



Empowerment and intimate partner violence: Domestic abuse when household income is uncertain

Erwin Bulte¹ | Robert Lensink²

¹Development Economics Group, Wageningen University, Wageningen, Netherlands

²Department of Economics, Econometrics and Finance, Groningen University, Groningen, Netherlands

Correspondence

Erwin Bulte, Development Economics Group, Wageningen University, Box 8130, Wageningen 6700 HB, Netherlands.
Email: erwin.bulte@wur.nl

Abstract

Intimate partner violence is an important global health problem that remains ill understood. Several studies have documented that female empowerment may increase violence against women—the so-called “male backlash.” We propose a utilitarian explanation for this phenomenon, based on the assumption that violence may be used as an instrument to affect the distribution of the household surplus between the spouses. Our main result is that promoting norms of gender equity (or otherwise enhancing the prospects of divorced women) may inadvertently promote violence against women in settings where production outcomes are uncertain.

KEYWORDS

domestic abuse, female empowerment, gender norms, spousal violence

JEL CLASSIFICATION

D10; D74; I10; J12

1 | INTRODUCTION

Violence against women is widespread and persistent. In light of the large health and social impacts associated with such violence, it is not surprising that curbing it has emerged as an important development goal and policy priority. Intimate partner violence (IPV) is the most common form of violence against women, and approximately one third of all women worldwide have been exposed to physical or sexual abuse by an intimate partner (Devries et al., 2013). One prominent policy response

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2020 The Authors. Review of Development Economics published by John Wiley & Sons Ltd

to domestic abuse is the implementation of projects that aim to promote women's empowerment. This agenda may be pursued at the level of individual women (say, through targeted employment or transfer projects), the level of households or social groups (e.g. behavioral programming interventions), or the societal level (Michau, Horn, Bank, Dutt, & Zimmerman, 2015). The latter type of response may involve information campaigns challenging social norms about violence, gender equality, and the position of (divorced) women in society. It is intuitive that promoting economic empowerment of women, or norms of gender equality, will result in less IPV (e.g. Farmer & Tiefenthaler, 1997). This could happen, for example, because it offers women an exit out of abusive relationships (which may increase their bargaining position within such relationships) or because social disapproval of abuse raises the expected costs of IPV for the husband.

While there is a lot of high-quality research on gender and IPV, some of which is summarized in the next section, the empirical evidence establishing a credible causal link between specific interventions and domestic abuse remains scant and ambiguous. In light of conflicting evidence (see below), empirical researchers need additional theoretical lenses through which to view the patterns in their data. The objective of this paper is to develop a theoretical model that probes the consequences of women's empowerment for the incidence of IPV. Specifically, we provide one new theoretical lens (deliberately ignoring other theoretical mechanisms) and analyze the impact of a policy or project that improves the "outside option" of married women, or the reservation value that married women obtain after divorce. This could be an economic intervention that enhances employment opportunities and promotes the economic independence of women, or a social norms project that reduces the stigma associated with divorce.

Our main result is that the impact of such policies is *fundamentally ambiguous* in a context where the following three assumptions are satisfied: (i) women can divorce their husbands or otherwise exit an unsatisfactory relationship; (ii) future benefits of remaining married are uncertain;¹ and (iii) husbands can increase their share of household resources through the strategic use of domestic violence, and take into account their expectations about future states of the world. In particular, since (economic) empowerment of women improves their outside options and, all else equal, facilitates divorce, men will have to form expectations about the probability of remaining married. We show that while some abused women will benefit from an empowerment intervention, for example by abandoning their badly behaving husband, others will remain in their relationship and endure more intensive abuse than before. We therefore provide a novel explanation for "male backlash."

Our theoretical model does not provide the first explanation for male backlash in the literature. Many papers emphasize the importance of cultural norms and focus on how violence may be a response to threats to traditional norms of masculinity. In addition, two explanations for backlash focus on the instrumental role for violence: husbands use violence "strategically", aiming to distort the within-household allocation of resources. First, Bloch and Rao (2002) explain IPV in terms of asymmetric information between husband and wife (and her family) about his lack of appreciation of the marital relationship. The husband may seek to extort his family-in-law by using violence and terror as a bargaining instrument to increase the stream of transfers flowing to his household. If divorce is stigmatized, as in rural India, his wife has no choice but to remain married, and a woman's parents can only stop the abuse by paying him. Violence thus serves as a (costly, hence credible) signal to in-laws, and women coming from wealthier families are more likely to be beaten to elicit greater transfers from their parents.

Second, Eswaran and Malhotra (2011) propose a non-cooperative bargaining model between husband and wife to explain IPV, where the autonomy of married women is endogenously determined. Violence increases male bargaining power within the family. The autonomy of women measures the extent to which women can implement their preferences in resource allocation *vis-à-vis* those of their

husbands. In the model's first stage, the husband decides on the "IPV menu," where exercising autonomy by the wife incites additional violence. In the second stage, the wife decides about the allocation of resources, taking into account the effect of her choice on the intensity of IPV she has to endure. The model is solved through backward induction. An improvement in the wife's reservation utility (through an empowerment intervention, say) increases her autonomy. This may be accompanied by more intense abuse, depending on how she trades off the cost of IPV against the gains from resource allocations more closely aligned with her own preferences.

Like Eswaran and Malhotra (2011), we consider a non-cooperative game where the husband may use violence to influence the allocation of within-household resources. We also adopt the sequential setup, where the husband first decides about the intensity of violence, followed by the wife's decision problem. The novel feature of our model, and the main contribution of the paper, is the introduction of uncertainty about the future household surplus that is available for distribution between the partners. This is the first stochastic model where husbands decide about IPV based on expectations about future income, and wives decide about remaining married (or not) based on income realizations.²

The intuition for the paradoxical finding that empowering women may result in *additional* violence against women is as follows. Improving the "outside options" of women in the context of uncertain future income may invite additional violence because it enables women to exit a "bad marriage" for a *wider range* of relatively unattractive future states of the world. This implies that a rational husband will optimize his behavior (including his choice of violence) over a *narrower range* of states of nature. However, the states for which the relationship remains intact are the ones in which the use of violence generates relatively large returns (for husbands). The husband understands that the improvement in his wife's outside options implies that divorce is more likely than before, and is only avoided for favorable income realizations. These realizations, however, are also the states of nature where using violence "pays off." As a result, the optimal level of IPV as chosen by the husband increases.

Our model is therefore relevant for households whose income is fundamentally uncertain, and who have limited opportunities for insurance against income volatility. This prominently includes poor smallholders in low-income countries, who must cope with income fluctuations due to weather shocks, diseases, pests, and variable output prices. Insurance can be formal or informal. "Informal insurance" can take the form of flexible borrowing within rotating savings and credit association, or through mutual sharing in tightly knit social networks (see, for example, Coate & Ravallion, 1993, for a theoretical exposition, and Townsend, 1994, for empirical work). However, while risk pooling at the level of local networks helps to overcome idiosyncratic risk (such as health shocks), it can only imperfectly address systemic risks such as adverse weather shocks.

Formal insurance also provides imperfect coverage (or no coverage at all) because it is expensive and because the timing of insurance premiums typically occurs when households are liquidity-constrained (Belissa, Bulte, Lensink, Gangopadhyay, & Cecchi, 2019). Many index insurance products also suffer from basis risk. Households without liquid assets not only lack access to formal insurance, but also often lack collateral, and are therefore "unbankable." Being constrained in their possibilities to borrow or save, key instruments to deal with income shocks are not available to them. Characteristics that are associated with being unbankable are low education levels and informal employment status (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018). Considerable risk remains for many households in the agricultural or informal sector, even after they have resorted to imperfect and costly combinations of *ex ante* and *ex post* risk coping strategies (e.g. Cole & Xiong, 2017; Komarek, De Pinto, & Smith, 2020). We discuss the implications and possible policy responses in the remainder of this paper.

2 | FEMALE EMPOWERMENT AND INTIMATE PARTNER VIOLENCE

Broadly speaking, two complementary sets of theories try to explain IPV. So-called *expressive violence theories* explain violence by assuming that husbands derive utility from beating their wives. Violence may serve the purpose of relieving frustration and anxiety, perhaps triggered by challenges (or “insults”) to traditional gender roles and norms emphasizing male authority (e.g. Macmillan & Gartner, 1999; Alesina, Brioschi, & La Ferrara, 2016; Tur-Prats, 2017).³ The second group of violence theories assume that husbands use domestic violence to change their bargaining position within the family. These so-called *instrumental violence theories* are predicated on the assumption that violence helps male household members to assert control over scarce household resources. The work of Bloch and Rao (2002) and Eswaran and Malhotra (2011), discussed above, fits in the second group of theories, as does our theory.

A sizable empirical literature now exists that probes expressive and instrumental theories of IPV. While early studies suffered from endogeneity issues caused by simultaneity and (self-)selection, recent studies seek to leverage exogenous variation in key variables for causal inference. This is achieved, for example, by random assignment to interventions such as training interventions or transfer programs (e.g. Green, Blattman, Jamison, & Annan, 2015; Hidrobo, Peterman, & Heise, 2016) or by estimating instrumental variable models (Aizer, 2010; Bhattacharya, Bedi, & Chhachhi, 2011; Chin, 2012; Lenze & Klasen, 2017). As a result, a rich and nuanced picture is emerging on the causes of IPV, and on the impact of interventions such as transfer programs on the incidence and type of IPV (e.g. Hidrobo et al., 2016; Bobonis, Gonzalez-Brenes, & Castro, 2013).

One important determinant of IPV, potentially amenable to outside interventions, is women’s empowerment. The relation between empowerment and IPV is complex and possibly bidirectional, and presumably context or culture dependent. However, since domestic abuse is sometimes seen as a symptom of disempowerment, it is natural to assume that the reverse may be true as well: empowering women could reduce the incidence and prevalence of IPV. Indeed, in many (developing) countries, training projects and policies are implemented that try to promote the economic independence of women. Such interventions and policies can take a variety of forms, including efforts to develop female skills or entrepreneurship, targeting women as beneficiaries of transfer programs, and initiatives to alter social norms that condone IPV and gender inequality.

An important component of several interventions seeking to promote economic independence of women or to contribute to changing social norms is to improve the “exit option” for wives, or to enhance options for women outside marriage (i.e. after divorce). The assumption is that if women are economically independent, or if the stigma associated with divorce is attenuated, their so-called “threat point” in intra-household bargaining processes improves. This not only would increase their share of the surplus, but also could potentially reduce exposure to violence (e.g. Cruz & Henderson, 2017; Lenze & Klasen, 2017).

Various studies confirm such “conventional wisdom,” and indeed find that enhanced employment status or a narrowing of the male–female wage gap reduces IPV (e.g. Farmer & Tiefenthaler, 1997; Pronyk et al., 2006; Aizer, 2010; Chin, 2012; Anderberg, Rainer, Wadsworth, & Wilson, 2016). However, the evidence for such a causal link is not overwhelming. Some studies suggest there are no effects of women’s empowerment on domestic violence (Green et al., 2015; Lenze & Klasen, 2017; Gibbs et al., 2020), and others find evidence of impact of the opposite sign (e.g. Finoff, 2012; Gracia & Merlo, 2016; Heath, 2014; Hindin & Adair, 2002).⁴ The effect of women’s empowerment on domestic abuse varies across different types of IPV (Cruz & Henderson 2017) and is mediated by economic conditions (e.g. male and female background unemployment rates; Anderberg et al., 2016)

and characteristics of household members (Heath, 2014). Importantly, the effect also depends on the cultural context. Alesina et al. (2016) find that pre-colonial customs in Africa affect contemporary culture, including gender norms. These norms not only affect violence directly, but also mediate the impact of women empowerment and employment (e.g. Tur-Prats, 2017).⁵

The empirical literature on social norms regarding gender equality and IPV is hardly more conclusive. While recent reviews are supportive of community-wide and multi-sector efforts to change social norms (e.g. Ellsberg et al., 2015; Michau et al., 2015), the evidence establishing a causal link between social norms and IPV is extremely scant. This is not surprising as it is difficult to create a credible counterfactual for evolving social norms.

Outcomes where women's empowerment triggers male violence are commonly referred to as male backlash (e.g., Luke & Munshi, 2011; Cruz & Henderson, 2017). Male backlash is fully consistent with expressive motives for domestic violence if gender equality challenges traditional gender roles and causes anxiety, frustration, and aggression. Most of the gender literature on male backlash therefore focuses on such mechanisms. However, the finding that empowering women may invite IPV may also be consistent with instrumental theories of abuse. If women earn higher incomes, husbands may try to gain access to these additional resources by the use of extra violence, for example by increasing their bargaining power (as in Eswaran & Malhotra 2011). Chin (2012) refers to this as an "extraction effect" of women's employment. Empowered women with greater autonomy may suffer more frequent abuse in equilibrium, resulting from the interaction between the punishment regime chosen by the husband and the frequency of "transgressions" chosen by the wife.

Existing theories focus on deterministic models without uncertainty. However, very few things are fully certain in real life. We sketch another model based on uncertain future income, and demonstrate that this provides a complementary explanation for male backlash.

3 | THE MODEL

3.1 | Building blocks

Assume the existence of a husband and wife sharing an (annual) endowment R , which is stochastic and satisfies $R \in [\underline{R}, \bar{R}]$, with density function $f(R)$. The wife is responsible for allocating this endowment to a set of commodities and services, and allocates share α to goods valued especially by her, and the complementary share $(1 - \alpha)$ to goods especially valued by her husband. Assume that the husband can increase "his share" by using violence. Denote the intensity of violence by s , so that the allocation function is $\alpha(s)$, with $\alpha' < 0$.

We develop a two-stage game where the husband first chooses his private "optimal abuse intensity," based on his expectations with respect to future states of nature. In the relationship we model, abuse intensity is based on the range of expected payoffs considered by the husband, and does not vary from period to period in response to realized income, R . Observing the intensity of violence chosen by the husband, the wife decides about the allocation of the household surplus and, potentially, about marriage dissolution.

We assume that the wife is able to opt out of the marriage, and earn a reservation level of utility denoted by X . This variable may be interpreted as a proxy for economic empowerment (e.g. her skills and abilities), or alternatively as the state of social norms with respect to divorced women (e.g. stigma). It is a key parameter in our model. The woman's participation constraint is defined by

$$\alpha(s)R - X - v(s) \geq 0, \quad (1a)$$

where $v(s)$ denotes disutility caused by exposure to IPV, with $v' > 0$. As long as condition (1a) is satisfied, the wife prefers to remain married. We can readily solve inequality (1a) for the “critical level” of household surplus inducing her to stay in the marriage:

$$\widehat{R} = \frac{X + v(s)}{\alpha(s)}. \quad (1b)$$

For future reference, observe that

$$\frac{\partial \widehat{R}}{\partial s} = \frac{v' \alpha - \alpha' (X + v(s))}{\alpha^2} > 0, \quad \frac{\partial \widehat{R}}{\partial X} > 0, \quad \text{and} \quad \frac{\partial^2 \widehat{R}}{\partial s \partial X} > 0.$$

For income realizations below the threshold, $R < \widehat{R}$, the wife abandons her husband. Not surprisingly, the wife demands greater compensation (in terms of a higher household surplus to be divided between the spouses) in a context of more frequent abuse or improved outside options. The latter insight helps explain why female empowerment is such an intuitive strategy to curb IPV: it enables women who are unhappy in their relation to abandon their husband.

The husband only stays married if he obtains a utility level that exceeds his own reservation level, denoted by Z . His participation constraint is defined by

$$(1 - \alpha(s))R - c(s) - Z \geq 0, \quad (2a)$$

where $c(s)$ is the (emotional) cost associated with beating his wife. Assume that $c' > 0$, $c'' > 0$, or that violence is utilitarian and does not represent a source of gratification for the abuser (as would be the case in the context of expressive theories of IPV).⁶ Condition (2a) can be solved to obtain the critical household endowment from the male perspective:

$$R^* = \frac{c(s) + Z}{1 - \alpha(s)}. \quad (2b)$$

Observe that

$$\frac{\partial R^*}{\partial s} = \frac{c'(1 - \alpha) + \alpha'(c + Z)}{(1 - \alpha)^2},$$

which can be positive or negative, reflecting that while the use of violence increases tangible payoffs for the husband, it also comes at a cost.

3.1.1 | A simple deterministic model

Before solving the stochastic model we first develop a simple deterministic version which serves as a benchmark for future results. Set the husband's reservation utility equal to zero, or assume that he always prefers to remain married. The husband maximizes utility, defined as $U = (1 - \alpha(s))R - c(s)$, subject to his wife's participation constraint (1a), or he solves the following Lagrangian function:

$$L = (1 - \alpha(s))R - c(s) + \lambda(\alpha(s)R - X - v(s)). \quad (3)$$

The Kuhn–Tucker conditions are $L'(s) = 0$, $\lambda \geq 0$, and $\lambda(\alpha(s)R - X - v(s)) = 0$. Assuming $\lambda = 0$, or that the female participation constraint (1b) is not binding, the husband's first-order constraint is given by

$$-\alpha'(s)R - c'(s) = 0. \quad (4)$$

Total differentiation yields

$$\frac{ds}{dR} = \frac{-\alpha'(s)}{\alpha''R + c''} > 0. \quad (5)$$

In words, increasing household income invites additional IPV as the benefits of using violence for the husband are greater. This simply reflects that the stakes are greater, or that there is a larger pie to be divided between the spouses.

Alternatively, consider the case where $\lambda > 0$, or where the wife's participation constraint is binding. In this case, the intensity of IPV is defined by the condition

$$\alpha(s)R - X - v(s) = 0. \quad (6)$$

The husband's optimal IPV level is now determined by his wife's participation constraint,⁷ hence

$$\frac{ds}{dR} = \frac{-\alpha(s)}{\alpha'(s)R - v'(s)} > 0. \quad (7)$$

Hence, again we find that increasing household income R increases the level of IPV. The reason is that the woman tolerates more abuse because she receives a larger flow of household income: even as her share of household income, α , shrinks, in equilibrium she still enjoys a larger flow of consumption goods valued by her, αR .

Next, consider the consequences of improving the woman's outside option, X . From Equation 4 it is evident that this does not affect violence if the participation constraint does not bind: $ds/dX = 0$. However, outcomes are different for couples with binding participation constraints: couples where women are indifferent between staying and going. Differentiating participation constraint (1a) yields the outcome that improving exit options will reduce IPV. This finding is, of course, the rationale of strategies that seek to empower women:

$$\frac{ds}{dX} = \frac{1}{\alpha'R - v'} < 0. \quad (8)$$

3.2 | The Stochastic model with uncertain household income

Next we turn to the more realistic stochastic model where household income R varies from year to year. To solve this model we distinguish between two cases, depending on which partner is most likely to abandon the relationship. First, consider the case where $\hat{R} < R^*$, or where the husband is the "weakest link" in the relationship. Since his critical surplus level exceeds that of his wife, he is more likely to abandon the relationship and only considers the narrow range of (favorable) income realizations: $R \in [R^*, \bar{R}]$. His wife, however, prefers to remain married for intermediate incomes in the range of $R \in [\hat{R}, R^*]$. Write the husband's expected utility level as

$$U = \int_{\underline{R}}^{\widehat{R}} Zf(R) dR + \int_{\widehat{R}}^{R^*} Zf(R) dR + \int_{R^*}^{\bar{R}} \{[(1 - \alpha(s))R - c(s)] f(R) dR. \quad (9)$$

The first-order condition with respect to IPV intensity is given by

$$\frac{\partial U}{\partial s} = -\frac{\partial R^*}{\partial s} [(1 - \alpha(s))R^* - c(s) - Z] + \int_{R^*}^{\bar{R}} (-\alpha'(s)R - c')f(R) dR = 0.$$

Observe that the first term is equal to zero (due to his participation constraint). Hence

$$\frac{\partial U}{\partial s} = \int_{R^*}^{\bar{R}} (-\alpha'(s)R - c')f(R) dR = 0. \quad (10)$$

Taking the total differential of (10) yields $(\partial^2 U / \partial s^2) ds + (\partial^2 U / \partial s \partial X) dX = 0$, or $ds/dX = -U_{sX} / U_{ss}$. Since it follows from Equation 10 that $\partial^2 U / \partial s \partial X = 0$, female empowerment through improved outside options, raising X , does *not* affect violence against women: $ds/dX = 0$. The reason is that the husband is not affected by the threat of divorce caused by the empowerment intervention: he wants to abandon the relationship anyway for the range of income realizations for which his wife now seeks a divorce.⁸

Next consider the more interesting case where $\widehat{R} > R^*$, or *where the woman is most likely to leave the marriage*. Specifically, the wife only prefers to stay married for incomes in the range $R \in [\widehat{R}, \bar{R}]$ while the husband would also be happy to remain married for income realizations $R \in [R^*, \widehat{R}]$. Rewrite the husband's expected utility U as

$$U = \int_{\underline{R}}^{R^*} Zf(R) dR + \int_{R^*}^{\widehat{R}} Zf(R) dR + \int_{\widehat{R}}^{\bar{R}} \{[(1 - \alpha(s))R - c(s)] f(R) dR, \quad (11)$$

and obtain the first-order condition

$$\frac{\partial U}{\partial s} = -\frac{\partial \widehat{R}}{\partial s} [(1 - \alpha(\widehat{s}))\widehat{R} - c(\widehat{s}) - Z] + \int_{\widehat{R}}^{\bar{R}} (-\alpha'(s)R - c')f(R) dR = 0. \quad (12)$$

The first term on the right-hand side (RHS) is now *not* equal to zero, as the husband's participation constraint is not binding at \widehat{R} —which is defined by his *wife's* participation constraint (1b). Because $R^* < \widehat{R}$, the first term is negative. This term captures the fact that increasing the intensity of IPV shifts up the critical level of household income for which the wife is indifferent between staying and going, and therefore increases the probability of divorce. The second term must be positive, and captures the benefits of increasing the intensity of IPV for husbands: they secure a greater share of the surplus if the marriage stays intact (but suffer greater disutility costs associated with using violence).⁹ To determine the effect of female empowerment on male violence we again consider the cross-term:

$$\frac{\partial^2 U}{\partial s \partial X} = -\frac{\partial^2 \widehat{R}}{\partial s \partial X} [(1 - \alpha(\widehat{s}))\widehat{R} - c(\widehat{s}) - Z] - \frac{\partial \widehat{R}}{\partial s} \frac{\partial \widehat{R}}{\partial X} [1 - \alpha(\widehat{s})] + \frac{\partial \widehat{R}}{\partial X} [\alpha'(\widehat{s})\widehat{R} + c']. \quad (13)$$

The sign of this expression is ambiguous, implying that the effect of women's empowerment on male violence, $ds/dX = -U_{sX}/U_{ss}$, is also ambiguous.

To see this, first recall that $-\partial^2 \widehat{R}/\partial s \partial X < 0$ and $\left((1 - \alpha(\widehat{s})) \widehat{R} - c(\widehat{s}) - Z \right) > 0$. The latter follows immediately from $\left((1 - \alpha(s^*)) R^* - c(s^*) - Z \right) = 0$ and $\widehat{R} > R^*$. Hence, the first term has a negative sign. The same applies to the second term. These effects capture that improving the outside option of women increases the risk for husbands of being abandoned. To reduce this risk, they can choose to accommodate their wives and limit domestic abuse, accepting a lower share of the household surplus for themselves. This consideration was also relevant in the deterministic model.

But the sign of the final term in parentheses is potentially positive, and could dominate the two other terms. Equation 10 implies that the weighted average of $(-\alpha'(s)R - c'(s))$ over the interval $[\widehat{R}, \bar{R}]$ is positive, and this may also be the case for the lowest income state \widehat{R} . If $U_{sX} > 0$, we obtain the apparently paradoxical result that empowered women are abused more frequently in equilibrium: $ds/dX = -U_{sX}/U_{ss}$. Why?

The reason is as follows. Since women's empowerment shifts up the reservation income level for women ($-\partial \widehat{R}/\partial X > 0$), the first-order effect is that the marriage stays intact only for a narrower range of (highly favorable) income realizations. But this implies that husbands will "optimize" over a more narrow range of R realizations when deciding about the optimal frequency of abuse, s^* . Specifically, they ignore income states R in the (expanded) range $R \in [R^*, \widehat{R}]$ (because their wives will abandon them anyway) and base their preferred level of violence on incomes from the range $R \in [\widehat{R}, \bar{R}]$ where violence pays off (because the stakes for distribution are "highest").

This implies that women's empowerment introduces a complex balancing act for husbands. They may invest in the marriage, reduce levels of domestic violence, and try to maintain the marriage by extending a greater share of the common surplus to their wife. Alternatively, they can accept that the risk of marriage dissolution has gone up, and that divorce is only avoided (or postponed) in case of very favorable income realizations. But for these realizations the use of violence has the highest pay-offs, so the intensity of IPV may go up as well. In other words, women's empowerment may invite husbands to focus on states of nature where the use of violence is most attractive. The net effect of empowerment on violence is ambiguous, depending on which effect dominates: the bargaining effect or the high-stakes effect.

4 | EXTENSIONS

We now show that the conclusions derived above extend to different types of household models, and are not an artifact of the simple zero-sum game discussed above. As one possible extension we consider the case of a model where husband and wife earn separate incomes, and pool part of their income into a common pot. This amounts to a simplified version of the hybrid model of household decision-making developed by Malapit (2012). Assume that husband and wife each have their own set of separate economic activities, and earn their own incomes H and W , respectively. In what follows we assume that spouses supply labor inelastically, regardless of domestic violence or contributions to the common pot.¹⁰

First, consider the case where a local social norm stipulates that both spouses contribute a share θ of their income to the common pot, which is then converted into a set of household goods denoted by G via a simple linear production function (similar results, but more messy algebra, obtain for concave production functions):

$$G = A\theta(H + W), \quad (14)$$

where A is a productivity parameter and G consists of a bundle of “household goods” possibly including health or education services enjoyed, home improvements, and food. Assume a share μ of these household goods consists of goods that are especially valued by the husband. Or, alternatively, think of μ as the share of the household goods consumed by the husband (e.g. in the case of food). We assume the husband chooses μ . His claim on household resources may cause tensions within the household, so he may resort to violence, s , to force his preferences upon his partner. The payoffs for the husband when married are given by

$$\pi = \delta \mu A \theta (H + W) + (1 - \delta) (1 - \theta) H - c(s), \quad (15)$$

where δ is a parameter measuring the relative strength of the husband’s preferences for household goods, relative to private goods purchased from his remaining income. The first term on the RHS of Equation 15 measures his utility from consuming household goods, and the second term measures the utility from his remaining private income, spent on private goods. The third term again measures any utility loss associated with using violence. Payoffs for the woman when in marriage, from consumption, are given by

$$\omega = \varepsilon (1 - \mu) A \theta (H + W) + (1 - \varepsilon) (1 - \theta) W - v(s), \quad (16)$$

where ε is a parameter measuring her preferences for household goods. The interpretation of the first and second term on the RHS is as above; the utility from consuming household and private goods, respectively. From Equation 16 it is evident that the wife prefers $\mu = 0$ but may accept $\mu > 0$ if the husband uses violence. We assume the husband will use more violence for greater values of μ (as the gap between his chosen allocation and the preferences of his wife is greater), and capture the utility loss associated with such violence for his wife in the model as $v(s) = \gamma \mu$, where γ is a cost parameter. Finally, and as before, denote the reservation utility of wives by X and the reservation level of utility of husbands by Z .

The participation constraint for the wife can be written as:

$$\varepsilon (1 - \mu) A \theta (H + W) + (1 - \varepsilon) (1 - \theta) W - \gamma \mu \geq X. \quad (17)$$

Consider the case where male income is uncertain, and ranges in $[H, \bar{H}]$. For example, the husband may manage plots with cash crops so that his income varies with market prices, or he may work part of the time off-farm and his off-farm earnings fluctuate with the aggregate demand for labor. The female participation constraint is satisfied for sufficiently high male incomes $H > \hat{H}$:

$$\hat{H} = \frac{X + \mu \gamma - (1 - \varepsilon) (1 - \theta) W}{\varepsilon (1 - \mu) A \theta} - W. \quad (18)$$

From Equation 18 it follows immediately that wives are less likely to remain married if their outside option improves ($-\partial \hat{H} / \partial X > 0$) and if their husband claims a greater share of the common pot ($-\partial \hat{H} / \partial \mu > 0$). An increase in the share of the household goods claimed by the husband reduces the wife’s utility from staying married because (i) she receives less of the household good and (ii) there will be higher “violence” costs.

We again focus on the interesting case where the wife is the weakest link in the relation, and demands a greater “realization” of male income H to remain married: $\hat{H} > H^*$. The husband’s expected future payoff in that case is given by

$$U = \int_{\underline{H}}^{\hat{H}} Z f(H) dH + \int_{\hat{H}}^{\bar{H}} \pi(\mu) f(H) dH. \quad (19)$$

The optimal share of the common pot claimed by the husband is

$$\frac{\partial U}{\partial \mu} = -\frac{\partial \hat{H}}{\partial \mu} \left(\delta \mu A \theta (\hat{H} + W) + (1 - \delta)(1 - \theta) \hat{H} - c(\mu) - Z \right) + \int_{\hat{H}}^{\bar{H}} (\delta A \theta (H + W) - c') f(H) dH = 0. \quad (20)$$

Note that the first term on the RHS of Equation 19 is negative (because $\hat{H} > H^*$). The second term should be positive for an optimum, which will always be the case if utility loss for the husband of using violence is not “too large” (else a corner solution eventuates, without violence: $s = 0$).

We again want to know how empowerment affects IPV in equilibrium: $d\mu/dX = -U_{\mu X}/U_{\mu\mu}$. Assuming, as usual, that $U_{\mu\mu} < 0$, the relevant comparative static result is summarized by

$$U_{\mu X} = -\frac{\partial^2 \hat{H}}{\partial \mu \partial X} \left(\delta \mu A \theta (\hat{H} + W) + (1 - \delta)(1 - \theta) \hat{H} - c(\mu) - Z \right) - \frac{\partial \hat{H}}{\partial \mu} \left(\delta \mu A \frac{\partial \hat{H}}{\partial X} + (1 - \delta)(1 - \theta) \frac{\partial \hat{H}}{\partial X} \right) - \frac{\partial \hat{H}}{\partial X} \left(\delta A \theta (\hat{H} + W) - c' \right).$$

The sign of this expression is ambiguous, and the reason is as before: improving the wife’s outside option implies that the husband optimizes over a more narrow range of states of the world, namely those in which his income is higher than \hat{H} , and these high-income states are the ones in which the use of violence “pays off” because the size of the common pot is large.

We can repeat the analysis by treating the wife’s income W as uncertain, ranging in $[\underline{W}, \bar{W}]$. She prefers to remain married if the condition

$$\hat{W} = \frac{X + \mu\gamma - \varepsilon(1 - \mu)A\theta H}{\varepsilon(1 - \mu)A\theta + (1 - \varepsilon)(1 - \theta)}, \quad (18')$$

holds, and the husband’s maximization problem reduces to maximizing the expression

$$U = \int_{\underline{W}}^{\hat{W}} Z f(H) dH + \int_{\hat{W}}^{\bar{W}} \pi(\mu) f(W) dW. \quad (19')$$

It is readily verified that this amounts to a similar problem with a solution similar to those sketched above. The fundamental point remains: in the presence of income uncertainty (which is quite realistic in a context of farming or casual labor) the effects of women’s empowerment on the prevalence of IPV are ambiguous. This finding is robust to the exact specification of household production. Stochasticity of income and the associated uncertainty about the longevity of the marital relationship invite male backlash.

Qualitatively similar results eventuate when another type of model is developed, for example where spouses contribute unequal shares of their income to the common pot. Assume that husbands seek to shift the burden of common pot contributions towards their wives by using violence. Assuming that raising the “household tax” through violence does not affect female income, her participation constraint is now given by

$$\varepsilon A (\theta H + \sigma(s) W) + (1 - \varepsilon)(1 - \sigma(s)) W - \gamma s \geq X, \quad (17')$$

where $\sigma(s)$ measures the share of the wife’s income contributed to the pot, with $\sigma'(s) > 0$ and $\sigma''(s) < 0$. For simplicity, but without loss of generality, we now assume the public good is enjoyed equally by both

spouses, so that the only source of contention is how the public good will be financed. If the wife's income is stochastic, ranging in $[\underline{W}, \overline{W}]$, the income level for which she is indifferent between marriage and divorce is given by

$$\widehat{W} = \frac{X + \gamma s - \varepsilon A \theta H}{\varepsilon A \sigma(s) + (1 - \varepsilon)(1 - \sigma(s))}. \quad (18'')$$

Observe that, again, $\partial \widehat{W} / \partial X > 0$, or women are more likely to abandon their husband if their outside option improves, and can only be tempted to remain married for particularly positive income realizations. The rest of the analysis is therefore similar to the case examined above, as husbands optimize over a more narrow range of possible income realizations: precisely those where payoffs of male violence are highest.

5 | POLICY IMPLICATIONS

Consistent with earlier work (and many policy interventions), our model predicts that the incidence and prevalence of IPV can be reduced by raising the cost of abuse for the husband. This can be achieved, for example, by programs that seek to alter societal norms of gender equality and IPV. However, the impact of women empowerment interventions—promoting economic independence or reducing stigma of divorce—appears less benign.

Our model predicts a dilemma for policy-makers and non-governmental organizations. Female empowerment improves the welfare of women opting out of marriage (and increases the number of women who will opt out of abusive relationships), but simultaneously reduces the welfare of the subsample of women who remain married. Such women suffer more intense violence, which distorts the allocation of the household surplus. Our theory therefore suggests that women's empowerment interventions most predictably produce the desired effects in contexts where household income fluctuations are modest. In contexts where men can commit to violence levels, the possibility of large upward swings in income is especially harmful as these income realizations invite the most extensive abuse. The policy implications are twofold.

First, empowerment interventions could *target* households with relatively stable incomes. This includes households with formal employment (and fixed salaries), households with informal but predictable incomes, and agricultural households with farming types producing a stable flow of revenues (e.g. irrigated agriculture versus rain-fed cropping). As mentioned, even in the absence of formal insurance opportunities, many households have multiple strategies for coping with and managing risk. While residual risk remains important for many households in low-income countries, identifying subsamples of potential beneficiaries with relatively stable incomes attenuates or eliminates the policy dilemma discussed above.

Second, policy-makers can try to complement empowerment interventions with efforts to *stabilize* household income. Such income-stabilizing measures may serve multiple objectives, other than IPV prevention, and can take a variety of forms. For example, Komarek et al. (2020) distinguish between five different types of risks in agriculture (production, market, institutional, personal, and financial risk), each of which can be attenuated by appropriate interventions. These range from the promotion of drought-tolerant crop varieties to crop insurance, and from subsidized health care to price stabilization. Unfortunately, as also emphasized by Komarek et al. (2020), our understanding of how these different types of risk interact and jointly affect household income is extremely limited—this is a priority for future research.

6 | DISCUSSION

In this paper we propose a novel instrumental explanation for male backlash, or the empirical finding that improvements in the economic position of women may invite higher levels of IPV. A key component of our model is the ability of women to abandon their husband, which is realistic in some contexts but not in others. Other key assumptions are that household income is uncertain (a stochastic variable with known distribution), and that using violence enables husbands to secure a greater share of household resources, with the payoff of such strategies depending on the realization of household income. We also assume that the husband is the first mover and chooses the “optimal violence level” when future income is still uncertain. Our explanation is based on the interplay between these assumptions. Uncertainty about marriage dissolution induces the husband to focus on states of nature where the use of violence pays off most, because the economic benefits of abuse are greatest when the household surplus is “large.”

Observe that we consider a specific form of female empowerment, namely efforts to improve the well-being of women outside marriage (through altered social norms, say). This perspective complements that of other economic models, which tend to focus on efforts to increase female income *within* the relationship (e.g. Aizer, 2010). If women earn higher incomes, male backlash may eventuate due to expressive motives. However, instrumental motives likely point in the opposite direction. Economically independent women may have a lower tolerance for abuse, forcing the husband to strategically curb the dishing out of violence so as not to lose his wife (and her income). In observational data of gender and empowerment interventions, multiple mechanisms are simultaneously relevant, and disentangling the magnitude of specific mechanisms will prove to be extremely challenging.

ORCID

Erwin Bulte  <https://orcid.org/0000-0001-9491-5268>

Robert Lensink  <https://orcid.org/0000-0001-6448-5164>

ENDNOTES

- ¹ Uncertainty about future states of the world may be due, for example, to the simple fact that income of rural households varies with the vagaries of rainfall, or that the returns to family-owned enterprises vary with unpredictable shifts in aggregate demand.
- ² A few empirical papers consider the effect of (the resolution of) uncertainty on IPV, but do not focus on the effects of stochastic income. Card and Dahl (2011) look at the impact of an (unexpected) loss of the favorite football team on IPV by frustrated supporters, and Gibbs, Jacobsen, and Kerr Wilson (2017) emphasize the importance to IPV of a context of insecurity in post-conflict societies.
- ³ Anderberg and Rainer (2013) demonstrate that abuse need not take the form of physical violence—men can also use sabotage tactics to reduce the employability and job prospects of their wife.
- ⁴ The so-called Nordic paradox appears to speak to the latter issue: the puzzling fact that the prevalence of IPV is disproportionately high in Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) with superior gender equality along many other dimensions (for references, see Gracia & Merlo, 2016).
- ⁵ Tur-Prats (2017) analyses the relation between unemployment and IPV, distinguishing between so-called stem and nuclear family types (as traditionally occurring in different Spanish regions). In the former family type, women traditionally have more freedom to engage in outdoor activities, which shaped the evolution of local gender identity norms. These cultural norms affect how men respond to female (un)employment today.
- ⁶ According to expressive theories of violence, husbands' utility increases due to violence, or $c < 0$ (presumably with $c' < 0$ and $c'' > 0$). For our results assumptions with respect to the specification of the “cost of beating” function $c(s)$ are unimportant, and our main results also hold under alternative assumptions.

- ⁷ From Equation 6 is also evident that violence is not inevitable, even in a simple household model without love, affection, or empathy. Corner solutions may eventuate. Assume that, in the absence of IPV, the wife adopts a simple sharing norm of $\alpha = 1/2$. Then, if the condition $R = 2X$ holds, the husband can only save his marriage by setting $s = 0$. Obviously the zero-violence corner solution may also be due to the presence of utility costs for the husband associated with the use of violence, $c(s) > 0$; a necessary condition for positive levels of IPV is that $(1 - \alpha(s))R - c(s) > 0$.
- ⁸ Outcomes are less benign when the reservation value for the husband improves, or when Z increases. Observe that $ds/dZ = -U_{sZ}/U_{ss}$. Differentiating Equation 10 yields $\frac{\partial U}{\partial s \partial Z} = -\frac{\partial R^*}{\partial Z} (-\alpha'(\hat{s})\hat{R} - c'(\hat{s})) > 0$. This result follows from two observations: first, $\frac{\partial R^*}{\partial Z} = \frac{1}{1 - \alpha(s)} > 0$; and second, the simple implication of Equation 7 that $(-\alpha'(\hat{s})\hat{R} - c'(\hat{s})) < 0$. (Since the weighted average of the first-order condition over the interval $[R^*, \bar{R}]$ is zero, it must be that in the lowest income state R^* the derivative is negative.) Taken together, we find that $ds/dZ = 0$, or that IPV increases when the exit option for the husband improves. The reason is that he demands additional utility from remaining in the relationship, which he obtains by focusing on high-income realizations and conditioning the level of abuse on such income outcomes.
- ⁹ If these costs are sufficiently large, the husband will again choose a zero-violence corner solution, as in the deterministic case studied above.
- ¹⁰ This assumption is not innocuous. If (female) labor supply is introduced as an additional choice variable, then the wife's maximization problem becomes much more complicated. For example, if she is the first mover in a sequential-move household model, she can manipulate IPV by supplying more or less labor. Exploring the consequences of such a complex model is left for future research.

REFERENCES

- Aizer, A. (2010). The gender wage gap and domestic violence. *American Economic Review*, *100*, 1847–1859.
- Alesina, A., Brioschi, B., & La Ferrara, E. (2016). *Violence against women in Africa: A cross-cultural analysis for Africa* (NBER Working Paper No. 21901). Cambridge, MA: National Bureau for Economic Research.
- Anderberg, D., & Rainer, H. (2013). Economic abuse: A theory of intrahousehold sabotage. *Journal of Public Economics*, *97*, 282–295.
- Anderberg, D., Rainer, H., Wadsworth, J., & Wilson, T. (2016). Unemployment and domestic violence: Theory and evidence. *Economic Journal*, *126*, 1947–1979.
- Belissa, T., Bulte, E., Lensink, R., Gangopadhyay, S., & Cecchi, F. (2019). Liquidity constraints, informal institutions, and the adoption of weather insurance: A randomized controlled trial in Ethiopia. *Journal of Development Economics*, *140*, 269–278.
- Bhattacharya, M., Bedi, A., & Chhachhi, A. (2011). Marital violence and women's employment and property status: Evidence from north Indian villages. *World Development*, *39*, 1676–1689.
- Bloch, F., & Rao, V. (2002). Terror as a bargaining instrument: A case study of dowry violence in rural India. *American Economic Review*, *92*, 1029–1043.
- Bobonis, G., Gonzalez-Brenes, M., & Castro, R. (2013). Public transfers and domestic violence: The roles of private information and spousal control. *American Economic Journal: Economic Policy*, *5*, 179–205.
- Card, D., & Dahl, G. (2011). Family violence and football: The effect of unexpected emotional cues on violent behavior. *Quarterly Journal of Economics*, *126*, 1–41.
- Chin, Y. M. (2012). Male backlash, bargaining or exposure reduction? Women's working status and physical spousal violence in India. *Journal of Population Economics*, *25*, 175–200.
- Coate, S., & Ravallion, M. (1993). Reciprocity without commitment: Characterization and performance of informal insurance arrangements. *Journal of Development Economics*, *40*, 1–24.
- Cole, S., & Xiong, W. (2017). Agricultural insurance and economic development. *Annual Review of Economics*, *9*, 235–262.
- Cruz, C. B., & Henderson, E. A. (2017). Bargaining or backlash? Evidence on intimate partner violence from the Dominican Republic. *Feminist Economics*, *23*(4), 90–117.
- Demircug-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). *Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution*. Washington, DC: World Bank.
- Devries, K., Mak, J., Garcia-Moreno, C., Petzold, M., Child, J., Falder, G., ... Watts, C. (2013). The global prevalence of intimate partner violence against women. *Science*, *340*, 1527–1528.
- Ellsberg, M., Arango, D., Morton, M., Gennari, F., Kiplesund, S., Contreras, M., & Watts, C. (2015). Prevention of violence against women and girls: What does the evidence say? *The Lancet*, *385*(9977), 1555–1566.

- Eswaran, M., & Malhotra, N. (2011). Domestic violence and women's autonomy in developing countries: Theory and evidence. *Canadian Journal of Economics*, 44, 1222–1263.
- Farmer, A., & Tiefenthaler, J. (1997). An economic analysis of domestic violence. *Review of Social Economy*, 55, 335–358.
- Finoff, K. (2012). Intimate partner violence, female employment and male backlash in Rwanda. *Economics of Peace & Security*, 7, 14–24.
- Gibbs, A., Corboz, J., Chirwa, E., Mann, C., Karim, F., Shafiq, M., ... Jewkes, R. (2020). The impacts of combined social and economic empowerment training on intimate partner violence, depression, gender norms and livelihoods among women: An individually randomized controlled trial and qualitative study in Afghanistan. *British Medical Journal: Global Health*, in press. <https://doi.org/10.1136/bmjgh-2019-001946>.
- Gibbs, A., Jacobsen, J., & Kerr Wilson, A. (2017). A global comprehensive review of economic interventions to prevent intimate partner violence and HIV risk behaviours. *Global Health Action*, 10, 1290427.
- Green, E., Blattman, C., Jamison, J., & Annan, J. (2015). Women's entrepreneurship and intimate partner violence: A cluster randomized trial of microenterprise assistance and partner participation in post-conflict Uganda. *Social Science & Medicine*, 133, 177–188.
- Gracia, Enrique, & Merlo, Juan (2016). Intimate partner violence against women and the Nordic paradox. *Social Science & Medicine*, 157, 27–30.
- Heath, R. (2014). Women's access to labor market opportunities, control of household resources, and domestic violence: Evidence from Bangladesh. *World Development*, 57, 32–46.
- Hidrobo, M., Peterman, A., & Heise, L. (2016). The effect of cash, vouchers, and food transfers on intimate partner violence: Evidence from a randomized experiment in northern Ecuador. *American Economic Journal: Applied Economics*, 8, 284–303.
- Hindin, M. J., & Adair, L. S. (2002). Who's at risk? Factors associated with intimate partner violence in the Philippines. *Social Science & Medicine*, 55, 1385–1399.
- Komarek, A. M., De Pinto, A., & Smith, V. H. (2020). A review of types of risks in agriculture: What we know and what we need to know. *Agricultural Systems*, 178, 102738.
- Lenze, J., & Klasen, S. (2017). Does women's labor force participation reduce domestic violence? Evidence from Jordan. *Feminist Economics*, 23, 1–29.
- Luke, N., & Munshi, K. (2011). Women as agents of change: Female income and mobility in India. *Journal of Development Economics*, 94, 1–17.
- Macmillan, R., & Gartner, R. (1999). When she brings home the bacon: Labor-force participation and the risk of spousal violence against women. *Journal of Marriage and Family*, 61, 947–958.
- Malapit, H. (2012). Why do spouses hide income? *Journal of Socio-Economics*, 41, 584–593.
- Michau, L., Horn, J., Bank, A., Dutt, M., & Zimmerman, C. (2015). Prevention of violence against women and girls: Lessons from practice. *The Lancet*, 385, 1672–1684.
- Pronyk, P. M., Hargreaves, J. R., Kim, J. C., Morison, L. A., Phetla, G., Watts, C., ... Porter, J. D. H. (2006). Effect of a structural intervention for the prevention of intimate partner violence and HIV in rural South Africa: A cluster randomised trial. *The Lancet*, 368, 1973–1983.
- Townsend, R. (1994). Risk and uncertainty in village India. *Econometrica*, 62, 539–591.
- Tur-Prats, A. (2017). *Unemployment and intimate partner violence: A gender-identity approach* (Economics Working Paper Series No. 1564). Barcelona: Universitat Pompeu Fabra.

How to cite this article: Bulte E, Lensink R. Empowerment and intimate partner violence: Domestic abuse when household income is uncertain. *Rev Dev Econ*. 2020;00:1–15. <https://doi.org/10.1111/rode.12715>