8.

To get an intuition, XXX

The fact that $\text{IPV}^{\{h\}}$ increases in μ is *not* due to backlash. Rather, a higher μ raises the reference utility of wives and this makes it less attractive for the husband to try to mitigate the possibility of her becoming aggrieved. Similarly, the fact that $\text{IPV}^{\{w\}}$ decreases in μ is *not* due to an emboldened wife negotiating less violence. Rather, the husband's reference utility decreases and this makes it more attractive for the wife to try to mitigate the possibility of him becoming aggrieved.

This result allows us to rank husband-control and wife-control, consistent with the empirical patterns uncovered in Section 3.

[9] For instance, it is satisfied when $\pi_i(u, \bar{u}) = g(u/\bar{u})$ for any g with a non-decreasing elasticity. For instance, any function of the form: $\pi_i(u, \bar{u}) = \beta_1 + \beta_2 \cdot [\beta_3 + \beta_4 \cdot (u/\bar{u})]^\eta$ for $\beta_1, \beta_2, \beta_3 \geq 0$, and $\beta_4, \eta > 0$.

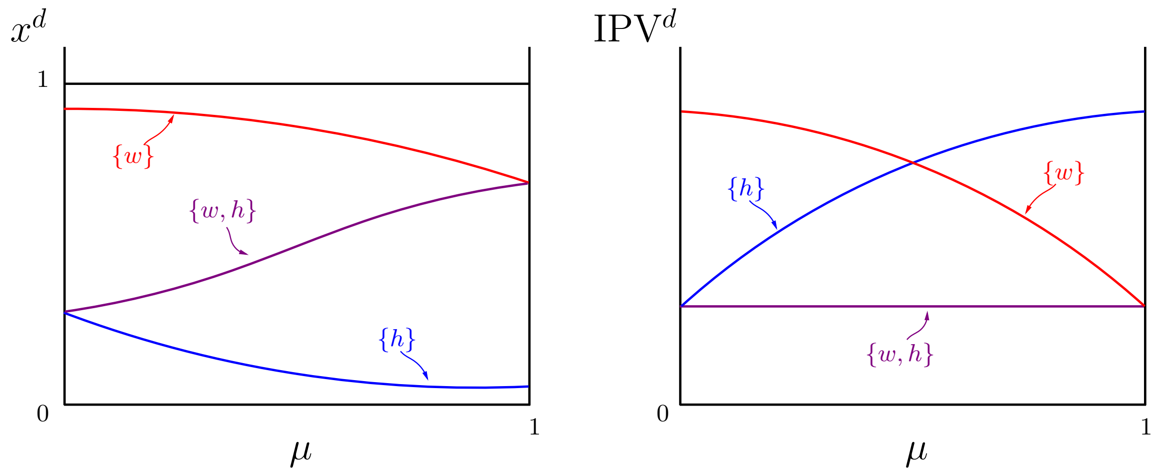

Figure 8: Effect of μ on IPV, by decision regime

Corollary 1. *$IPV^{\{h\}} < IPV^{\{w\}}$ for sufficiently small μ.*

Furthermore, μ has a counter-intuitive impact on equilibrium household allocations. Specifically, one may reasonably conjecture that μ acts as a sort of 'outside option' in the husband-decides or wife-decides regime. This, it turns out, is not true. Under the stated condition, an increase in wife's power leads to a worse allocation for her in these two regimes.

Proposition 4. *The effect of μ on the equilibrium allocation, x^d, depends on regime. Specifically, an increase in μ raises $x^{\{w,h\}}$, but lowers both $x^{\{h\}}$ and $x^{\{w\}}$.*

This result has implications for the effect of μ on welfare.

Proposition 5. *The effect of an increase in μ on payoffs depends on regime. An increase in wife's power, μ:*

- *raises w payoff but lowers h payoff in the joint regime ($d = \{w, h\}$).*
- *lowers w payoff and lowers h payoff in the husband-decides regime ($d = \{h\}$).*
- *raises w payoff and raises h payoff in the wife-decides regime ($d = \{w\}$).*

This result is intuitive in the case of the joint regime. An increase in μ leads to an allocation more favourable to w and less favourable to h. The result follows by noting that IPV is unaffected by μ (proposition 3).

To provide an intuition for the other two regimes, consider the husband-decides regime. It is perhaps expected that an increase in μ would lower h's payoff. But it is not so clear since there are counter-veiling effects: a higher μ raises IPV but it also leads to an allocation more preferred by h. An envelope argument can be used to see that h must have a lower payoff. Since a higher μ raises $x^{\{w,h\}}$ and lowers $x^{\{h\}}$ (proposition 4), it must be that both benchmark utilities (i.e. $\bar{u}_w^{\{h\}}$ and $\bar{u}_h^{\{h\}}$) increase. This means that h's objective function now lies everywhere below where it was, so that the maximized value is now lower than the original maximized value.

Remaining with the husband-decides regime, it is perhaps more surprising that a higher μ lowers w's payoff. However, w is in fact 'doubly' harmed: a higher μ raises IPV (3) *and* the allocation becomes less favourable to w (4).

The analogous arguments apply in the wife-decides regime. A higher μ now decreases both benchmark utilities (i.e. $\bar{u}_w^{\{w\}}$ and $\bar{u}_h^{\{w\}}$), and thus the same envelope argument for why w's payoff must increase applies. Similarly, h is 'doubly' better off: a higher μ lowers IPV (3) *and* the allocation becomes more favourable to h (4).

Proposition 6. *The husband never prefers the wife-decides regime, and prefers the joint-decision regime to the husband-decides regime for sufficiently small μ. Similarly, the wife never prefers the husband-decides regime, and prefers the joint-decision regime to the wife-decides regime for sufficiently large μ.*

[To be completed]

4.2 Gender Norms

There is an increasing focus in the policy literature on altering gender-biased norms, or attitudes, directly. These policy instruments can fit into our theoretical framework by directly altering our conflict function. That is, changing womens' attitudes, beliefs and expectations, can be represented by varying the shape of the π_i function. To make progress here we adopt a functional form so that we can vary the associated parameters. In particular, we assume

$$\pi_i(u_i(x), \bar{u}_i^d) = \alpha_{0i} + \alpha_{1i} \cdot \left(\frac{u_i(x)}{\bar{u}_i^d} \right)$$

where $\alpha_{0i}, \alpha_{1i} \geq 0$ with $\alpha_{0i} + \alpha_{1i} \leq 1$.

Heightened aspirations or expectations, to be included in household decisions, might be captured by a decrease in α_{1i} for $i = w$. Whether the intervention has lasting or temporary impacts will also lead to different predictions.

To be completed.

5 Discussion

As emphasized the previous literature aimed at understanding the impact of improving women' bargaining power, μ in our framework, on IPV have resulted in ambiguous effects.

A main takeaway from our framework is that the resulting effects of increasing μ on IPV depend upon the underlying decision regime. It is difficult for us to ascertain how our model might help to make sense of the previous findings, without knowing which decision regime the household sample was likely to be in. A subset of these studies, however, uncover heterogeneous effects in their samples. These varying impacts on IPV found for different sub-populations can shed some very ”loose” empirical support for our model.

In particular, in our framework, increasing μ is more likely to lead to an increase in IPV in the husband-only decision making regime, compared to a regime where wives are involved in the decision making. We can try to characterize the different sub-populations, of the previous studies, by their likelihood of being in a certain decision regime.

In particular several studies find that increasing wives' relative position increases IPV only in circumstances which we might conceive as more likely to be in the husband-decision regime, as consistent with our model. For example, Atkinson et al. (2005) find that increasing wives' share of income leads to increasing IPV only when men hold traditional gender views. Likewise, Angelucci (2005) finds that large conditional cash transfers to wives increase IPV when husbands hold gender-biased views. Tur-Prats (2021) finds that increased female employment leads to more IPV only in traditionally nuclear families (as opposed to stem), which she argues hold traditional gender norms whereby it is less acceptable for women to work outside the home as breadwinners. Heath (2014) finds that IPV is correlated positively with women working only when women have low education or are in an early marriage. Balhotra et al. (2021) show how female employment is linked to a higher probability of IPV only in countries with unequal access to divorce.

On the flip side, several studies find that increasing wive's relative position reduces IPV under circumstances where we might expect women to be more involved in household decision making. Chin (2012) finds that increased female employment leads to a decrease in IPV only when there is more economic equality in the household. Relatedly, Garcia-Ramos (2021) finds that easier divorce laws reduced IPV only for highly educated women women. Kim et al.(2009) find that a micro-credit program reduces IPV only when accompanied by a training program encouraging gender equality. Very related results are found in similar double-treatment arms in Gupta et al. (2013) and also for Pronyk et al. (2006).

Appendix

A Proofs

Proof of Proposition 1.

Consider the general problem of maximizing

$$\xi \cdot U_w(x|\bar{u}^d) + (1-\xi) \cdot U_h(x|\bar{u}^d).$$

The FOC is:

$$L(x|\xi) \equiv \left[\xi + \pi_h \cdot \frac{d\pi_w}{du_w} \cdot c\right] \cdot v'(x) - \left[(1-\xi) + \pi_w \cdot \frac{d\pi_h}{du_h} \cdot c\right] \cdot v'(1-x) = 0 \tag{7}$$

where $\pi_w = \pi_w(v(x)/\bar{u}_w)$ and $\pi_h = \pi_h(v(1-x)/\bar{u}_h)$. We see that L is continuous in x with $\lim_{x\to 0} L(x|\xi) = \infty$ and $\lim_{x\to 1} L(x|\xi) = -\infty$. Thus at least one solution exists. The fact that L is strictly decreasing in x implies that the objective function is strictly concave and thus the first-order condition is also sufficient and that a solution is unique.

By letting $\xi \in \{0, \mu, 1\}$ this tells us that bargaining solutions exist and are unique for each regime.

Let $L^{\{w,h\}}(x|\mu)$ be defined as $L(x|\xi)$ where $\xi = \mu$, $\pi_w = \pi_w(1)$ and $\pi_h = \pi_h(1)$. The equilibrium allocation in the joint regime satisfies $L^{\{w,h\}}(x|\mu) = 0$. Again, $L^{\{w,h\}}$ is strictly decreasing, ranging from $-\infty$ to ∞, and therefore $x^{\{w,h\}}$ exists and is unique. Since $L^{\{w,h\}}(x|\mu)$ is increasing in μ, we have that $x^{\{w,h\}}$ is increasing in μ.

Let $L^{\{h\}}(x|0)$ be defined as $L(x|\xi)$ where $\xi = 0$, $\pi_w = \pi_w(v(x)/v(x^{\{w,h\}}))$ and $\pi_h = \pi_h(1)$. The equilibrium allocation in the husband-decides regime satisfies $L^{\{h\}}(x|0) = 0$. Again, $L^{\{h\}}(x|0)$ is strictly decreasing, ranging from $-\infty$ to ∞, and therefore $x^{\{h\}}$ exists and is unique.

Let $L^{\{w\}}(x|1)$ be defined as $L(x|\xi)$ where $\xi = 1$, $\pi_w = \pi_w(1)$ and $\pi_h = \pi_h(v(1-x)/v(1-x^{\{w,h\}}))$. The equilibrium allocation in the wife-decides regime satisfies $L^{\{w\}}(x|1) = 0$ where. Again, $L^{\{w\}}(x|1)$ is strictly decreasing, ranging from $-\infty$ to ∞, and therefore $x^{\{w\}}$ exists and is unique.

The allocation ordering arises because $L^{\{h\}}(x|0) < L^{\{w,h\}}(x|\mu) < L^{\{w\}}(x|1)$ when $x = x^{\{w,h\}}$. □

Proof of Proposition 2.

This is a direct consequence of proposition 1 along with the expressions for IPV; (2), (4), and (6). □

Proof of Proposition 3.

Consider the equilibrium condition in the husband-decides regime:

$$\left[0+\pi_h(1)\cdot\frac{d\pi_w}{du_w}\cdot c\right]\cdot v'(x)-\left[1+\pi_w\cdot\frac{d\pi_h}{du_h}\cdot c\right]\cdot v'(1-x)=0 \tag{8}$$

An increase in μ raises $x^{\{w,h\}}$ and therefore $\bar{u}_w$. Suppose to the contrary that conflict weakly decreased (i.e. π_w weakly increases). This, along with the fact that $\frac{\partial^2\pi_w}{\partial u_w \partial \bar{u}_w}\leq 0$ implies that the expression on the left side of the above equality decreases. This implies that $x^{\{h\}}$, and thus $u_w^{\{h\}}$, weakly decreases. But if $x^{\{w,h\}}$ increases and $u_w^{\{h\}}$ weakly decreases then π_w strictly decreases. This is a contradiction.

The analogous argument applies for the wife-decides regime. The equilibrium condition is:

$$\left[1+\pi_h\cdot\frac{d\pi_w}{du_w}\cdot c\right]\cdot v'(x)-\left[0+\pi_w(1)\cdot\frac{d\pi_h}{du_h}\cdot c\right]\cdot v'(1-x)=0 \tag{9}$$

An increase in μ raises $x^{\{w,h\}}$ and therefore lowers $\bar{u}_h$. Suppose to the contrary that conflict weakly increased (i.e. π_h weakly decreases). This, along with the fact that $\frac{\partial^2\pi_h}{\partial u_h \partial \bar{u}_h}\leq 0$ implies that the expression on the left side of the above equality weakly decreases. This implies that $x^{\{w\}}$ weakly decreases, so that $u_h^{\{w\}}$ weakly increases. But if $\bar{u}_h$ decreases and $u_h^{\{w\}}$ weakly increases then π_h increases. This is a contradiction.

□

Proof of Proposition 4.

Write the generalized equilibrium condition as follows.

$$\left[\pi_h\cdot\frac{d\pi_w}{du_w}\cdot c\right]\cdot v'(x)-\left[\pi_w\cdot\frac{d\pi_h}{du_h}\cdot c\right]\cdot v'(1-x)=(1-\xi)\cdot v'(1-x)-\xi\cdot v'(x) \tag{10}$$

which is

$$\left[\frac{\frac{d\pi_w}{du_w}}{\pi_w}\right]\cdot v'(x)-\left[\frac{\frac{d\pi_h}{du_h}}{\pi_h}\right]\cdot v'(1-x)=\frac{(1-\xi)\cdot v'(1-x)-\xi\cdot v'(x)}{c\cdot\pi_w\cdot\pi_h} \tag{11}$$

In the joint-decision regime we have $\pi_w=\pi_w(1)$, $\pi_h=\pi_h(1)$, and $\xi=\mu$. An increase in μ lowers the right side and therefore raises $x^{\{w,h\}}$.

In the husband-decides regime we have $\pi_w=\pi_w(v(x^{\{h\}}),v(x^{\{w,h\}}))$, $\pi_h=\pi_h(1)$, and $\xi=0$. An increase in μ raises $\bar{u}_w$. This lowers π_w and thus increases the right side. It also weakly decreases the left side. Therefore $x^{\{h\}}$ strictly decreases.

In the wife-decides regime we have $\pi_w=\pi_w(1)$, $\pi_h=\pi_h(v(1-x^{\{w\}}),v(1-x^{\{w,h\}}))$, and $\xi=1$. An increase in μ lowers $\bar{u}_h$. This lowers π_h and thus increases the right side. It also weakly decreases the left side. Therefore $x^{\{w\}}$ strictly decreases. □

Proof of Proposition 5.

The equilibrium payoffs in decision regime d are:

$$U_w^d = v(x^d) - C^d$$
$$U_h^d = v(1 - x^d) - C^d$$

where

$$C^{\{w,h\}} \equiv \bar{\pi}_w \cdot \bar{\pi}_h \cdot c$$
$$C^{\{w\}} \equiv \bar{\pi}_w \cdot \pi_h(v(1 - x^{\{w\}}), v(1 - x^{\{w,h\}})) \cdot c$$
$$C^{\{h\}} \equiv \pi_w(v(x^{\{h\}}), v(x^{\{w,h\}})) \cdot \bar{\pi}_h \cdot c.$$

The results for the joint regime follows from the fact that an increase in μ raises $x^{\{w,h\}}$ while leaving $C^{\{w,h\}}$ unchanged.

For the husband-decides regime, we have that an increase in μ raises $C^{\{h\}}$ (proposition 3) and lowers $x^{\{h\}}$ (proposition 4). Thus $U_w^{\{h\}}$ decreases. Since an increase in μ raises $x^{\{w,h\}}$ and lowers $x^{\{h\}}$ (proposition 4), we have that $\bar{u}_w^{\{h\}}$ and $\bar{u}_h^{\{h\}}$ both increase (since $\bar{u}_w^{\{h\}} = v(x^{\{w,h\}})$ and $\bar{u}_h^{\{h\}} = v(1 - x^{\{h\}})$). Since

$$U_h^{\{h\}} \equiv \max_{x \in [0,1]} \left\{ U_h(x|\bar{u}^{\{h\}}) \right\}$$

the Envelope theorem implies

$$\frac{d}{d\mu} U_h^{\{h\}} = \frac{\partial U_h(x|\bar{u}^{\{h\}})}{\partial \bar{u}_h^{\{h\}}} \cdot \frac{d\bar{u}_h^{\{h\}}}{d\mu} + \frac{\partial U_h(x|\bar{u}^{\{h\}})}{\partial \bar{u}_w^{\{h\}}} \cdot \frac{d\bar{u}_w^{\{h\}}}{d\mu} < 0.$$

For the wife-decides regime, we have that an increase in μ lowers $C^{\{w\}}$ (proposition 3) and lowers $x^{\{h\}}$ (proposition 4). Thus $U_h^{\{w\}}$ increases. Since an increase in μ raises $x^{\{w,h\}}$ and lowers $x^{\{w\}}$ (proposition 4), we have that $\bar{u}_w^{\{w\}}$ and $\bar{u}_h^{\{w\}}$ both decrease (since $\bar{u}_w^{\{w\}} = v(x^{\{w\}})$ and $\bar{u}_h^{\{w\}} = v(1 - x^{\{w,h\}})$). Since

$$U_w^{\{w\}} \equiv \max_{x \in [0,1]} \left\{ U_w(x|\bar{u}^{\{w\}}) \right\}$$

the Envelope theorem implies

$$\frac{d}{d\mu} U_w^{\{w\}} = \frac{\partial U_w(x|\bar{u}^{\{w\}})}{\partial \bar{u}_h^{\{w\}}} \cdot \frac{d\bar{u}_h^{\{w\}}}{d\mu} + \frac{\partial U_w(x|\bar{u}^{\{w\}})}{\partial \bar{u}_w^{\{w\}}} \cdot \frac{d\bar{u}_w^{\{w\}}}{d\mu} > 0.$$

□

Proof of Proposition 6.

[To be added.]

B Estimation Tables

Table 1: IPV Experience and Household Decision Making

	Emotional	Less Severe	Severe	Sexual	Injured
Joint Contraception	-0.0406***	-0.0356***	-0.0235***	-0.0252***	-0.0333***
	(0.00923)	(0.00946)	(0.00639)	(0.00361)	(0.0100)
Wife Contraception	0.0650***	0.0664***	0.0405***	0.0274***	0.0528***
	(0.00806)	(0.00794)	(0.00453)	(0.00377)	(0.00449)
Joint Healthcare	-0.0311***	-0.0263**	-0.0148**	-0.0235***	-0.0182***
	(0.00732)	(0.0100)	(0.00570)	(0.00367)	(0.00542)
Wife Healthcare	0.0496***	0.0506***	0.0270***	0.0148***	0.0367***
	(0.00763)	(0.00817)	(0.00454)	(0.00284)	(0.00477)
Joint HH Purchases	-0.0451***	-0.0329***	-0.0201***	-0.0265***	-0.0274***
	(0.00647)	(0.00877)	(0.00489)	(0.00321)	(0.00647)
Wife HH Purchases	0.0379***	0.0382***	0.0240***	0.0131***	0.0294***
	(0.00647)	(0.00863)	(0.00470)	(0.00309)	(0.00425)
Joint Daily Needs	-0.0433***	-0.0204	-0.0173***	-0.0229***	-0.0287***
	(0.0110)	(0.0131)	(0.00544)	(0.00367)	(0.00983)
Wife Daily Needs	0.0198***	0.0420***	0.0156***	0.00622*	0.0241***
	(0.00482)	(0.0108)	(0.00479)	(0.00344)	(0.00354)
Joint Family Visits	-0.0476***	-0.0374***	-0.0241***	-0.0309***	-0.0309***
	(0.00859)	(0.0104)	(0.00621)	(0.00376)	(0.00763)
Wife Family Visits	0.0320***	0.0290***	0.0157***	0.00775***	0.0213***
	(0.00549)	(0.00917)	(0.00486)	(0.00263)	(0.00408)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone.

Table 2: IPV Experience by Wife and Husband Education

	Wife No Education	Wife Primary	Wife Secondary	Husband No Education	Husband Primary	Husband Secondary
Joint Contraception	-0.0458***	-0.0431***	-0.0556***	-0.0336***	-0.0359***	-0.0625***
	(0.00666)	(0.0121)	(0.0164)	(0.0120)	(0.0130)	(0.0129)
Wife Contraception	0.0529***	0.0835***	0.0604***	0.0779***	0.0871***	0.0537***
	(0.00997)	(0.00842)	(0.0113)	(0.0125)	(0.0127)	(0.00704)
Joint Healthcare	-0.0227	-0.0465***	-0.0558***	-0.0200	-0.0483***	-0.0571***
	(0.0140)	(0.00724)	(0.00742)	(0.0164)	(0.00824)	(0.00864)
Wife Healthcare	0.0610***	0.0543***	0.0234***	0.0721***	0.0544***	0.0192**
	(0.0104)	(0.00547)	(0.00724)	(0.0131)	(0.00652)	(0.00897)
Joint HH Purchases	-0.0321***	-0.0499***	-0.0634***	-0.0297**	-0.0516***	-0.0630***
	(0.00998)	(0.00691)	(0.00637)	(0.0120)	(0.00736)	(0.00646)
Wife HH Purchases	0.0471***	0.0558***	0.0278***	0.0558***	0.0568***	0.0251***
	(0.00976)	(0.00675)	(0.00579)	(0.0106)	(0.00846)	(0.00563)
Joint Daily Needs	-0.00559	-0.0464***	-0.0535***	-0.0107	-0.0389***	-0.0561***
	(0.00856)	(0.00406)	(0.00810)	(0.00994)	(0.00670)	(0.00622)
Wife Daily Needs	0.0616***	0.0433***	0.0245***	0.0584***	0.0456***	0.0230***
	(0.00794)	(0.00608)	(0.00666)	(0.0155)	(0.00748)	(0.00647)
Joint Family Visits	-0.0272*	-0.0574***	-0.0774***	-0.0247	-0.0578***	-0.0747***
	(0.0150)	(0.00762)	(0.00773)	(0.0164)	(0.00908)	(0.00839)
Wife Family Visits	0.0433***	0.0372***	0.00853	0.0437***	0.0377***	0.00949
	(0.00691)	(0.00474)	(0.00703)	(0.00713)	(0.00634)	(0.00719)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone. Dependent Variable: Any IPV (emotional, less severe, severe, sexual, injured). Primary refers to at least some primary education (33% of the sample of women, 31% of husbands). Secondary refers to at least some secondary (43% of women and 51% of husbands).

Table 3: IPV Experience by Wife Occupation

	Wife not Working	Wife Agriculture	Wife Manual	Wife Professional	Wife Service
Joint Contraception	-0.0552***	-0.0359***	-0.0543***	-0.0284*	-0.0634***
	(0.0121)	(0.0119)	(0.0156)	(0.0155)	(0.0158)
Wife Contraception	0.0573***	0.0719***	0.0644***	0.0722***	0.0583***
	(0.00998)	(0.00986)	(0.0147)	(0.0176)	(0.0147)
Joint Healthcare	-0.0553***	-0.0447***	-0.0304*	-0.0482***	-0.0389**
	(0.0104)	(0.00793)	(0.0157)	(0.0171)	(0.0168)
Wife Healthcare	0.0230**	0.0438***	0.0682***	0.0274*	0.0494***
	(0.00989)	(0.00896)	(0.0137)	(0.0158)	(0.0140)
Joint HH Purchases	-0.0598***	-0.0520***	-0.0319**	-0.0706***	-0.0556***
	(0.00601)	(0.00879)	(0.0136)	(0.0115)	(0.0154)
Wife HH Purchases	0.0194***	0.0355***	0.0727***	0.0326***	0.0451***
	(0.00521)	(0.00768)	(0.0119)	(0.0118)	(0.0130)
Joint Daily Needs	-0.0410***	-0.0237**	-0.0416***	-0.0767***	-0.0660***
	(0.00668)	(0.0101)	(0.0103)	(0.00775)	(0.00370)
Wife Daily Needs	0.0184***	0.0571***	0.0384***	0.00804	0.0263***
	(0.00619)	(0.00702)	(0.00845)	(0.0105)	(0.00706)
Joint Family Visits	-0.0637***	-0.0551***	-0.0397**	-0.0871***	-0.0657***
	(0.0109)	(0.00683)	(0.0185)	(0.0137)	(0.0203)
Wife Family Visits	0.0123	0.0264***	0.0564***	0.0111	0.0278*
	(0.00794)	(0.00579)	(0.0145)	(0.0135)	(0.0155)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone. Dependent Variable: Any IPV (emotional, less severe, severe, sexual, injured). 46% of women do not work; 22% are employed in agriculture (includes labourer, self-employed, and fishing, hunting, forestry); 7% perform manual labour (skilled and unskilled); 5% are a type of professional (professional, technical, managerial); and 28% are in services (includes sales and domestic services and clerical).

Table 4: IPV Experience by Husband Occupation

	Husband not Working	Husband Agriculture	Husband Manual	Husband Professional
Joint Contraception	-0.0349***	-0.0536***	-0.0670***	-0.0514***
	(0.00927)	(0.0141)	(0.0114)	(0.0143)
Wife Contraception	0.0800***	0.0651***	0.0413***	0.0585***
	(0.00959)	(0.0111)	(0.0103)	(0.0102)
Joint Healthcare	-0.0318**	-0.0491***	-0.0690***	-0.0480***
	(0.0128)	(0.0118)	(0.0138)	(0.0147)
Wife Healthcare	0.0558***	0.0406***	0.00471	0.0327**
	(0.00990)	(0.00984)	(0.0161)	(0.0129)
Joint HH Purchases	-0.0372***	-0.0501***	-0.0776***	-0.0572***
	(0.0111)	(0.00901)	(0.0101)	(0.0106)
Wife HH Purchases	0.0582***	0.0417***	0.0118	0.0367***
	(0.00999)	(0.00826)	(0.0106)	(0.00878)
Joint Daily Needs	-0.0252**	-0.0430***	-0.0749***	-0.0503***
	(0.00930)	(0.00902)	(0.0101)	(0.00840)
Wife Daily Needs	0.0553***	0.0330***	0.00526	0.0237***
	(0.00770)	(0.00642)	(0.00776)	(0.00686)
Joint Family Visits	-0.0419***	-0.0620***	-0.0857***	-0.0587***
	(0.0139)	(0.0105)	(0.0146)	(0.0158)
Wife Family Visits	0.0410***	0.0248***	-0.00191	0.0275**
	(0.00876)	(0.00868)	(0.0142)	(0.0128)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone. Dependent Variable: Any IPV (emotional, less severe, severe, sexual, injured). 35% of husbands are employed in agriculture (includes labourer, self-employed, and fishing, hunting, forestry); 27% perform manual labour (skilled and unskilled); 10% are a type of professional (professional, technical, managerial); and 24% are in services (includes sales and domestic services and clerical).

Table 5: IPV Experience by Household Characteristics

	Low Wealth	Medium Wealth	High Wealth	Urban	Rural
Joint Contraception	-0.0472***	-0.0522***	-0.0448***	-0.0692***	-0.0410***
	(0.0104)	(0.0171)	(0.0144)	(0.0156)	(0.00974)
Wife Contraception	0.0728***	0.0786***	0.0650***	0.0523***	0.0742***
	(0.0109)	(0.0138)	(0.00995)	(0.0119)	(0.00937)
Joint Healthcare	-0.0285**	-0.0444***	-0.0543***	-0.0577***	-0.0368***
	(0.0128)	(0.00980)	(0.0108)	(0.0115)	(0.0130)
Wife Healthcare	0.0619***	0.0503***	0.0311***	0.0307***	0.0460***
	(0.00911)	(0.00777)	(0.0114)	(0.0100)	(0.0111)
Joint HH Purchases	-0.0381***	-0.0554***	-0.0609***	-0.0644***	-0.0440***
	(0.0110)	(0.00883)	(0.00915)	(0.00844)	(0.0112)
Wife HH Purchases	0.0517***	0.0377***	0.0311***	0.0361***	0.0438***
	(0.0101)	(0.0102)	(0.00888)	(0.00965)	(0.00998)
Joint Daily Needs	-0.0294***	-0.0430***	-0.0530***	-0.0612***	-0.0259***
	(0.00946)	(0.0114)	(0.0113)	(0.00745)	(0.00738)
Wife Daily Needs	0.0491***	0.0358***	0.0244***	0.0227***	0.0477***
	(0.00862)	(0.0106)	(0.00836)	(0.00686)	(0.00826)
Joint Family Visits	-0.0395***	-0.0606***	-0.0670***	-0.0765***	-0.0461***
	(0.0137)	(0.0121)	(0.0108)	(0.0115)	(0.0143)
Wife Family Visits	0.0434***	0.0274**	0.0196**	0.0179*	0.0330***
	(0.00995)	(0.0103)	(0.00876)	(0.00964)	(0.0103)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone. Dependent Variable: Any IPV (emotional, less severe, severe, sexual, injured). Household wealth is an index variable calculated by the DHS using Principal Component Analysis (PCA) on easy-to-collect data on a household's ownership of selected assets, and access to certain amenities.

Table 6: IPV Experience by Relative Education

	Wife More Education	Equal Education	Husband More Education
Joint Contraception	-0.0416**	-0.0551***	-0.0551***
	(0.0186)	(0.0136)	(0.00852)
Wife Contraception	0.0820***	0.0683***	0.0585***
	(0.0142)	(0.00954)	(0.00812)
Joint Healthcare	-0.0486***	-0.0479***	-0.0429***
	(0.00743)	(0.0164)	(0.00981)
Wife Healthcare	0.0439***	0.0331**	0.0438***
	(0.00709)	(0.0142)	(0.00766)
Joint HH Purchases	-0.0554***	-0.0548***	-0.0498***
	(0.00697)	(0.0119)	(0.00848)
Wife HH Purchases	0.0467***	0.0383***	0.0437***
	(0.00892)	(0.00991)	(0.00794)
Joint Daily Needs	-0.0508***	-0.0392***	-0.0424***
	(0.0102)	(0.00749)	(0.00920)
Wife Daily Needs	0.0306***	0.0327***	0.0405***
	(0.00646)	(0.0115)	(0.00697)
Joint Family Visits	-0.0710***	-0.0583***	-0.0551***
	(0.00826)	(0.0162)	(0.0111)
Wife Family Visits	0.0180**	0.0268**	0.0318***
	(0.00766)	(0.0125)	(0.00681)

Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Sample: 645,518 women. Controls: Country and year fixed effects; age; education; household wealth; marital status, employment. Left out category is husband decides alone. Dependent Variable: Any IPV (emotional, less severe, severe, sexual, injured).

References

To be added.