Income Changes and Intimate Partner Violence: Theory and Evidence from Unconditional Cash Transfers in Kenya* 

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Abstract

In a previous study, we found an improvement in female empowerment after randomized unconditional cash transfers in Kenya (Haushofer and Shapiro 2016). Here we report detailed impacts of these transfers on physical and sexual intimate partner violence, and construct a theory to explain them. Transfers to women averaging USD 709 reduced physical and sexual violence (−0.26, −0.22 standard deviations). Transfers to men reduced physical violence (−0.18 SD). We find spillovers: physical violence towards non-recipient women in treatment villages decreased (−0.16 SD). We show theoretically that transfers to both men and women are needed to understand why violence occurs. Our theory suggests that husbands use physical violence to extract resources, but dislike it, while sexual violence is not used to extract resources, but is pleasurable.

JEL codes: O12, C93, D13

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1. Introduction

Worldwide, almost one in three women have been victims of physical or sexual violence from their intimate partner. In Kenya, the figure is forty-two percent (Hindin, Kishor, and Ansara 2008). To design policies that effectively reduce the incidence of violence, we must first understand why it happens. How intimate partner violence (IPV) responds to changes in economic variables for either partner can contribute to building this understanding. A previous study reported improvements in female empowerment following unconditional cash transfers in Kenya (Haushofer and Shapiro 2016). Here, we report additional results from this study, including detailed effects on physical and sexual IPV, and construct a theory to elucidate the underlying motives for IPV.¹

Why do husbands engage in IPV? Existing literature distinguishes two motives, which may work independently or in concert: instrumental and expressive. Violence (threatened or realized) is said to be instrumental when it is used by husbands to extract resources from the wife to increase their own consumption (Tauchen, Witte, and Long 1991; Farmer and Tiefenthaler 1997; Eswaran and Malhotra 2011).² In contrast, violence is expressive when it contributes directly to the husband’s utility (Tauchen, Witte, and Long 1991). These non-pecuniary returns can be positive or negative: husbands may derive direct pleasure from engaging in violence, e.g., as a way to assert dominance or in the case of sexual violence. In such cases, violence is “expressively pleasurable”. Conversely, husbands may find the use of violence...

¹We focus on violence perpetrated by the husband against the wife because it accounts for the majority of violence, both in this context and in others. The previous paper used a gatekeeper strategy, i.e. it first tested effects of the program on a set of index variables, and then explored those indices in more detail that survived correction for multiple comparisons. We found significant effects on the female empowerment index in treatment compared to control villages, that survived correction for multiple comparisons across all index variables. In the original paper, this effect could not be explored further due to space constraints. This is the purpose of the present paper. Note that, like in the previous paper and as pre-specified in our PAP, we do not correct for multiple comparisons across variables within a family of outcomes.

²Some authors use the term “extractive” violence to refer specifically to the extraction of resources (Bloch and Rao 2002). This is a specific example of instrumental violence, which is a broader concept and can also include violence to control the wife’s behavior and achieve control of decisions in the household (Hidrobo, Peterman, and Heise 2016). We focus on extractive instrumental violence because other types of instrumental violence can be expressed as extractive as long as transfers are possible.
displeasing, for example, because he cares for the wife or because of stigma. Here, violence is "expressively distasteful".\footnote{Note that theories of "male backlash", which have been proposed in psychology, are also special cases of instrumental and expressive violence. Male backlash refers to cases where the husband engages in violence in response to an increase in (financial) empowerment of the wife (Tankard and Paluck 2016; Buller et al. 2018). If such "backlash violence" is used to extract income or otherwise force the spouse to conform to his preferences, it is instrumental; if it is used to restore his bruised ego without any economic consequences, it is expressive. In our theory, we allow for the former case, i.e. the possibility that the husband’s preferred level of violence increases in the wife’s income because it is more profitable to extract resources from a wealthier wife. However, this restriction is merely for convenience, and it would be straightforward to extend the theory to cover expressive backlash violence.}

In addition to the husband’s motives, equilibrium violence is also determined by the wife’s participation constraint. This constraint reflects the woman’s outside option, which is affected endogenously by instrumental violence; and her “empowerment”, a function that captures the effect of norms on a woman’s disutility from violence.\footnote{Of course, norms may also affect the husband’s (dis)utility from violence; this is captured in our expressive channel.}

How can we determine which motives are most salient in explaining equilibrium violence? In this paper, we present a theory which shows how income changes to both spouses can be used to make inferences about the motives underlying violence. Our framework allows all of the motives and channels described above to be at play: First, changes in income may (endogenously) affect the degree to which the husband extracts income from the wife. Second, changes in income may affect the degree to which the husband has a direct taste or distaste for violence. Finally, changes in income may affect the degree to which the wife tolerates violence instead of leaving the marriage. Tolerance reflects empowerment, both in the sense that the wife may not have enough resources to escape, and in the sense that she may view domestic violence as "normal". We also allow for within-household transfers, implying that the husband can extract resources from his wife using only the threat of violence. This is important for understanding welfare effects because a policy that reduced equilibrium violence but also increased extraction from women may not be desirable. Moreover, our model shows that in order to obtain an accurate understanding of why IPV happens, we can not only look at the effect of programs...
on violence, we must also look at their effect on consumption.\footnote{Note that the theory is not specifically about how to use UCTs to reduce physical and sex violence. The goal is to (i) provide a framework in which we can learn about why IPV happens by studying the effects of existing programs (expedience), and (ii) more broadly, to better understand richer impacts of economic development, such as impacts on IPV.}

We use our theory to interpret the experimental results from previously published work by Haushofer and Shapiro (2016), which randomly gave an UCT to either men or women. We find that transfers to both men and women reduce IPV. Through examining impacts on consumption, we conclude that intra-household transfers did not attenuate or undo the positive welfare effects (they do not seem to be operative). Our model shows that this pattern of impacts suggests that physical violence is instrumental and expressively distasteful (for example, stigmatized), while sexual violence is not instrumental and expressively pleasurable (the husband derives non-pecuniary utility, and it may be less stigmatized, e.g. because it is less publicly observable).

Thus, policies targeting different types of violence must account for potentially very different sets of underlying motives. For example, giving husbands a cash transfer reduces physical violence, but giving wives a cash transfer reduces both physical and sexual violence. Broadly, if we believe that women’s empowerment is the main determinant, then giving money to women is more effective at reducing IPV. However, if it turns out violence is distasteful but stress is a key channel (violence and male wealth substitutes in non-pecuniary utility), then giving money to men may be more effective.

Our empirical evidence on the effect of income changes on IPV comes from a randomized controlled trial on unconditional cash transfers with about 1500 households in western Kenya. Effects of the program on economic and psychological wellbeing variables have already been reported in a previous paper (Haushofer and Shapiro 2016). That paper also included reduced-form impacts on a female empowerment index, which was a standardized weighted average of a group of variables which included indices of physical and sexual violence. In the present paper we report the detailed impacts that were previously summarized in this index. Between 2011 and 2013, the NGO GiveDirectly, Inc. made unconditional cash transfers of, on average, USD 709 PPP, corresponding to about two years of per capita expenditure, to households in western Kenya using the mobile money system
M-Pesa. Recipients were chosen for meeting a basic means test criterion, did not expect the transfers, and were explicitly informed that they were unconditional. We randomized at the village level, the household level within villages, and whether transfers were sent to the man or the woman in the household.\textsuperscript{6}

In female recipient households, transfers led to a significant reduction in both physical (0.26 SD) and sexual (0.22 SD) violence. Women in male recipient households report a statistically significant 0.18 SD reduction in physical violence. In contrast, sexual violence was not significantly reduced when the husband received money.\textsuperscript{7} Together with our theory, these results suggest that violence is used instrumentally, but that physical violence is expressively distasteful; sexual violence, however, may be expressively pleasurable. Our results further suggest that transfers to the wife primarily reduce IPV by reducing her tolerance of it, while transfers to the husband reduce IPV by reducing his marginal taste for it.

A further unresolved question about the effect of cash transfers on domestic violence is whether they affect not only recipient, but also non-recipient households. In standard economic models, such spillovers would only occur in the presence of economic spillovers. In contrast, social norms may respond to cash transfers in both recipient and non-recipient households even in the absence of economic spillovers. If IPV is reduced in recipient households due to improvements in the wife’s bargaining power or her outside option (Almås et al. 2018), this reduction might translate into a change in the perceived prevalence and/or perceived justifiability of IPV.\textsuperscript{8} If non-recipients are motivated to conform to these norms, we might expect a change in IPV even in non-recipient households and in the absence of economic spillovers.

Our two-stage randomization design allows us to study the spillovers of transfers on non-recipients in the same villages by comparing “spillover” to “pure control”

\textsuperscript{6}Additional randomization arms were the magnitude of the transfer (USD 404 PPP vs. USD 1525 PPP) and the timing of the transfer (lump-sum transfer vs. nine monthly installments); however, in this paper, we focus on the randomization of recipient gender.

\textsuperscript{7}Social desirability bias or reciprocity is unlikely to account for the improvements in treatment households because participants were informed by the survey team that the survey was independent of the intervention. Participants thus had no incentive to deceive field officers. The fact that several important outcomes, such as health and education, did not show treatment effects suggests that social desirability bias or reciprocity motives did not play an important role.

\textsuperscript{8}In social psychology, perceived prevalence is referred to as descriptive norm, while perceived justifiability is referred to as prescriptive norm (Tankard and Paluck 2016).
households. Non-recipient women in treatment villages show an increase of 0.19 SD in the female empowerment index, driven by a 0.16 SD reduction in physical violence, although no significant reduction in sexual violence (−0.11 SD). These findings suggest that the reduction of IPV through cash transfers in recipient households may lead to a change in social norms. In line with this hypothesis, women in both treatment and spillover households are somewhat less likely to view IPV as permissible, although these effects are weak and only statistically significant for a small subset of outcome variables, and not for a norms index.9

This study contributes to a growing empirical literature on the effect of economic variables on IPV. The evidence on the effects of economic changes that mainly affect women on IPV is mixed: Previous studies have shown that improved outside options for women due to changes in divorce laws (Stevenson and Wolfers 2006) or reductions in the wage gap (Aizer 2010) lead to lower levels of violence against women. Several studies of the Oportunidades program, which made conditional cash transfers to women in Mexico, have found reductions in domestic violence against women in beneficiary households (Angelucci 2008; Bobonis, Gonzalez-Brenes, and Castro 2013). Similarly, Hidrobo and Fernald (2013) and Hidrobo, Peterman, and Heise (2016) show that transfers of cash and food significantly reduce physical and emotional violence against women in Ecuador. On the other hand, a study in Bangladesh found that cash transfers only reduced violence when combined with behavior change communication (Roy et al. 2018). In addition, women may receive more non-violent threats from their partners as a result of participating in Oportunidades (Bobonis 2009), and large cash transfers may increase violence perpetrated by men.

9One concern with these spillover findings is that treatment and spillover households were surveyed twice, while pure control households were surveyed once. It is possible that being surveyed at baseline raised awareness of domestic violence in treatment and spillover households, and led to a change in its incidence simply for this reason, and independently of the cash transfer (Zwane et al. 2011). To rule out this possibility, we conducted a separate “survey effects” experiment, in which we asked whether a survey in the absence of any other treatment reduces subsequent reports of IPV. Specifically, we re-administered the same survey to the pure control group two years after the initial endline survey, and additionally administered the survey to a new sample of 500 households, randomly chosen from the same population, at the same time. Because neither group receive any interventions other than the survey, this design allows us to estimate the effects of the initial survey in the pure control group on responses in the second administration of that same survey. We find no evidence of survey effects; the coefficients are economically small and statistically insignificant.
with traditional views on gender roles (Angelucci 2008). Relatedly, Tankard (2016) finds that an economic empowerment program for women in Colombia leads to an increase in IPV among women who experienced baseline IPV. Our study contributes an additional datapoint to these disparate findings. In addition, previous studies have not directly estimated the empirical effect of income changes of the husband on IPV. Heath, Hidrobo, and Roy (2018) study Mali’s national cash transfer program to heads of households, most of whom are men, but their focus is on comparing the impact on IPV in polygamous vs. non-polygamous households. Our study builds on this work by directly estimating and comparing the effect of cash transfers to the husband and the wife. We then use both of these estimates to identify underlying motives of violence, which is key for guiding policy design in our context.

Our study also contributes to the theoretical literature on IPV by offering the first model we know of that precisely characterizes the relationship between the impacts of spousal income changes on equilibrium violence and individual consumption, and distinct types of motives for violence. Existing theory in IPV literature consists of descriptive frameworks oriented towards illustrating that the impact of environmental changes (e.g. the reservation utility of women) on equilibrium violence is ambiguous, to motivate studying the question empirically.

The model in Farmer and Tiefenthaler (1997) is most similar in spirit to ours, in that the two choice variables are violence and intra-household transfers, and the wife has a threat point. However, in their model, violence is assumed to be pleasurable and not extractive of wife’s consumption. The key takeaway from Farmer and Tiefenthaler (1997) is that an increase in the wife’s income always decrease violence, since it increases her reservation utility, while an increase in the husband’s income has ambiguous effects.

Eswaran and Malhotra (2011) does not consider transfers or private consumption. Consumption of public goods is determined by an exogenous (Nash) split of pooled income. Violence is assumed to be distasteful to the husband, and instrumental in the sense of intimidating the wife into being less autonomous, which increases his consumption. The takeaway is that equilibrium violence depends on how sensitive a woman’s choice of autonomy is to violence, i.e., in the language of our model, how extractive violence is of the wife’s consumption. Spousal income
changes are not considered.

Finally, Tauchen, Witte, and Long (1991) assumes that violence is pleasurable, as well as instrumental in keeping the wife “obedient”. For example, the husband might set a rule for how much consumption the wife gives him. If she violates these rules but stays in the marriage, she suffers the violence. Alternatively, she can stay and obey, or she can leave. Tauchen, Witte, and Long (1991) state that even with strong functional forms, the comparative statics (i.e. in the wife’s reservation utility) are ambiguous.

To sum up, our model builds on existing work in several key ways. First, while past papers specify that violence is pleasurable and not instrumental, or violence is distasteful and instrumental, our model allows for violence to play all of these roles and more: to be pleasurable, distasteful, sometimes pleasurable, instrumental, and not instrumental, as well as a mechanism that relieves stress and a mechanism that expresses dominance. Second, we delve into the ambiguity of the comparative statics, and make precise the relationships between different sets of IPV motives and exact impacts of spousal income changes on equilibrium violence and consumption. Finally, we characterize these relationships both when intra-household transfers are and are not feasible. In the latter case, the woman’s participation constraint does not necessarily bind in equilibrium, which contrasts with all of the existing literature. We show that spousal income changes have very different impacts on violence and consumption depending on the feasibility of intra-household transfers, even if the motives at play are the same.

The remainder of this paper is structured as follows. Section 2 presents the theoretical model. Section 3 describes the intervention, the experimental design, and the econometric approach. Section 4 presents the impacts of the program on IPV and related outcomes. Section 5 concludes.
2. Theoretical framework

2.1 A Model of Intimate Partner Violence with and without Intra-Household Transfers

Consider a one-period, two-person household in which husband \((H)\) and wife \((W)\) earn separate, exogenously-given incomes, \(y_H\) and \(y_W\).\(^{10}\) \(H\) chooses the level of violence \(v\) that maximizes his utility without violating his wife’s participation constraint, \(P_W\). \(H\)’s utility depends on two components: his consumption and his non-pecuniary returns from violence. We consider two possible ways for \(H\) to determine how much he consumes: he can agree with \(W\) on an intra-household transfer, or, if intra-household transfers are not feasible, he can extract resources from \(W\) using violence, which imposes a non-pecuniary cost \(h(v,y_W)\) on \(W\). \(H\) and \(W\) have utility from consumption given by \(u_H(\cdot)\) and \(u_W(\cdot)\), respectively, which are increasing, concave, and continuous.\(^{11}\)

Thus, when intra-household transfers are feasible, the husband chooses \((v,t)\) to satisfy the program below:

\[
\begin{align*}
\max_{v \geq 0, t \in [y_H, y_W]} & \quad u_H(y_H + t) + g(v, y_H) \\
\text{s.t.} & \quad P_W : u_W(y_W - t) - h(v, y_W) \geq \bar{u}_W(y_W)
\end{align*}
\]

When intra-household transfers are not feasible, the husband chooses \(v\) to satisfy the program below:

\(^{10}\)We study exogenous incomes since our experiment gives unconditional cash transfers to \(H\) and \(W\). Because the world is static, we do not model savings and credit.

\(^{11}\)Public consumption is outside the scope of this model, but is typically modeled as being separable and thus unlikely to affect our insights substantively, as long as individuals value private consumption sufficiently. One can think of our results about how spousal income changes affect consumption as pertaining to private consumption.
This model features four distinct types of channels that potentially determine equilibrium violence. We explain them below.

2.1.1 Violence may be instrumental (pecuniary)

Note that if intra-household transfers are feasible, then even if violence can be used for extraction, the husband always prefers to use the “non-violent” intra-household transfer, since violence further tightens the wife’s participation constraint by inflicting a trauma cost \( h(v, y_W) \) on her.\(^{12}\) That is, for a given level of resource extraction, it is more “expensive” for a husband to use violence than to use a transfer. Thus, the pecuniary use of violence is relevant only when intra-household transfers are not feasible.

Hence, in our model with no intra-household transfers, \( f(v, y_W) \) captures the possibility of this pecuniary, or “instrumental” motive for violence.\(^{13}\) This function describes how much income a husband using violence \( v \) extracts from a wife with income \( y_W \). We say that violence is “instrumental” if \( f_v > 0 \) and “not instrumental” if \( f_v \leq 0 \).\(^{14}\)

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\(^{12}\)“Non-violent” is in quotes because the transfer could be compelled through threats of violence. While threats of violence may certainly cause trauma to the wife, our \( h(v, y_W) \) term reflects the view that explicit violence causes even further trauma.

\(^{13}\)Let \( f(v, y_W) \) be continuous in both its arguments, and \( f(v, y_W) \leq y_W, f(0, y_W) = 0, \) and \( f(v, 0) = 0 \).

\(^{14}\)For clarity in distinguishing “instrumental” from “non-instrumental” violence, it is easiest to think of \( f(v, y_W) \) as monotonically increasing or flat in \( v \). However, the same intuition applies when \( f \) is locally monotonic. For example, it could be that \( f(v, y_W) \) is increasing over \( v < \bar{v} \), and not after — then violence is instrumental up to the point \( \bar{v} \), not instrumental for \( v > \bar{v} \), and our results still apply. We can also allow for \( f_v < 0 \) over some interval, but we exclude \( f(v, y_W) \) monotonically decreasing in \( v \) on the grounds that it appears implausible that no violence is much more extractive than some violence. Note that we allow for the possibility of non-violent extraction (including extraction under the threat of violence) by modeling the possibility of intra-household transfers.
We make no assumption about $f_{vyW}$. If $f_{vyW} > 0$, then a marginal increase in violence extracts more from a wealthier woman, perhaps because there are simply more resources available to be extracted. If $f_{vyW} < 0$, then a marginal increase in violence extracts less from a wealthier woman, perhaps because she is more resistant.

2.1.2 Violence may be expressive (non-pecuniary)

Violence may yield non-pecuniary returns for the husband. For example, the husband may derive pleasure from “power-tripping” on the use of violence, i.e., violence is expressively pleasurable. Alternatively, the husband may be stigmatized for using violence, i.e., violence is expressively distasteful.

In our model, $g(v,y_H)$ denotes the husband’s (dis)utility from IPV. When $g_v > 0$, violence is expressively pleasurable: the husband derives more direct utility from higher levels of violence. Conversely, when $g_v < 0$, violence is expressively distasteful: the husband derives less direct utility from higher levels of violence. If $g_v = 0$, we say that violence is not expressive.\footnote{We allow for violence to be expressively pleasurable over some range, and distasteful over another range.}

We make no assumption about $g_{vyH}$. If $g_{vyH} > 0$, then a marginal increase in violence is better in non-pecuniary terms for a wealthier man, perhaps because he feels more dominant. If $g_{vyH} < 0$, then a marginal increase in violence is worse in non-pecuniary terms for a wealthier man, perhaps because husbands use violence to release stress, and wealthier men are less stressed economically.\footnote{Note that stress is captured in both the instrumental and expressive components of our model. Because $u_H(\cdot)$ is concave, husbands experience diminishing marginal returns to consumption. In particular, note that $\frac{\partial^2 u_H(y_H+f(v,y_W))+g(v,y_H))}{\partial v \partial y_H} = u_{HH}f_v+g_{vyH} < 0$ if $g_{vyH} \leq 0$. That is, if violence and husband’s wealth are substitutes in the expressive component, then they are substitutes in the husband’s total utility, consistent with a stress motive.}

2.1.3 Women’s trauma cost: empowerment and norms

Although the husband is ostensibly choosing the level of violence, his choice is constrained by the wife’s participation.\footnote{Note that divorce may be captured in this model through the wife’s outside option. The more feasible divorce is, the higher the wife’s outside option. In our experimental setting of poor households in western Kenya, divorce is costly for the woman and uncommon.} The wife derives disutility from violence,
both because violence is traumatic and painful, and because her consumption may be reduced if violence is used to extract her resources. Let \( h(v, y_W) \) describe the wife’s non-pecuniary disutility from violence, where \( h(v, y_W) \) is always increasing in violence \( v \), and \( h(0, y_W) = 0 \). We think of a larger non-pecuniary disutility as reflecting more empowerment and/or less normalization of IPV.

We make no assumption about \( h_{vy_W} \). If \( h_{vy_W} > 0 \), a wealthier woman gets more disutility from a marginal increase in violence, perhaps because she is more empowered. If \( h_{vy_W} < 0 \), a wealthier woman experiences a smaller increase in disutility from an increase in violence, perhaps because she is more able to draw utility from consumption.\(^{18}\)

### 2.1.4 Women’s outside option

Finally, \( \pi_W(y_W) \) denotes the wife’s outside option. The wife’s outside option is increasing in her wealth, and \( \bar{u}_W(y_W) \leq u_W(y_W) \), so that her participation constraint, \( P_W \), is satisfied when there is no violence.\(^{19}\) We make no assumption about convexity or concavity of the woman’s outside option in her wealth. Though not necessary for the insights, for algebraic ease, we let \( \bar{u}_W(y_W) = u_W(r y_W), r \in (0,1) \). One interpretation is a divorce cost, where a woman loses part of her resources if she leaves a marriage.

### 2.2 Determining the underlying motives for violence

The focus of our theoretical analysis is to understand how income changes for the husband and the wife affect equilibrium violence and consumption, depending on which channels are salient. We characterize these impacts both when transfers are operative and when they are not, and show that the relationship between

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\(^{18}\)As is customary, we assume conditions for the existence of a unique interior solution. For example, \( f_{vv} \geq 0 \), \( g_{vv} \leq 0 \), and \( h_{vv} \geq 0 \) are sufficient.

\(^{19}\)We have considered various approaches to modeling the wife’s outside option, including cases where it depends directly on violence and on how much is extracted from her by the husband. These different approaches can be attributed to differences in the timing of the wife’s decision to leave a marriage. Since we find that the theoretical insights we use to interpret our experimental results are robust to all of these alternatives, and there is no obvious “right” approach, we present the case where the woman decides whether to leave at the start of the period, when she has her income \( y_W \).
underlying motives and the impact of spousal income changes on IPV differs greatly depending on the role of intra-household transfers. Thus, it is critical to measure a program’s impact on consumption as well as on equilibrium violence, in order to obtain an accurate understanding of underlying motives and of welfare.

We begin by solving the model with intra-household transfers.

2.2.1 Intra-household transfers: spousal income changes and equilibrium violence

Note that this is a cooperative model and that the outcome will be Pareto-efficient. For parsimony, our results focus on the impact of increases in income, but note that decreases simply have the opposite effect.

Lemma 1. The wife’s participation constraint always binds when intra-household transfers are feasible.

Observe that $H$’s utility is strictly increasing in $t$, while $W$’s utility is strictly decreasing in $t$. Thus, $H$ will always fully extract whatever surplus he can from his wife using $t$, given violence $v$. That is to say, if $H$’s unconstrained choice of violence leaves $P_W$ slack, he will use $t$ to bind it.

Thus, equilibrium violence $v^*$ solves:

$$
\max_{v \geq 0} u_H[y_H + y_W - u_W^{-1}(u_W(ry_W) + h(v, y_W)) + g(v, y_H)]
$$

Notationally, we refer to the maximand as $U_H(v; y_H, y_W)$.

Result 1a. If violence is distasteful ($g_v < 0$), then there is no violence in equilibrium, and spousal income changes do not affect violence.

If $g_v < 0$, $U_H$ clearly decreases in $v$. Thus, $H$ chooses $v^* = 0$, and sets the transfer as large as possible without violating $P_W$, that is, $t^* = (1-r)y_W$.

Result 2a. If violence is more pleasurable than consumption, then:

(i) $\uparrow y_H$ increases violence, and
(ii) $\uparrow y_W$ decreases violence.

In this case, $U_H$ increases in $v$. In other words, because the husband derives additional non-pecuniary pleasure from using violence, $H$’s marginal utility from $v$ is greater than his utility from increasing consumption $c$ non-violently. In this

13
case, he uses all of his money to “buy violence” from $W$: $t^* = -y_H$, and $v^*$ satisfies
$y_H + y_W = f(v^*,y_W) + u_W^{-1}(w_W(r_{yW} + h(v^*,y_W)))$. This is the maximal level
of violence $H$ can use without violating $P_W$, when $W$ has consumption $y_W + y_H$.

Thus, if his income increases, $H$ can afford more violence, so violence increases.

When $H$’s preferences are such that he prefers to use additional income to
purchase violence rather than to increase his consumption, the strengthening of
$W$’s outside option due to an increase in her income reduces equilibrium violence,
since $P_W$ was binding at the initial level of violence, and $W$’s utility is strictly
decreasing in violence.

**Result 3a.** Suppose violence is pleasurable over lower levels, and distasteful over
higher levels: $g_v > 0$ for $v < \tilde{v}$, while $g_v \leq 0$ for $v \geq \tilde{v}$ (“sometimes pleasurable”). Then:

\[
\begin{array}{c|c|c|c|c|c|}
 & g_{vy_H} < 0 & g_{vy_H} > 0 & & h_{vy_W} > 0 & h_{vy_W} < 0 \\
\hline
\uparrow y_H & v^* \downarrow & v^* \uparrow \\
\hline
\end{array}
\]

(i) $\uparrow y_H$ decreases violence iff $g_{vy_H} < 0$: husband’s wealth and violence are
substitutes in his non-pecuniary utility.

(ii) $\uparrow y_H$ increases violence iff $g_{vy_H} > 0$: husband’s wealth and violence are
complements in his non-pecuniary utility.

(iii) $\uparrow y_W$ decreases violence iff $h_{vy_W} > 0$: wife’s wealth and violence are com-
plements in her non-pecuniary disutility.

(iv) $\uparrow y_W$ increases violence iff $h_{vy_W} < 0$: wife’s wealth and violence are substi-
tutes in her non-pecuniary disutility.

See Theory Appendix A1 for the proof.

To recap, when intra-household transfers are feasible, changes in income have
no effect on violence if violence is purely distasteful. When violence is not purely
distasteful, motives for violence correspond to the impact of income changes on
violence in the following way:

\[
\begin{array}{c|c|c|c|c|c|}
 & \uparrow y_W \rightarrow \downarrow v^* & \uparrow y_W \rightarrow \uparrow v^* \\
\hline
\uparrow y_H \rightarrow \downarrow v^* & \text{some pleasure} & g_{vy_H} < 0, h_{vy_W} > 0 & \text{some pleasure} & g_{vy_H} < 0, h_{vy_W} < 0 \\
\hline
\uparrow y_H \rightarrow \uparrow v^* & \text{some pleasure} & g_{vy_H} > 0, h_{vy_W} > 0 ; \text{high pleasure} & \text{some pleasure} & g_{vy_H} > 0, h_{vy_W} < 0 \\
\hline
\end{array}
\]
2.2.2 Intra-household transfers: spousal income changes and equilibrium consumption

In addition to the impact of spousal income changes on equilibrium violence for different cases of underlying motives, we are also interested in the impact on equilibrium consumption, $c_H$ and $c_W$.

**Result 1b. When violence is distasteful ($g_v<0$):**

(i) $\uparrow y_H$ increases $c_H$ by the same amount, while $c_W$ is unchanged.
(ii) $\uparrow y_W$ decreases $c_H$ and increases $c_W$.

The husband simply consumes his own increased income. If the wife’s income increases, her strengthened outside option means the husband must reduce the intra-household transfer given to him in order to continue to satisfy $P_W$. Hence, her consumption rises, while his falls.

**Result 2b. When violence is more pleasurable than consumption:**

(i) $\uparrow y_H$ does not change $c_H$. $c_W$ increases by the same amount as the increase in $y_H$.
(ii) $\uparrow y_W$ does not change $c_H$. $c_W$ increases by the same amount as the increase in $y_W$.

The husband uses an increase in his income to buy more violence from the wife. This increases his wife’s consumption (although her non-pecuniary disutility from violence also increases). The wife’s strengthened outside option causes violence to fall. The husband’s consumption is unchanged because he still gives all of his money to his wife to buy violence; his money simply buys less now. The wife consumes her income increase.

**Result 3b. When violence is sometimes pleasurable:**

(i) if $\uparrow y_H$ decreases $v^*$, $\Delta c_H > \Delta y_H$, while $c_W$ decreases.
(ii) if $\uparrow y_H$ increases $v^*$, the impact on $c_H$ is ambiguous, while $c_W$ increases.
(iii) if $\uparrow y_W$ decreases $v^*$, $c_H$ increases, while the effect on $c_W$ is ambiguous.
(iv) if $\uparrow y_W$ increases $v^*$, $c_H$ decreases, while $c_W$ increases.

If an increase in $y_H$ decreases $v^*$, $W$’s non-pecuniary disutility becomes smaller, and $H$ increases the transfer he receives from $W$ to bind $P_W$. Thus, $H$’s consumption increases by more than the size of his income increase, and $W$’s consumption decreases.
If an increase in $y_H$ increases $v^*$, $W$’s non-pecuniary disutility becomes larger, and $H$ reduces the transfer. This increases $W$’s consumption. Depending on how much the transfer is reduced, $H$’s consumption could increase or decrease.

If an increase in $y_W$ decreases $v^*$, $H$ increases the transfer, which increases his consumption. But he may not be able to fully extract the increase in $y_W$, depending on how the effect on $h(v,y_W)$ compares to $\bar{u}(y_W)$, so $W$’s consumption could also increase.

Finally, if an increase in $y_W$ increases $v^*$, $H$ reduces the transfer. This decreases his consumption, and increases $W$’s.

### 2.2.3 Without intra-household transfers: spousal income changes and equilibrium violence

Now, suppose that intra-household transfers are not feasible. In addition to the possibility that violence is expressive, we now also consider the possibility that violence is instrumental—a way of extracting resources from the wife that imposes a further trauma cost $h(v,y_W)$ on her, compared to an intra-household transfer.

In this case, the wife’s participation constraint $P_W$ does not necessarily bind in equilibrium. For example, suppose that violence is not instrumental, and the husband has a distaste for violence ($g'(v) < 0$). Then his unconstrained choice of violence is 0, which leaves $P_W$ slack. In the absence of intra-household transfers, the only way for $H$ to tighten $P_W$ is to increase violence, but this decreases his utility. However, if violence is not instrumental and the husband derives pleasure from violence ($g'(v) > 0$), then $P_W$ always binds in equilibrium because he exerts as much violence as the wife will tolerate without leaving the marriage.

Notationally, we denote the husband’s unconstrained choice of violence $v^H$, and the maximal level of violence the woman “tolerates” before leaving the marriage, $v^W$ (this is the level at which $P_W$ binds).\(^{20}\) Equilibrium violence is then $v^* = \min\{v^H, v^W\}$.

Below, we characterize how increases in income affect equilibrium violence under different sets of motives for violence, when intra-household transfers are not feasible.

---

\(^{20}\)We use the word “tolerance” for lack of something better, but emphasize that the woman is not culpable in any way.
**Result 4a.** If violence is purely distasteful ($f_v=0$, $g_v<0$):

(i) $\uparrow y_H$ has no impact on $v^*$, and

(ii) $\uparrow y_W$ has no impact on $v^*$.

If violence is purely distasteful, then $v^*=0$ for all possible parameters.

**Result 5a.** Suppose violence is purely instrumental ($f_v>0$, $g_v=0$), purely pleasurable ($f_v=0$, $g_v>0$), or instrumental and pleasurable ($f_v>0$, $g_v>0$). Then:

(i) $\uparrow y_H$ has no impact on $v^*$, and

(ii) $\uparrow y_W$ may increase or decrease $v^*$.

In all three of these cases, the husband’s utility is strictly increasing in $v$. His only constraint is the wife’s participation. Thus, he sets $v^*=v^W$, the maximum level of violence he can use without violating $P_W$. An increase in his income does not change $v^W$.

An increase in income for the wife has an ambiguous impact on $v^*$ because an increase in $y_W$ may tighten or slacken $P_W$. Thus, an increase in $y_W$ may decrease or increase her maximally-tolerated level of violence $v^W$. Slackening could occur if $h_{y_W}<0$, that is, wealthier women get less non-pecuniary disutility from violence, or if $f_{y_W}>0$, that is, a given level of violence extracts more from a wealthier woman. If the strengthening of her outside option due to the increase in $y_W$ outweights the increase in income, then violence falls; else, violence rises.

If $h_{y_W} \geq 0$ and $f_{y_W} \leq 0$, then an increase in $y_W$ reduces $v^*$.

**Result 6a.** If violence is instrumental and distasteful ($f_v>0$, $g_v<0$):

(i) $\uparrow y_H$ weakly decreases $v^*$, and

(ii) $\uparrow y_W$ may increase or decrease $v^*$.

The key feature of this case is that the husband’s utility is non-monotone in $v$. Hence, equilibrium violence $v^*$ could either be $v^H$, the husband’s unconstrained choice of violence, or $v^W$, the wife’s maximal “tolerance” of it.

An increase in $y_H$ weakly reduces violence because the only utility the husband derives from violence is pecuniary—it increases his consumption. However, he has diminishing marginal returns to consumption, and incurs non-pecuniary disutility from using violence. Hence, if he becomes wealthier, his preferred choice of violence $v^H$ falls. If, previous to the income change, $v^{pre}\equiv v^H$, then equilibrium violence falls. Similarly, if $v^{pre}\equiv v^W$ but $v^{post}=v^H$, equilibrium violence falls. However,
if equilibrium violence is determined by the wife’s tolerance pre- and post- the increase in $y_H$, then violence will be unchanged by $H$’s increased income.

An increase in $y_W$ decreases $v^H$ if $f_{vyW} > 0$, that is, less violence is required to extract the same level of resources from a wealthier woman, and/or if $h_{vyW} > 0$, that is, a wealthier woman experiences more non-pecuniary disutility from violence. The impact on equilibrium violence therefore depends on whether $v^{pre} = v^H$ or $v^W$, and whether $v^{post} = v^H$ or $v^W$.

To recap:

<table>
<thead>
<tr>
<th>Change in $y_H$ or $y_W$</th>
<th>Impact on $v^*$</th>
<th>Impact on Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\uparrow y_W \rightarrow \downarrow v^*$</td>
<td>$\uparrow v^*$</td>
<td>$\Delta v^* = 0$</td>
</tr>
<tr>
<td>$\uparrow y_H \rightarrow \downarrow v^*$</td>
<td>Distaste and instrumental</td>
<td>n/a</td>
</tr>
<tr>
<td>$\uparrow y_H \rightarrow \Delta v^* = 0$</td>
<td>Pure pleasure and instrumental</td>
<td>Pure distaste</td>
</tr>
</tbody>
</table>

2.2.4 Without intra-household transfers: spousal income changes and equilibrium consumption

Now, we characterize the impacts of income changes on consumption, $c_H$ and $c_W$.

**Result 4b. If violence is purely distasteful:**

(i) $\uparrow y_H$ leads to an equivalent increase in $c_H$, and no change in $c_W$.

(ii) $\uparrow y_W$ leads to no change in $c_H$, and an equivalent increase in $c_W$.

When violence is purely distasteful, there is no violence. Since there are no intra-household transfers, each spouse simply consumes their own income.

**Result 5b. If violence is purely instrumental, purely pleasurable, or instrumental and pleasurable:**

(i) $\uparrow y_H$ leads to an equivalent increase in $c_H$, and no change in $c_W$.

(ii) $\uparrow y_W$ may increase or decrease in $c_H$ and $c_W$.

$H$’s utility is strictly increasing in $v$ and in consumption, so when his income increases, he continues using as much violence as he can ($v^W$), and also consumes his additional income.

When violence is purely or partly instrumental, the effect of an increase in $y_W$ on consumption depends on its effect on violence. For example, if violence is reduced
because a wealthier wife has higher non-pecuniary disutility from violence, then
$H$’s consumption falls while $W$’s rises. If violence increases because a wealthier wife
has lower non-pecuniary disutility from violence, then $H$’s consumption increases,
and $W$’s could increase or decrease (depending on how much violence increases).

When violence is purely pleasurable, an increase in $y_W$ equivalently increases
$W$’s consumption, and has no effect on $H$’s consumption.

**Result 6b. If violence is instrumental and distasteful:**

(i) $\uparrow y_H$ increases $c_H$ by less than the increase in income, and also increases $c_W$.

(ii) if $\uparrow y_W$ decreases (increases) $v^*$, then $c_H$ decreases (increases) and $c_W$
increases (ambiguous).

Because $H$ incurs disutility from using violence, and uses it only to increase
consumption (for which he has diminishing marginal returns), he consumes his
income increase but also reduces violence. Thus, he extracts less from $W$, and her
consumption increases as well.

The effect of an increase in $y_W$ on consumption depends on its effect on violence.
If violence decreases, $H$’s consumption is reduced because of reduced extraction,
and $W$’s clearly increases. If violence increases, $H$’s consumption increases through
increased extraction. $W$’s could increase or decrease, depending on how much
violence increases.

Appendix A3 presents a numerical example and a graphical representation of
the benchmark model. Appendix A also presents additional results describing what
we can further learn about the underlying motives of violence by examining not
only the signs, but the relative magnitudes of the impact of cash transfers to the
wife and the husband on IPV.

### 2.3 Spillovers and Norms

Below we describe a simple mechanism based on social norms that would produce
spillovers for untreated households. Assume that the direct utility of IPV for the
husband can be decomposed into two terms. The first term is the (dis)utility term
$g(v)$ discussed above. The second term reflects social norms. For simplicity, we
model the norm as the average level of domestic violence in the village, $\bar{v}$. Any
deviation from the social norm creates a disutility for the husband (for example, through stigma from non-conformity). Let the husband’s utility be given by:

\[ u_H(c) + g(v) - (v - \overline{v})^2 \]

where \( \overline{v} \) denotes the average level of IPV in the village. We square the disutility term to allow for disutility both when the husband engages in more violence than is the norm, but also when he engages in less violence.

The constraints are the same as mentioned above. For conciseness, we focus on the model without intra-household transfers, as this model generates predictions consistent with our experimental findings. Equilibrium violence then satisfies:

\[
\begin{align*}
\max_{v \geq 0} & u_H(y_H + f(v,y_W)) + g(v,y_H) - (v - \overline{v})^2 \\
\text{s.t.} & P_W : u_W(y_W - f(v,y_W)) - h(v,y_W) \geq \overline{u}_W(y_W)
\end{align*}
\]

It is straightforward to see that a decrease in the average level of domestic violence in a village from \( \overline{v} \) to \( \overline{v}' < \overline{v} \) decreases violence in a given household. If \( v > \overline{v} \), a decrease in \( \overline{v} \) makes the deviation from the social norm more painful, and thus \( H \)'s preferred level of violence, \( v^H \), decreases. If \( v < \overline{v} \), \( H \) originally exerts less domestic violence than the social norm. If the social norm decreases, \( H \) has the opportunity to decrease domestic violence even more because the deviation has become less painful. Thus, the effect of a change in the social norm on equilibrium violence is weakly negative.

As described above, psychologists distinguish between descriptive norms, which describe perceptions of actual outcomes, from prescriptive norms, which describe desired outcomes. Our modeling approach extends easily to these settings: if the husband incurs disutility from violating descriptive norms, his utility would decrease in deviations of his level of violence from \( \phi(\overline{v}) \), where \( \phi(\cdot) \) maps levels of violence to perceptions, with \( \phi' > 0 \). Similarly, if the husband incurs disutility from violating prescriptive norms, his utility would decrease in deviations of his level of violence from an analogous function describing “acceptable” levels of violence in the village. Importantly, prescriptive norms can integrate preferences over desired levels
of violence of both women and men, making it possible that changes in women’s attitudes towards violence affect husband’s preferred levels of violence.

We could also have used a similar approach for the wife’s utility, where she incurs additional disutility \( \max\{v - \bar{v}, 0\} \) or \((v - \bar{v})\). That is, \( W \) incurs additional disutility if she experiences more violence than average and nothing additional otherwise, or she can even derive positive utility from experiencing less violence than average. In both types of cases, a decrease in \( \bar{v} \) decreases her tolerance of violence. Again this line of reasoning extends easily to both descriptive and prescriptive norms.

3. Intervention, experimental design, and econometric approach

The intervention, experimental design, and econometric approach used in this study have previously been described by us elsewhere (Haushofer and Shapiro 2016), and are briefly summarized here. We refer the reader to the companion paper for details.

3.1 Intervention

GiveDirectly, Inc. (GD; www.givedirectly.org) is an international NGO founded in 2009 whose mission is to make unconditional cash transfers to poor households in developing countries. At the time of the study, eligibility was determined by living in a house with a thatched (rather than metal) roof. Recipients were informed that they would receive a transfer of KES 25,200 (USD 404 PPP), and that this transfer was unconditional and one-time. Recipients were provided with a Safaricom SIM card and had to register it for the mobile money service M-Pesa in the name of the name of the designated transfer recipient.

3.2 Design and timing: Main study

An overview of the design and timeline is shown in Figure B2. Among the 120 villages with the highest proportion of thatched roofs in Rarieda district, Kenya, 60 were randomly chosen to be treatment villages. Within these villages, half of
all eligible households were randomly chosen to be treatment households, while the other half were control households. A household was eligible if it had a thatched roof. This process resulted in 503 treatment households and 505 spillover households in treatment villages at baseline. Villages had an average of 100 households, of which an average of 19 percent were surveyed, and an average of 9 percent received transfers. The transfers amounted to an average of 10 percent of aggregate baseline village wealth (excluding land).

Among treatment households, we further randomized whether the transfer went to the husband or the wife (in dual-headed households). In addition, 137 households in the treatment group were randomly chosen to receive “large” transfers of KES 95,200 (USD 1,525 PPP, USD 1,000 nominal) per household, while the remaining 366 treatment households received “small” transfers of KES 25,200 (USD 404 PPP, USD 300 nominal) per household. Finally, we randomly assigned the transfer to be delivered either as a lump-sum amount or as a series of nine monthly installments. The randomization of transfer magnitude and timing is not the focus of the present paper; results have been reported elsewhere (Haushofer and Shapiro 2016). We instead focus on the randomization of recipient gender.

We conducted a baseline survey with all treatment and spillover households before they received the first transfer, and an endline after the end of transfers. Households received the first transfer an average of 9.3 months before endline, the last transfer an average of 4.4 months before endline, and the mean transfer an average of 6.9 months before endline. The order in which villages were surveyed at baseline was randomized, and at endline it followed the same order. In a small number of households, the endline survey was administered before the final transfer was received. These households are nevertheless included in the analysis to be conservative (intent-to-treat).

Control villages were surveyed only at endline; in these villages, we sampled 432 “pure control” households from among eligible households. Because these pure control households were selected into the sample just before the endline, the thatched-roof criterion was applied to them about one year later than to households

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21 The mean transfer date is defined as the date at which half of the total transfer amount to a given household has been sent.
in treatment villages. This fact potentially introduces bias into the comparison of households in treatment and control villages; however, we showed in our previous paper (Haushofer and Shapiro 2016) that this bias was negligible, amounting to 5 households, or 1.1 percent of the sample. For this reason, and because the IPV variables, in contrast to most others studied in our previous paper, show within-village spillover effects, we use across-village treatment effect estimates for the direct treatment effect in this paper.

At endline, we observe responses to the IPV questions from women in cohabitating households in 349 treatment households, 349 spillover households, and 312 pure control households. These 1,010 households form the core analysis sample for this paper, and we restrict our analysis to this sample for all outcome variables. We observe responses from husbands in 881 (87 percent) of these households.

### 3.3 Design and timing: Survey effects study

In the main study, the treatment and spillover households were surveyed both at baseline and endline, while the pure control households were surveyed at endline only. This difference could introduce bias in the estimation of across-village treatment and spillover effects if the first survey affects subsequent reports. To address this potential confound, we conducted a separate “survey effects” study in 2015, in which we directly test for the presence of such survey effects in this sample. Specifically, in 2015, we returned to administer a second endline survey to the households that originally participated in the endline survey; in addition, we used our original 2012 census of pure control villages to identify households that had been eligible to participate in the 2012 survey, but that had not previously been surveyed. There were 428 such households. We administered the same survey to this set of households in 2015 as to households involved in the original endline, with a similar temporal delay. Neither of these two groups of households received an intervention; the only difference between them is the number of surveys they completed, and comparison of the two groups therefore allows us to identify the effect on outcomes of interest of having previously been surveyed.
3.4 Data and variables

In each surveyed household, we collected two survey modules: a household module, which collected information about assets, consumption, income, food security, health, and education; and an individual module, which collected information about psychological wellbeing, intra-household bargaining and domestic violence, and economic preferences. The two surveys were administered on different (usually consecutive) days. The household survey was administered to any household member who could give information about the outcomes in question for the entire household; this was usually one of the primary members. The individual survey was administered to both primary members of the household, that is, husband and wife, for double-headed households; and to the single household head otherwise. During individual surveys, particular care was taken to ensure privacy; respondents were interviewed by themselves, without the interference of other household members, especially the spouse.

In this study, we focus on the female empowerment and IPV outcomes, which were collected during the individual survey. Impacts on other outcome categories have been reported in our previous paper (Haushofer and Shapiro 2016). In addition, the previous paper reported the reduced-form impacts on the female empowerment index described below. The IPV module was adapted from the Demographic & Health Survey (DHS). Our outcomes of interest are reports by the woman in the household about violence perpetrated against her by the man, since most violence occurs in this direction, and reports by the woman are least likely to be subject to reporting bias. We report both individual outcome variables, as well as summary indices. These indices are created and grouped as follows:

The physical violence index is the weighted standardized average (Anderson 2008) of dummy variables indicating if in the preceding six months the woman was pushed or shaken; slapped; punched; kicked, dragged, or beaten by the husband; whether he twisted her arm or pulled her; tried to choke or burn her; or threatened to attack her. In the tables in the paper, we report the index and a subset of the constituent variables. Higher values of the index denote higher levels of physical violence.

The sexual violence index is the weighted standardized average of dummy variables indicating if in the preceding six months the husband forced the woman
to have sexual intercourse or perform sexual acts. Higher values denote higher levels of sexual violence.

The female empowerment index is the weighted standardized average of a violence index and an attitude index, which in turn are constructed as follows. The violence index is a weighted standardized average of the physical and sexual violence indices described above, and an additional emotional violence index. The attitude index is a weighted standardized average of a male-focused attitudes index and a justifiability of violence index. These indices are not all presented separately because the focus of this paper is on physical and sexual violence. When combining these variables into the female empowerment index, we sign them such that higher values denote higher female empowerment. Note that the reduced-form impacts on the female empowerment index were reported in Haushofer and Shapiro (2016).

To measure psychological wellbeing, we use a number of standard questionnaires which are described in more detail in our original paper (Haushofer and Shapiro 2016). Higher values of the psychological well-being index denote higher psychological well-being.

To measure norms related to violence, we survey wives about whether they believe husbands have the right to beat their wives under different circumstances. The violence norms index variable is a weighted standardized average of these variables. Higher values denote stronger pro-female norms.

Finally, to measure consumption, we use total monthly household expenditure,
in USD PPP. In addition, the survey module contained questions about private
the consumption of both spouses. We report total private consumption for each
spouse separately, which consists of the sum of variables measuring private clothing
expenditure; medical expenditure; and other private expenditure.

3.5 Integrity of experiment

In this paper we focus on across-village comparisons between the treatment and
pure control groups, and the spillover and pure control groups. Because we have
no baseline data from pure control villages, we cannot run the standard baseline
balance checks for these comparisons. However, the comparison of male and female
recipient households is within treatment villages, and for this comparison we there-
fore do have baseline data. We find no significant imbalance in this comparison
(Table C2). In addition, in our previous within-village analysis, we found that our
study had good baseline balance on most outcomes of interest, including female
empowerment (Haushofer and Shapiro 2016).

Due primarily to registration issues with M-Pesa, 18 treatment households had
not received transfers at the time of the endline, and thus only 485 of the 503
treatment households were in fact treated. We deal with this issue by using an
intent-to-treat approach.

We had low levels of attrition; overall, 940 of 1,008 baseline households (93.3
percent) were surveyed at endline. We have shown previously that our results are
unlikely to be affected by this attrition (Haushofer and Shapiro 2016).

We wrote a pre-analysis plan (PAP) for this study, which is published and
time-stamped at https://www.socialscienceregistry.org/trials/19. In the PAP, we
specify the variables to be analyzed, the construction of indices, our approach to
dealing with multiple inference, the econometric specifications to be used, and the
handling of attrition. The analysis here follows this PAP, except that it focuses
on one sub-group of variables for which we observed an overall treatment effect
(across villages) in the main analysis reported in Haushofer and Shapiro (2016).
3.6 Econometric approach

3.6.1 Direct and spillover effects of cash transfers

Because we found a positive spillover effect on the female empowerment index in our previous paper, we here focus on across-village treatment effects. The main specification to capture the direct impact of cash transfers on recipient households, and the village-level spillover effect, is

\[ y_{vhiE} = \beta_0 + \beta_1 T_{vh} + \beta_2 S_{vh} + \varepsilon_{vhiE} \]  \hspace{1cm} (3)

Here, where \( y_{vhiE} \) is the outcome of interest for household \( h \) in village \( v \), measured at endline (\( t = E \)); index \( i \) is included for outcomes measured at the level of the individual respondent, and omitted for outcomes measured at the household level. \( T_{vh} \) is a treatment indicator that takes value 1 for households which received a cash transfer ("treatment households") and 0 otherwise. \( S_{vh} \) is a dummy variable that takes value 1 for spillover households and 0 otherwise. \( \varepsilon_{vhiE} \) is the error term. The omitted category is pure control households. Thus, \( \beta_1 \) identifies the treatment effect for treated households relative to pure control households, and \( \beta_2 \) identifies within-village spillover effects by comparing spillover households to pure control households. To account for possible correlation in outcomes within villages, the error term is clustered at the village level. Because of the focus of this paper, the sample is restricted to co-habitating couples.

To analyze the across-village treatment effect for households in which the transfer was received by the wife vs. the husband, we estimate:

\[ y_{vhiE} = \beta_0 + \beta_1 T^F_{vh} + \beta_2 T^M_{vh} + \beta_3 T^W_{vh} + \beta_4 S_{vh} + \beta_5 P_{vh}^{SINGLE} + \varepsilon_{vhiE} \]  \hspace{1cm} (4)

Here, \( T^x_{vh} \) indicates whether the transfer recipient is female (\( T^F_{vh} \)), male (\( T^M_{vh} \)), or that the gender of the recipient could not be randomized because the household only had one head (most commonly in the case of widows/widowers) (\( T^W_{vh} \)). \( P_{vh}^{SINGLE} \) is an indicator for pure control households with a single head. Thus, the omitted category is cohabiting pure control households. \( \beta_1 \) identifies the treatment effect when the wife in the household receives the transfer, and \( \beta_2 \) identifies the treatment
effect when the husband receives the transfer. Standard errors are again clustered at the village level. The randomizations on monthly vs. lump-sum transfers and large vs. small transfers are not the focus of this paper and are therefore not shown here.

3.6.2 Survey effects

Our basic specification to capture the effect of having been previously surveyed is:

\[ y_{vhiE2} = \alpha_v + \beta_0 + \beta_1 D_{vh} + \varepsilon_{vhiE2} \]  

(5)

Here, \( y_{vhi} \) is the outcome of interest for household \( h \) in village \( v \), measured in the second endline \( (t=E_2) \). The sample is restricted to households in control villages. \( D_{vh} \) is a dummy variable that takes value 1 for pure control households that were surveyed in the first endline, and 0 for control village households that were not surveyed in the first endline. \( \alpha_v \) is a village fixed effect. Thus, \( \beta_1 \) identifies the effect of having been previously surveyed. The error term is clustered at the household level when the outcomes are measured at the individual level.

4. Results

4.1 Effect of cash transfers on physical and sexual violence

The main results are shown in Table 1. In all results tables, each row corresponds to one outcome variable, listed on the left. Column 1 shows the pure control group mean and standard deviation of that variable. The remaining columns present results from the following estimations: the main treatment effects analysis; separate regressions comparing transfers to women vs. men, and the \( p \)-value for the within-village difference between transfers to the female vs. the male. The final column shows the number of observations in the main sample, i.e. excluding the survey effects sample.

We find high baseline levels of domestic violence: Column 1 shows that large proportions of women in the pure control group report that their partner pushed or shook (26 percent), slapped (33 percent), punched (15 percent), or kicked, dragged,
or beat (15 percent) them. Similarly, we find high baseline levels of sexual violence; 12 percent of women report having been forced to have sexual intercourse in the preceding six months, and 9 percent report having been forced to perform sexual acts.

4.1.1 Treatment vs. pure control households

Column 2 shows a 0.17 SD increase in female empowerment in treatment relative to pure control households. This effect is mainly driven by a reduction in physical violence by 0.21 SD; and by a reduction of 0.16 SD in sexual violence. Among the individual variables, we find a decrease in being pushed or shaken by the husband by 7 percentage points relative to a control group mean of 27 percent (a 26 percent reduction); being slapped by the husband (11 percentage point decrease relative to 33 percent control group mean, a 33 percent reduction); being punched (6 percentage point decrease relative to 15 percent control group mean, a 39 percent reduction); and being kicked, dragged, or beaten (8 percentage point decrease relative to 15 percent control group mean, a 51 percent reduction). For sexual violence, we observe a reduction in the incidence of forced sexual intercourse by 5 percentage points relative to a control group mean of 12 percent (a 39 percent decrease), significant at the 10 percent level, and a 5 percentage point reduction in the incidence of being forced to perform sexual acts relative to a control group mean of 9 percent (a 52 percent reduction).

4.1.2 Male vs. female recipient households

Distinguishing between male and female recipient households, the treatment effect on female empowerment is driven by female recipient households, which experience a 0.26 SD increase in female empowerment relative to pure control households (column 3). The coefficient is positive (0.10 SD) even in male recipient households, but not significantly different from zero (column 4). We cannot reject equality of the male and female recipient coefficients (column 5). The physical violence index in female recipient households shows a significant reduction of 0.26 SD, and the sexual violence index by 0.22 SD. Male recipient households show no significant decrease in sexual violence (−0.10 SD), but we observe a significant 0.18 SD reduction in physical violence in these households. The individual variables for physical violence show highly sig-
nificant reductions in female recipient households. In male recipient households, the reduction in physical violence is driven by a 10 percentage point reduction in being slapped by the husband relative to a control group mean of 33 percent (a 32 percent reduction), and a 9 percentage point reduction in being kicked, dragged, or beaten relative to a control group mean of 15 percent (a 59 percent reduction). In female recipient households, rape is reduced by 7 percentage points or 56 percent, and the incidence of other sexual acts is reduced by 6 percentage points or 66 percent. Male recipient households show reductions as well, but these are not statistically significant.

Thus, we find a large and highly significant increase in female empowerment in female recipient households, and no significant decrease in male recipient households. In fact, the individual coefficients in male recipient households largely point in the direction of a decrease in IPV, and the decrease in physical violence is significant at the 5 percent level. These results are broadly consistent with the view that transfers to the woman increase the woman’s bargaining power (Almás et al. 2018).

### 4.2 Effects on consumption

Recall from Result 3a that, when intra-household transfers are operative, increases in $y_H$ and $y_W$ reduce violence if violence is sometimes pleasurable, and $g_{y_H} < 0$, $h_{y_W} > 0$. By contrast, Result 6a tells us that, when intra-household transfers are not operative, an increase in $y_H$ reduces violence and an increase in $y_W$ can decrease or increase violence if violence is instrumental ($f_v > 0$) and distasteful ($g_v < 0$). So, we need to examine consumption patterns to distinguish between these very different motives.

The table below compares our theoretical predictions for the impacts on consumption in each of these two cases.

<table>
<thead>
<tr>
<th></th>
<th>no transfers</th>
<th>transfers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>distaste and instrumental</td>
<td>some pleasure</td>
</tr>
<tr>
<td>$\uparrow y_H$</td>
<td>$\Delta c_H &lt; \Delta y_H$</td>
<td>$\Delta c_H &gt; \Delta y_H$</td>
</tr>
<tr>
<td></td>
<td>$\Delta c_W &gt; 0$</td>
<td>$\Delta c_W &lt; 0$</td>
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<tr>
<td>$\uparrow y_W$</td>
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<td>$\Delta c_W &gt; 0$</td>
<td>$\Delta c_W &gt; 0$, $\leq 0$</td>
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</table>

Table 2 shows the impact of transfers to either spouse on overall household...
consumption, as well as the husband’s and wife’s private consumption. We find large and statistically significant increases in household consumption both for transfers to the husband (15 percent) and to the wife (15 percent), with no significant difference between the two effects. Rows 2 and 3 show that the wife’s private consumption increases both after transfers to herself (91 percent) and after transfers to the husband (30 percent), although the latter effect is not statistically significant. The husband’s private consumption does not show a significant treatment effect regardless of which spouse receives the transfer.

Together, the crucial insight from these results is that they are not consistent with a model in which transfers decrease the wife’s consumption. This would be the prediction of a model in which within-household transfers play a role. The fact that we do not observe such evidence suggests that such transfers are not important in our setting.

4.3 Effects on psychological wellbeing

As an additional test of the relationships described above, we investigate whether and how changes in domestic violence are reflected in psychological wellbeing. Before doing so, two caveats are in order. First, this question cannot be answered causally here; instead, we simply ask whether treatment effects on IPV are mirrored in treatment effects on wellbeing in either partner. Second, psychological wellbeing correlates with other variables than IPV (e.g., consumption), and therefore changes in wellbeing may also reflect changes in these other variables.

With these caveats in place, we can consider treatment effects on psychological wellbeing. Tables 3 and 4 show effects of transfers on psychological well-being of the wife and the husband, respectively.

Recall that transfers to women reduce both sexual and physical violence. Are these changes reflected in the wife’s psychological well-being? Indeed, for female respondents who received transfers, we find a large and significant direct treatment effect of 0.44 SD on the index of psychological well-being, driven by a reduction in stress and increases in happiness, life satisfaction, and optimism. Recall further that we observe a decrease in physical violence when husbands receive transfers.
This effect, too, is mirrored in women’s psychological wellbeing, with a 0.40 SD increase in the index of psychological wellbeing among women whose husbands received transfers.

Our model suggests that husbands may derive negative utility from violence. If psychological wellbeing is closely linked to IPV, this claim makes the somewhat counterintuitive prediction that husbands should experience an increase in psychological wellbeing when transfers are made to their wife, because these transfers reduce IPV to the greatest extent. Indeed, we observe a 0.24 SD increase in the husband’s overall psychological wellbeing when his wife receives a transfer. In contrast, we observe no significant effects of transfers to the husband on his level of psychological wellbeing. One possible reason for this result is that, to the extent the husband’s psychological wellbeing decreases in IPV, the effect on IPV of transfers to the husband is much smaller than that of transfers to the wife.

4.4 Spillover and survey effects

4.4.1 Reduced-form effects

Column 2 of Table 5 shows that the positive effects on female empowerment we observe after cash transfers are not restricted to treatment households: compared to pure control households, spillover households show a 0.19 SD increase in female empowerment, significant at the 5 percent level and equal in magnitude to the direct effect on treatment households (0.17 SD). The result is driven by a reduction in physical violence by 0.16 SD. Thus, strikingly, the receipt of cash transfers by a subset of households in the village appears to have a similarly large overall effect on neighboring households which did not receive transfers.

As described above, one potential concern about this result is that both the treatment and spillover households were surveyed twice, while the pure control households were only surveyed once (at endline). To rule out that being surveyed affects responses in a subsequent survey, we compare pure control households which were surveyed twice to pure control households which were surveyed once in column 3 of Table 5. We find no significant effects on any outcomes, except for an increase in reporting sexual violence as a result of being surveyed twice in
the pure control group. Note, however, that this effect is only significant at the 10 percent level, and goes in the conservative direction, i.e. it shows a decrease in female empowerment as a result of more than one survey round. In addition, the overall female empowerment index is not significant. We thus conclude that survey effects are unlikely to have affected the findings on female empowerment reported above, and that they can therefore be attributed to the cash transfers.

4.4.2 Mechanisms for spillover effects: Norm change?

A prominent possibility to explain the large spillover effect on IPV is that the transfers changed social norms. Our survey measured norms by asking both husbands and wives whether husbands have the right to beat their wives in general, and in response to particular events, such as neglecting the children. Results on these variables are reported in Table 6. We find no significant direct or spillover effects on the index variable. Some individual coefficients point in the direction of a change towards less permissive norms around violence, and women in spillover households are 7 percentage points less likely to think that men have the right to beat them for going out without telling them, a 22 percent reduction relative to a control group mean of 32 percent; and are 6 percentage points less likely to think men have the right to beat them for refusing sex, a 22 percent reduction relative to a 28 percent control group mean. Thus, we observe some evidence that prescriptive norms among women around the husband’s right to violence change in favor of the woman, but we emphasize that these results only occur for a small subset of outcome variables and not for the main index variable and should therefore be interpreted with great caution. Appendix Table C3 shows that husbands do not show a change in prescriptive norms, suggesting that if norms partly drive our empirical effects, they are more likely to do so by entering the wife’s participation constraint.

5. Conclusion

Intimate partner violence is a widespread phenomenon with significant welfare costs. It has previously been shown that cash transfers can be effective in reducing domestic violence, suggesting that IPV responds to income changes (Rivera-Rivera
et al. 2004; Angelucci 2008; Bobonis, Gonzalez-Brenes, and Castro 2013; Hidrobo and Fernald 2013; Hidrobo, Peterman, and Heise 2016). We study the effects of an unconditional cash transfer program in Kenya in which transfers are made to either the husband or the wife on IPV. We present a theory which nests several possible determinants of violence, including resource extraction, a distaste or liking for violence, and the wife’s resources and empowerment. We show that when transfers are made only to the wife, this is not sufficient for determining the underlying motives for violence based on the effects of income changes on violence. In contrast, when transfers are randomly allocated to either the husband or the wife, the resulting changes in IPV can be used to determine which motives determine equilibrium violence. We find empirically that transfers to women and men both reduce the incidence of physical IPV. Our theory shows that this result implies that violence is extractive, but also distasteful. In contrast, sexual violence is only reduced after transfers to the wife, suggesting that it may be pleasurable for the husband.

In addition, while previous studies have focused on the direct impact of transfers on recipient households, we also study non-recipients to quantify spillover effects. We find large and significant spillover effects of cash transfers on IPV, strengthening the evidence that transfers are a promising intervention to reduce IPV. Because we observe few economic spillovers (Haushofer and Shapiro 2016), this finding suggests that cash transfers may have affected social norms around IPV. In line with this view, we find suggestive evidence of changes in social norms regarding the justifiability of violence. These effects are weak, however, and require replication.

From a policy perspective, these findings have implications for the targeting of cash transfers and the development of IPV reduction programs. First, in terms of targeting, they suggest that although cash transfers can reduce IPV regardless of who receives the transfer, transfers to female recipients are likely to be more effective, at least from the point of view of reducing IPV. In our previous work, we found few differences between male and female recipient households on other outcome dimensions; it is thus possible that transfers to the woman weakly dominate transfers to the man from the social planner’s perspective. The spillover effects also have implications for targeting: they suggest that to maximize impacts on IPV per dollar spent, it may be optimal to not treat all households in a given location
with cash transfers. Of course due to the large positive direct impacts and lack of spillovers of cash transfers on other dimensions, such selectivity also has a welfare cost; future studies might vary the proportion of households treated in a particular location to find the optimal targeting density for a given set of policy preferences.

References


Table 1: Effects of cash transfers on violence

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<tr>
<td></td>
<td>Control mean (SD)</td>
<td>Treatment (across village)</td>
<td>Female recipient</td>
<td>Male recipient</td>
<td>Female vs. male p-value</td>
<td>N</td>
</tr>
<tr>
<td>Female empowerment index</td>
<td>0.00 (1.00)</td>
<td>0.17** (0.07)</td>
<td>0.25*** (0.08)</td>
<td>0.09 (0.10)</td>
<td>0.10 (0.10)</td>
<td>1010</td>
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<tr>
<td>Physical violence index</td>
<td>−0.00 (1.00)</td>
<td>−0.21*** (0.07)</td>
<td>−0.26*** (0.08)</td>
<td>−0.18** (0.09)</td>
<td>0.39 (0.10)</td>
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<td>Pushed or shook you</td>
<td>0.27 (0.45)</td>
<td>−0.07** (0.03)</td>
<td>−0.09** (0.04)</td>
<td>−0.05 (0.04)</td>
<td>0.29 (0.10)</td>
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<td>Slapped you</td>
<td>0.33 (0.47)</td>
<td>−0.11*** (0.04)</td>
<td>−0.13*** (0.04)</td>
<td>−0.10** (0.04)</td>
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<td>Punched you</td>
<td>0.15 (0.36)</td>
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<td>−0.08*** (0.03)</td>
<td>−0.05 (0.03)</td>
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<td>Kicked, dragged, or beat you</td>
<td>0.15 (0.36)</td>
<td>−0.08*** (0.03)</td>
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<td>−0.09*** (0.03)</td>
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<td>Sexual violence index</td>
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<td>−0.16** (0.08)</td>
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<td>Forced sexual intercourse</td>
<td>0.12 (0.33)</td>
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<td>−0.07** (0.03)</td>
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<tr>
<td>Forced sexual acts</td>
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<td>−0.06*** (0.02)</td>
<td>−0.03 (0.03)</td>
<td>0.21 (0.10)</td>
<td>1010</td>
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</table>

Notes: OLS estimates of treatment effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Columns (3) and (4) report the effect of transfers to the husband and wife in the household, respectively, compared to pure control. Column (5) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (6) reports the sample size. The unit of observation is the individual; we analyze the responses of the wife. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
<table>
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<tr>
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<th>(1)</th>
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<tr>
<td></td>
<td>Control mean (SD)</td>
<td>Treatment (across village)</td>
<td>Female recipient</td>
<td>Male recipient</td>
<td>Female vs. male p-value</td>
<td>N</td>
</tr>
<tr>
<td>Total household expenditure (USD PPP, monthly)</td>
<td>176.88 (89.75)</td>
<td>26.28***</td>
<td>25.75**</td>
<td>26.86**</td>
<td>0.81</td>
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<td>Wife’s private expenditure (USD PPP, monthly)</td>
<td>3.76 (8.58)</td>
<td>2.39***</td>
<td>3.44***</td>
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<td>0.14</td>
<td>1010</td>
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<tr>
<td>Husband’s private expenditure (USD PPP, monthly)</td>
<td>3.04 (7.77)</td>
<td>−0.13</td>
<td>−0.49</td>
<td>−0.09</td>
<td>0.76</td>
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Notes: OLS estimates of treatment effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Columns (3) and (4) report the effect of transfers to the husband and wife in the household, respectively, compared to pure control. Column (5) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (6) reports the sample size. The unit of observation is the household. The sample is restricted to co-habitating couples. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Table 3: Effects of cash transfers on psychological wellbeing (female reports)

<table>
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<tr>
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<th>Column 3</th>
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<th>Column 5</th>
<th>Column 6</th>
<th>Column 7</th>
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<tr>
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<td>Treatment</td>
<td>Spillover</td>
<td>Survey</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
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<td>(across village)</td>
<td>effect</td>
<td>effect</td>
<td>recipient</td>
<td>recipient</td>
<td>p-value</td>
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<td>(0.09)</td>
<td>(0.08)</td>
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<tr>
<td>Depression (CESD)</td>
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<td>(0.10)</td>
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<tr>
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<td>0.43***</td>
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<td>(0.11)</td>
<td>(0.14)</td>
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<tr>
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<td>-0.15*</td>
<td>-0.18**</td>
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<td>-0.17*</td>
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<td>Optimism (Scheier)</td>
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<td>0.17*</td>
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<td>0.09</td>
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<td>-0.23**</td>
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Notes: OLS estimates of treatment, spillover, and survey effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Column (3) reports the spillover effect, i.e. comparing control households in treatment villages to control households in control villages. Column (4) reports survey effects comparing control households in control villages to a new sample of households in control villages who had not previously been surveyed. Note that this comparison uses results from endline 2. Columns (5) and (6) report the effect of transfers to the wife and husband in the household, respectively, compared to pure control. Column (7) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (8) reports the sample size. The unit of observation is the individual; we analyze the responses of the wife. The sample is restricted to co-habitating couples. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Table 4: Effects of cash transfers on psychological wellbeing (male reports)

<table>
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<tr>
<th></th>
<th>(1) Control mean (SD)</th>
<th>(2) Treatment (across village)</th>
<th>(3) Spillover effect</th>
<th>(4) Survey effect</th>
<th>(5) Female recipient</th>
<th>(6) Male recipient</th>
<th>(7) Female vs. male p-value</th>
<th>(8) N</th>
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<tr>
<td>Psychological well-being index</td>
<td>0.00 0.12</td>
<td>−0.17 −0.02 0.24* −0.01</td>
<td>0.13 881</td>
<td></td>
<td></td>
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<tr>
<td>Depression (CESD)</td>
<td>25.79 −1.22</td>
<td>−0.14 −0.14 −2.05 −0.28</td>
<td>0.11 881</td>
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</tr>
<tr>
<td>Stress (Cohen)</td>
<td>0.00 −0.15</td>
<td>0.26* −0.10 −0.17 −0.16</td>
<td>0.92 881</td>
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<td>Happiness (WVS)</td>
<td>0.00 0.14*</td>
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<td>Life satisfaction (WVS)</td>
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<td>−0.17 −0.08 0.11 0.05</td>
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<tr>
<td>Trust (WVS)</td>
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<td>0.06 −0.00 0.17 0.00</td>
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<td></td>
</tr>
<tr>
<td>Locus of control</td>
<td>0.00 −0.10</td>
<td>−0.01 0.05 −0.15 −0.02</td>
<td>0.48 881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism (Scheier)</td>
<td>−0.00 0.17</td>
<td>0.06 0.03 0.19 0.07</td>
<td>0.35 881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-esteem (Rosenberg)</td>
<td>−0.00 0.03</td>
<td>0.02 0.11 0.10 −0.04</td>
<td>0.41 881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: OLS estimates of treatment, spillover, and survey effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Column (3) reports the spillover effect, i.e. comparing control households in treatment villages to control households in control villages. Column (4) reports survey effects comparing control households in control villages to a new sample of households in control villages who had not previously been surveyed. Note that this comparison uses results from endline 2. Columns (5) and (6) report the effect of transfers to the wife and husband in the household, respectively, compared to pure control. Column (7) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (8) reports the sample size. The unit of observation is the individual; we analyze the responses of the husband. The sample is restricted to co-habitating couples. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Table 5: Effects of cash transfers on violence: spillover and survey effects

<table>
<thead>
<tr>
<th></th>
<th>(1) Control mean (SD)</th>
<th>(2) Spillover effect</th>
<th>(3) Survey effect</th>
<th>(4) N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female empowerment index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>0.19**</td>
<td>−0.04</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(1.00)</td>
<td>(0.08)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td><strong>Physical violence index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>−0.00</td>
<td>−0.16**</td>
<td>0.00</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(1.00)</td>
<td>(0.07)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Pushed or shook you</td>
<td>0.27</td>
<td>−0.06*</td>
<td>−0.22</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(0.03)</td>
<td>(0.24)</td>
<td></td>
</tr>
<tr>
<td>Slapped you</td>
<td>0.33</td>
<td>−0.09**</td>
<td>0.12</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
<td>(0.03)</td>
<td>(0.16)</td>
<td></td>
</tr>
<tr>
<td>Punched you</td>
<td>0.15</td>
<td>−0.04</td>
<td>−0.28</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.03)</td>
<td>(0.28)</td>
<td></td>
</tr>
<tr>
<td>Kicked, dragged, or beat you</td>
<td>0.15</td>
<td>−0.04</td>
<td>−0.14</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.03)</td>
<td>(0.17)</td>
<td></td>
</tr>
<tr>
<td><strong>Sexual violence index</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>−0.00</td>
<td>−0.11</td>
<td>0.20*</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(1.00)</td>
<td>(0.08)</td>
<td>(0.10)</td>
<td></td>
</tr>
<tr>
<td>Forced sexual intercourse</td>
<td>0.12</td>
<td>−0.03</td>
<td>0.26</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.33)</td>
<td>(0.03)</td>
<td>(0.19)</td>
<td></td>
</tr>
<tr>
<td>Forced sexual acts</td>
<td>0.09</td>
<td>−0.03</td>
<td>0.18</td>
<td>1010</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.02)</td>
<td>(0.21)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: OLS estimates of spillover and survey effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the spillover effect, i.e. comparing spillover households to pure control households. Column (3) reports survey effects comparing pure control households to a new sample of households in control villages who had not previously been surveyed. Note that this comparison uses results from endline 2. Column (4) reports the sample size. The unit of observation is the individual; we analyze the responses of the wife. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Table 6: Effects of cash transfers on violence norms (female reports)

<table>
<thead>
<tr>
<th></th>
<th>(1) Control mean (SD)</th>
<th>(2) Treatment effect (across village)</th>
<th>(3) Spillover effect</th>
<th>(4) Survey effect</th>
<th>(5) Female recipient</th>
<th>(6) Male recipient</th>
<th>(7) Female vs. male p-value</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence norms index</td>
<td>−0.00 (1.00)</td>
<td>0.07 (0.08)</td>
<td>0.11 (0.08)</td>
<td>0.09 (0.08)</td>
<td>0.13 (0.09)</td>
<td>0.02 (0.09)</td>
<td>0.53 (0.10)</td>
<td>1010</td>
</tr>
<tr>
<td>Wife should tolerate being beaten</td>
<td>0.27 (0.44)</td>
<td>−0.05 (0.04)</td>
<td>−0.06 (0.04)</td>
<td>−0.01 (0.04)</td>
<td>−0.07 (0.04)</td>
<td>−0.04 (0.05)</td>
<td>0.50 (0.05)</td>
<td>1010</td>
</tr>
<tr>
<td>Husband has the right to beat</td>
<td>0.48 (0.50)</td>
<td>−0.00 (0.04)</td>
<td>−0.01 (0.04)</td>
<td>0.01 (0.04)</td>
<td>−0.02 (0.05)</td>
<td>0.03 (0.06)</td>
<td>0.20 (0.06)</td>
<td>1010</td>
</tr>
<tr>
<td>Right to beat: Going out without telling him</td>
<td>0.32 (0.47)</td>
<td>−0.03 (0.04)</td>
<td>−0.07** (0.04)</td>
<td>−0.03 (0.05)</td>
<td>−0.06 (0.04)</td>
<td>−0.01 (0.05)</td>
<td>0.47 (0.05)</td>
<td>1010</td>
</tr>
<tr>
<td>Right to beat: Neglecting the children</td>
<td>0.53 (0.50)</td>
<td>0.05 (0.04)</td>
<td>0.02 (0.04)</td>
<td>0.02 (0.04)</td>
<td>0.03 (0.05)</td>
<td>0.07 (0.05)</td>
<td>0.98 (0.05)</td>
<td>1010</td>
</tr>
<tr>
<td>Right to beat: Arguing with him</td>
<td>0.54 (0.50)</td>
<td>−0.05 (0.04)</td>
<td>−0.03 (0.04)</td>
<td>−0.06 (0.04)</td>
<td>−0.08* (0.05)</td>
<td>−0.00 (0.05)</td>
<td>0.20 (0.05)</td>
<td>1010</td>
</tr>
<tr>
<td>Right to beat: Refusing to have sex</td>
<td>0.28 (0.45)</td>
<td>−0.05 (0.03)</td>
<td>−0.06* (0.03)</td>
<td>−0.05 (0.04)</td>
<td>−0.05 (0.04)</td>
<td>−0.06 (0.04)</td>
<td>0.78 (0.04)</td>
<td>1010</td>
</tr>
<tr>
<td>Right to beat: Burning the food</td>
<td>0.15 (0.36)</td>
<td>−0.02 (0.03)</td>
<td>−0.02 (0.03)</td>
<td>−0.03 (0.04)</td>
<td>−0.02 (0.04)</td>
<td>−0.03 (0.03)</td>
<td>0.26 (0.03)</td>
<td>1010</td>
</tr>
</tbody>
</table>

Notes: OLS estimates of treatment, spillover, and survey effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Column (3) reports the spillover effect, i.e. comparing control households in treatment villages to control households in control villages. Column (4) reports survey effects comparing control households in control villages to a new sample of households in control villages who had not previously been surveyed. Note that this comparison uses results from endline 2. Columns (5) and (6) report the effect of transfers to the wife and husband in the household, respectively, compared to pure control. Column (7) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (8) reports the total sample size, including all treatment, spillover and pure control households. The unit of observation is the individual; we analyze the responses of the wife. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Appendix

A. Theoretical Appendix

A1 Proof of Result 3a.

For ease of notation, denote the consumption of $H$ and $W$ as:

$$
\begin{align*}
    c_H &\equiv y_H + y_W - u_W^{-1}(u_W(r y_W) + h(v, y_W)) \\
    c_W &\equiv u_W^{-1}(u_W(r y_W) + h(v, y_W))
\end{align*}
$$

Then the (necessary and sufficient) first-order condition with respect to $v$ is:

$$
FOC_v: -\frac{\partial u_H}{\partial c}(c_H)\frac{\partial u_W^{-1}}{\partial c}(u_W(r y_W) + h(v, y_W)) \frac{\partial h}{\partial v}(v, y_W) + \frac{\partial g}{\partial v}(v, y_W) = 0
$$

Remark. Since the first term is clearly negative, this implies that $\frac{\partial g}{\partial v}(v^*, y_H) > 0$. Because $(u^{-1})'(a) = \frac{1}{u'(u^{-1}(a))}$, we can rewrite $FOC_v$ as

$$
\frac{\partial u_H}{\partial c}(c_H)\frac{\partial u_W^{-1}}{\partial c}(c_W) = \frac{\partial g}{\partial v}(v, y_H)\frac{\partial h}{\partial v}(v, y_W)
$$

What happens when $y_H$ increases?

If $\frac{\partial g}{\partial v}\frac{\partial y_H}{\partial y_H} < 0$, then an increase in $y_H$ means the numerator is smaller at the original level of violence ($\frac{\partial g}{\partial v}(v^{pre}, y_H^{post}) < \frac{\partial g}{\partial v}(v^{pre}, y_H^{pre})$). To countervail this, $v$ needs to move to decrease the denominator. Since $h$ is convex and increasing, this means $v$ decreases.

If $\frac{\partial g}{\partial v}\frac{\partial y_H}{\partial y_H} > 0$, then an increase in $y_H$ means the numerator is bigger at the original level of violence ($\frac{\partial g}{\partial v}(v^{pre}, y_H^{post}) > \frac{\partial g}{\partial v}(v^{pre}, y_H^{pre})$). To countervail this, $v$ needs to move to increase the denominator. Since $h$ is increasing and convex in $v$, this means $v$ increases.

What happens when $y_W$ increases?

If $\frac{\partial h}{\partial v}\frac{\partial y_W}{\partial y_W} > 0$, then an increase in $y_W$ means the denominator is bigger at the original level of violence ($\frac{\partial h}{\partial v}(v^{pre}, y_W^{post}) > \frac{\partial h}{\partial v}(v^{pre}, y_W^{pre})$). Thus, $v$ needs to respond
to make the numerator bigger, too. Since $g$ is concave, i.e. $g_v$ is decreasing in $v$, and $\frac{\partial g}{\partial v}(v^{pre}, y_{H}) > 0$ (by the Remark), this means that $v$ must decrease.

If $\frac{\partial h}{\partial y_W} < 0$, then an increase in $y_W$ means the denominator is smaller at the original level of violence ($\frac{\partial h}{\partial v}(v^{pre}, y_{W}^{pre}) < \frac{\partial h}{\partial v}(v^{pre}, y_{H}^{pre})$). Thus, $v$ needs to respond to make the numerator smaller, too. Since $g$ is concave, i.e. $g_v$ is decreasing in $v$, and $\frac{\partial g}{\partial v}(v^{pre}, y_{H}) > 0$ (by the Remark), this means that $v$ must increase.

### A2 Effect of transfers on husband’s preferred and wife’s maximally-tolerated violence

$H$’s unconstrained maximizer $v^H$ is characterized by the first-order condition for $H$’s utility with respect to $v$:

$$\frac{\partial u_H}{\partial c}(y_H + f(v^H, y_W)) \frac{\partial f}{\partial v}(v^H, y_W) = -\frac{\partial g}{\partial v}(v^H) \tag{A1}$$

$W$’s maximum tolerance $v^W$ is characterized by her binding participation constraint $P_W$:

$$u_W(y_W - f(v^W, y_W)) - h(v^W, y_W) = \bar{u}_W(y_W) \tag{A2}$$

We now examine how $v^H$ and $v^W$ move with respect to $y_H$.

Implicitly differentiating the condition characterizing $v^H$, we see that:

$$\frac{\partial v^H}{\partial y_H} = \frac{\partial^2 u_H}{\partial c^2} \left( \frac{\partial f}{\partial v} \right)^2 + \frac{\partial^2 f}{\partial v^2} \left( \frac{\partial u_H}{\partial c} \right) + \frac{\partial^2 g}{\partial v^2} \tag{A3}$$

$$\frac{\partial v^H}{\partial y_W} = \frac{\partial^2 u_H}{\partial c^2} \left( \frac{\partial f}{\partial v} \right)^2 + \frac{\partial^2 f}{\partial v^2} \left( \frac{\partial u_H}{\partial c} \right) + \frac{\partial^2 g}{\partial v^2} \tag{A4}$$

Note that the denominator is the same in both expressions, and is negative due to risk aversion, weak concavity of $f(v, y_W)$ in $v$, and concavity of $g(v)$. Clearly, $H$’s most preferred level of violence is always decreasing in his income $y_H$, while the impact of an increase in $y_W$ is determined by the sign of $\frac{\partial f}{\partial y_W}$, that is, the strength of complementarity or substitutability between the use of violence and
the wife’s wealth in how much income can be extracted from her.

Because $y_H$ does not appear in $W$’s participation constraint, it’s clear that a transfer to $y_H$ cannot affect the level of violence at which $P_W$ binds. Implicitly differentiating the condition characterizing $v^H$ with respect to $y_W$, we see that:

\[
\frac{\partial v^W}{\partial y_W} = \frac{\partial u^W}{\partial c} \left[ 1 - \frac{\partial f}{\partial y_W} \right] - \frac{\partial h}{\partial y_W} \frac{\partial u^W}{\partial y_W} + \frac{\partial h}{\partial v} \left( \frac{\partial f}{\partial v} \right)
\]

This yields Appendix Results 1 and 2.

**Appendix Result 1.** (i) A transfer to the husband always decreases his preferred level of violence $v^H$.

(ii) A transfer to the husband never affects the wife’s maximally tolerated violence $v^W$.

The intuition behind Appendix Result 1(i) is the following. A transfer to the husband leaves the wife’s income unchanged, so the profitability of violence is unchanged, and $H$’s own income (and therefore private consumption) has increased. Because violence is costly (distasteful), $H$’s ideal level of violence falls.\(^{24}\)

Appendix Result 1(ii) is explained as follows: When $H$’s income increases, this does not affect $W$’s maximal tolerance, since her participation only depends on her private consumption (which is just a portion of her own income), her inherent intolerance of IPV, and her outside option, where her ability to leave the marriage is a function of her own income.

Appendix Result 2 describes how $v^H$ and $v^W$ respond to $y_W$.

**Appendix Result 2.** (i) A transfer to the wife increases the husband’s preferred level of violence $v^H$ if violence and income are complements in the extractive technology (i.e. $\frac{\partial f}{\partial v} > 0$): the amount of income $H$ can extract from $W$ for a given level of violence increases in her income.

(ii) A transfer to the wife decreases the wife’s maximally tolerated violence $v^W$ if violence and income are complements in the extractive technology, $W$’s intolerance $h(v,y_W)$ increases strongly in her income, and/or her outside option $\bar{u}_W(y_W)$

\(^{24}\)A concrete interpretation of this result is that an increase in $H$’s consumption that is not obtained through violence may decrease his stress and thereby decrease his impulse to release stress through violence.
increases strongly in her income.

The intuition for Appendix Result 2(i) is as follows: if the extractive return to violence is much higher when the wife is wealthier, then \( H \)'s utility gains from increased consumption will outweigh his distaste for violence, and \( v^H \) increases.

Moreover, under strong complements, a given level of violence extracts much more from a wife with higher income \( y_W \). This means that the wife's utility at the pre-income-increase level of violence is now lower, reducing her tolerance. Further, a transfer to the wife reduces her maximally-tolerated violence if the increase in income exposes her to norms that are less tolerant of IPV, or empowers her to feel less tolerant of IPV. Again, this is because she has less utility at the pre-income-increase level of violence. Finally, if the increase in income gives her more resources to leave a bad marriage, \( W \)'s maximal tolerance \( v^W \) will also fall.

To sum up: the husband’s demand for violence always decreases in his own income, while an increase in the wife’s income may increase his demand if the returns to extractive violence are much higher for wealthier wives. The wife’s maximal tolerance for violence decreases in her own income if her income is sufficiently empowering, and is unaffected by a change in her partner’s income. However, since equilibrium violence is the minimum of the husband’s demand for violence and the wife’s maximal tolerance for violence, it is not enough to understand the effect of spousal transfers on the level of \( v^H \) and \( v^W \). The next step is to characterize the effect of spousal transfers on the conditions under which \( v^H \) or \( v^W \) is the minimum, and under which equilibrium violence goes up or down following these transfers.

### A3 An Example

We offer a numerical example to illustrate how equilibrium violence is an outcome of an interaction between instrumentality, distaste, and the participation constraint of the wife, with empowerment (norms) and her outside option as key elements of this constraint.

1. Utility: \( u_H(c) = u_W(c) = \log(c), y_H, y_W >> 1 \)

2. Extraction (instrumental violence), parametrized by \( \varepsilon \): \( f(v, y_W) = \varepsilon vy_W, \varepsilon \in [0,1], v \in [0,1] \)
3. Distaste (expressive violence), parametrized by $\delta$: $g(v) = \log(1 - \delta v)$, $\delta \in [0, 1]$

4. Empowerment, parametrized by $\pi$: $h(v, y_W) = \log(v + \pi vy_W + 1)$, $\pi \in [0, 1]$

5. Resources/Outside Option, parametrized by $r$: $\bar{u}_W(y_W) = u_W(r(1 - \epsilon v)y_W)$, $r \in [0, 1]$

Assume that the wife is poorer than the husband: $y_W < y_H$.

Then the constrained maximization problem is:

$$\max_v \log(y_H + \varepsilon vy_W) + \log(1 - \delta v) \quad \text{(A6)}$$

subject to:

$$\log((1 - \varepsilon v)y_W) - \log(v + \pi vy_W + 1) \geq \log(r(1 - \varepsilon v)y_W) \quad \text{(A7)}$$

The unconstrained maximizer for $H$ and the binding level of violence for $W$ are:

$$v_H = \frac{1 - \delta y_H}{y_H}$$

$$v_W = \frac{1 - r}{r(1 + \pi y_W)} \in [0, 1]$$

Observe that the husband’s preferred level of violence $v_H$ decreases in his income, $y_H$, increases in his wife’s income, $y_W$, decreases in the extractive efficiency of violence, $\varepsilon$, and decreases in his distaste for violence, $\delta$. The wife’s maximally-tolerated level of violence decreases in her income, $y_W$, in empowerment, $\pi$, and in resource strength, $r$. It is unaffected by changes in her husband’s income, $y_H$.

The condition under which the wife’s participation constraint $P_W$ binds and $v^* = v_W = \min\{v_H, v_W\}$ is:

$$\left(1 - \frac{\delta y_H}{y_W}\right) + \pi(y_W - \delta y_H) > \delta(1 + \varepsilon)\frac{(1 - r)}{r}$$

Observe that a cash transfer to $H$ makes this inequality less likely to hold: it slackens the wife’s participation constraint, which means that the husband’s demand for violence is lower than the wife’s maximal tolerance for it, and $v^* = v_H$.  

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Thus, a transfer to the husband increases his consumption and thereby reduces his demand for violence, and this is what leads to a fall in equilibrium violence.

By contrast, a cash transfer to W makes this inequality more likely to hold: this increases the wife’s empowerment and resources, causing $P_W$ to bind at a lower level of violence, so that it is the wife’s decreased tolerance for violence that leads to a fall in equilibrium violence.

The numerical exercise is as follows. We consider different strengths of each of the four channels: distaste $\delta$, extractiveness $\varepsilon$, empowerment $\pi$, and resource strength $r$, for different levels of husband and wife income (the relative income is what matters). We plot $v^H(y_H,y_W)$ and $v^W(y_H,y_W)$ given the parameter environment. The lower envelope of the husband’s preferred and the wife’s maximally tolerated level of violence is equilibrium violence. We seek the parameter environment that best matches our empirical patterns:

1. Empirically, an increase in $y_H$ reduced violence. Hence, equilibrium violence must be strictly decreasing over some range of $y_H$.

2. An increase in $y_W$ reduced violence. Hence, equilibrium violence must be strictly decreasing over some range of $y_W$.

3. An increase in $y_W$ qualitatively reduced violence by more than an equivalent increase in $y_H$.

Requiring the patterns from the theory to be consistent with our empirical observations yields Figure B1, a parameter environment where the husband has moderate distaste for violence ($\delta = 0.2$), violence is highly extractive ($\varepsilon = 1$), and an increase in the wife’s income increases her empowerment and outside option ($\pi = 1$, $r = \frac{1}{3}$). The blue line is the husband’s demand for violence $v^H(y_H,y_W)$, the red line is the wife’s maximal tolerance for violence $v^W(y_H,y_W)$, and the black line is the lower envelope $v^* = \min\{v^H,v^W\}$.25

The top panel shows how equilibrium violence changes when $y_W = 1$ and the husband’s income $y_H$ ranges from less than to more than his wife’s. Observe that when

25Note that we cap the husband's demand for violence at 1 in our figure when it exceeds the wife's tolerance, for better presentation.
the husband’s income is less than about 4, he wishes to use violence to extract income from his wife, but her participation constraint binds and her tolerance determines the equilibrium level. Thus, we know from Result 1 that changes in $y_H$ will not affect violence in equilibrium. When the husband is wealthier ($y_H \geq 5$), he has “enough” private consumption, and his moderate distaste for violence outweighs the amount he could extract from his relatively poor wife. Thus, his demand determines the equilibrium level of violence, and when the husband is much wealthier, his demand is zero.

The bottom panel shows how equilibrium violence changes when $y_H = 3$ and the wife’s income $y_W$ ranges from less than to more than her husband’s. Observe that as the wife becomes relatively wealthier, her husband’s demand for violence increases, because the value of extracting from her increases. However, at the same time, her tolerance for violence decreases – her higher income means she is more empowered and has a higher outside option. Thus, equilibrium violence is determined by the husband’s (low) demand when the wife is relatively poor, but is then determined by the wife’s (decreasing) tolerance. Thus, violence in equilibrium falls as the wife’s income increases beyond $y_W \approx 1$.

The example also illustrates that a transfer to the wife may reduce violence by more than an equivalent transfer to the husband. If $y_H = 3$ and $y_W = 1$, the top panel shows that a unit increase in the husband’s income leads no reduction in equilibrium violence, while the bottom panel shows that a unit increase in the wife’s income leads to a reduction in equilibrium violence. This is because, at these initial income levels and in this parameter environment, a transfer to the wife increases her empowerment by more than the same transfer to the husband reduces his demand.

The numerical example also illustrates a suggestive insight from our theory regarding the impact of small versus large cash transfers in settings where the husband and wife are both poor but the wife is even poorer, violence is extractive but distasteful, and an increase in the wife’s income increases her empowerment. Based on our theory (see ???), we suggest that in this setting, large cash transfers may actually increase IPV, and to a greater degree when given to the husband. This is because giving a large transfer to the wife will also make her a more profitable source of extraction through violence. However, transfers to the husband always weakly reduce his demand for violence, because of his distaste for it. On the other
hand, if only small transfers are feasible, they may reduce IPV to a greater degree when given to the wife. These transfers empower her and decrease her tolerance for violence, without causing the husband’s demand for violence to overwhelm this empowerment by making her a target for extraction.
B. Figures

Figure B1: Numerical example of the impact of changes in husband’s or wife’s income on preferred and equilibrium levels of violence

Wife’s income: $y_w = 1$

Husband’s income: $y_h = 3$

- Husband’s preferred level of violence
- Wife’s maximally tolerated level of violence
- Equilibrium level of violence
302 villages in Rarieda

120 villages with highest proportion of thatched roofs chosen for study, April 2011

60 villages randomly chosen to receive transfers

Research census: 1123 HH
March-November 2011

Baseline: 1097 HH
April-November 2011

GiveDirectly census: 1034 HH
April-November 2011

Final treatment sample: 1008 baseline HH

Treatment rollout
June 2011-January 2013

Pure control census: 1141 HH
(464 targeted) April-June 2012

Endline: 1372 HH

Treatment: 503/471 HH
Female recipient: 208/195 HH

Male recipient: 185/174 HH
Monthly transfer: 173/159 HH
Lump-sum transfer: 193/184 HH

Large transfer: 137/128 HH
Small transfer: 366/343 HH

Spillover: 505/469 HH

Pure control: 0/432 HH
### C. Additional Tables

Table C1: Effect of cash transfers to the husband on violence

<table>
<thead>
<tr>
<th></th>
<th>Expressive distaste: husband dislikes violence $(g_v &lt; 0)$</th>
<th>Not expressive $g_v = 0$</th>
<th>Expressive pleasure: husband likes violence $(g_v &gt; 0)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not instrumental $f_v = 0$</td>
<td>no effect (no violence)</td>
<td>no effect (no violence)</td>
<td>no effect</td>
</tr>
<tr>
<td>Instrumental $f_v &gt; 0$</td>
<td>increase or decrease</td>
<td>no effect (no violence)</td>
<td>no effect</td>
</tr>
<tr>
<td></td>
<td>(1) Control mean (SD)</td>
<td>(2) Female vs. male recipient</td>
<td>(3) N</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td><strong>Female empowerment index</strong></td>
<td>−0.00 (1.00)</td>
<td>0.07 (0.11)</td>
<td>709</td>
</tr>
<tr>
<td><strong>Physical violence index</strong></td>
<td>0.96 (1.72)</td>
<td>0.10 (0.20)</td>
<td>707</td>
</tr>
<tr>
<td>Pushed or shook you</td>
<td>0.20 (0.40)</td>
<td>0.02 (0.05)</td>
<td>707</td>
</tr>
<tr>
<td>Slapped you</td>
<td>0.24 (0.43)</td>
<td>0.01 (0.05)</td>
<td>707</td>
</tr>
<tr>
<td>Punched you</td>
<td>0.14 (0.35)</td>
<td>−0.01 (0.04)</td>
<td>706</td>
</tr>
<tr>
<td>Kicked, dragged, or beat you</td>
<td>0.16 (0.37)</td>
<td>0.03 (0.04)</td>
<td>706</td>
</tr>
<tr>
<td><strong>Sexual violence index</strong></td>
<td>0.25 (0.63)</td>
<td>−0.08 (0.08)</td>
<td>705</td>
</tr>
<tr>
<td>Forced sexual intercourse</td>
<td>0.13 (0.34)</td>
<td>−0.04 (0.04)</td>
<td>705</td>
</tr>
<tr>
<td>Forced sexual acts</td>
<td>0.12 (0.32)</td>
<td>−0.03 (0.04)</td>
<td>705</td>
</tr>
</tbody>
</table>

Notes: OLS estimates of baseline balance. Outcome variables, measured at baseline, are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the within-village control group for a given outcome variable. Column (2) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (3) reports the sample size. The unit of observation is the individual; we analyze the responses of the wife. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.
Table C3: Effects of cash transfers on violence norms (male reports)

<table>
<thead>
<tr>
<th></th>
<th>(1) Control mean (SD)</th>
<th>(2) Treatment (across village)</th>
<th>(3) Spillover effect</th>
<th>(4) Survey effect</th>
<th>(5) Female recipient</th>
<th>(6) Male recipient</th>
<th>(7) Female vs. male p-value</th>
<th>(8) N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Violence norms index</td>
<td>0.00 (1.00)</td>
<td>−0.05 (0.09)</td>
<td>−0.10 (0.09)</td>
<td>−0.06 (0.10)</td>
<td>−0.06 (0.11)</td>
<td>−0.02 (0.10)</td>
<td>0.78 (0.10)</td>
<td>881</td>
</tr>
<tr>
<td>Wife should tolerate being beaten</td>
<td>0.13 (0.33)</td>
<td>0.01 (0.03)</td>
<td>−0.01 (0.03)</td>
<td>0.05 (0.04)</td>
<td>0.01 (0.04)</td>
<td>0.00 (0.04)</td>
<td>0.66 (0.04)</td>
<td>881</td>
</tr>
<tr>
<td>Husband has the right to beat</td>
<td>0.26 (0.44)</td>
<td>0.04 (0.04)</td>
<td>0.04 (0.04)</td>
<td>0.09* (0.05)</td>
<td>0.03 (0.05)</td>
<td>0.06 (0.05)</td>
<td>0.84 (0.04)</td>
<td>881</td>
</tr>
<tr>
<td>Right to beat: Going out without telling him</td>
<td>0.15 (0.35)</td>
<td>0.00 (0.03)</td>
<td>0.02 (0.03)</td>
<td>−0.04 (0.04)</td>
<td>−0.01 (0.04)</td>
<td>0.02 (0.04)</td>
<td>0.39 (0.04)</td>
<td>881</td>
</tr>
<tr>
<td>Right to beat: Neglecting the children</td>
<td>0.32 (0.47)</td>
<td>0.01 (0.04)</td>
<td>0.06 (0.04)</td>
<td>−0.05 (0.05)</td>
<td>0.04 (0.05)</td>
<td>−0.04 (0.05)</td>
<td>0.13 (0.05)</td>
<td>881</td>
</tr>
<tr>
<td>Right to beat: Arguing with him</td>
<td>0.35 (0.48)</td>
<td>0.00 (0.04)</td>
<td>0.01 (0.04)</td>
<td>−0.00 (0.05)</td>
<td>0.02 (0.05)</td>
<td>−0.02 (0.05)</td>
<td>0.27 (0.05)</td>
<td>881</td>
</tr>
<tr>
<td>Right to beat: Refusing to have sex</td>
<td>0.08 (0.28)</td>
<td>0.02 (0.02)</td>
<td>0.03 (0.03)</td>
<td>0.04 (0.04)</td>
<td>0.02 (0.03)</td>
<td>0.02 (0.03)</td>
<td>0.70 (0.03)</td>
<td>881</td>
</tr>
<tr>
<td>Right to beat: Burning the food</td>
<td>0.06 (0.23)</td>
<td>−0.00 (0.02)</td>
<td>0.03 (0.03)</td>
<td>0.01 (0.03)</td>
<td>−0.00 (0.03)</td>
<td>0.01 (0.03)</td>
<td>0.66 (0.02)</td>
<td>881</td>
</tr>
</tbody>
</table>

Notes: OLS estimates of treatment, spillover, and survey effects. Outcome variables are listed on the left. For each outcome variable, we report the coefficients of interest and their standard errors in parentheses. Column (1) reports the mean and standard deviation of the control group for a given outcome variable. Column (2) reports the basic treatment effect calculated across villages, i.e. comparing treatment households to pure control households. Column (3) reports the spillover effect, i.e. comparing control households in treatment villages to control households in control villages. Column (4) reports survey effects comparing control households in treatment villages to a new sample of households in control villages who had not previously been surveyed. Note that this comparison uses results from endline 2. Columns (5) and (6) report the effect of transfers to the wife and husband in the household, respectively, compared to pure control. Column (7) reports p-values for the difference between transfers to the husband and wife, using village-level fixed effects. Column (8) reports the sample size. The unit of observation is the individual; we analyze the responses of the husband. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.