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Resources and Intimate Partner Violence in Sub-Saharan Africa

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Summary. — Combining DHS data for 580,000 women from 30 different countries in Sub-Saharan Africa, we analyze how both the incidence and the acceptance of intimate partner violence vary across time and space, in a region with record high levels of violence against women. We review the existing literature regarding the impact of resources on intimate partner violence, extracting testable and often conflicting hypotheses at the micro and macro level, and on the interaction across levels. We propose to extend existing theory to take into account attitudes at the community level. In the empirical analysis, we find no evidence that resources protect against abuse at the individual level, although resources are associated with lower acceptance. We find that resource inequality, both within the household and at the aggregate level, is associated with more abuse. Finally, we find that employed women face greater risk of abuse in communities with relatively higher acceptance of wife-beating.

1. INTRODUCTION

Violence against women is a widespread form of human rights violation, and intimate partner violence is by far its most important component (Devries *et al.*, 2013; Fried, 2003; Heise, 2011). Intimate partner violence is associated with a wide array of negative outcomes for the women who are abused, including pregnancy loss and sexually transmitted infections (Durevall & Lindskog, 2015; Krishnan, 2005). It also has considerable negative externalities, affecting more individuals than the ones who are abused, through fear of abuse and psychological stress from witnessing violence (Jewkes, 2002; True, 2012).

Intimate partner violence is prevalent in all societies, but the level and the degree to which it is considered acceptable vary greatly. The countries of Sub-Saharan Africa (SSA) have very high levels of violence against women (Garća-Moreno, Ellsberg, & Watts, 2005; Devries *et al.*, 2013). Also, 14 out of the 15 countries with the highest share of women who deem wife-beating justifiable are found in SSA (World Bank, 2011). There is nevertheless a lot of variation across the region and over time, suggesting that intimate partner violence also depends on factors at the contextual level (Jewkes, 2002; Johnson, Ollus, & Nevala, 2008; True, 2012). In the present paper, we explore this variation in order to shed light on a wide range of hypotheses regarding the relationship between resources and abuse. [1]

We first give a broad description of the spatial and temporal variation in the prevalence of abuse in SSA, and in the degree to which it is considered justifiable. By extending the analysis to women's actual experience with abuse, this description complements Pierotti (2013), who documents a recent declining trend in women's acceptance of intimate partner violence. Our analysis suggests that both acceptance and the incidence of intimate partner violence declined in SSA over the period of analysis. Importantly, the data show a great deal of variation across time and space, suggesting the need for taking specific contextual factors into account. We move on to investigating the relationship between abuse and resources at different levels of analysis. Resources are measured in terms of wealth, education, and employment. We use exceptionally ample micro data from the Demographic and Health Surveys (DHS), containing information on attitudes regarding wife-beating for 586,255 women and the experience of abuse for 156,929 women, located in 30 SSA countries and interviewed over the years 2003–13.

There are three general versions of theories on how resources affect the prevalence of intimate partner violence. The standard resource theory (e.g., Goode, 1971) posits that women with few resources are more at risk of abuse, and that men with fewer resources are more likely to be abusive. More recent scholarship, including bargaining theories of the household, tends to focus on *relative* resources. On the one hand, relatively less female resources could lead to more abuse due to marital dependency (e.g., Vyas & Watts, 2009). On the other hand, relatively more female resources could increase violence due to the stress induced by status inconsistencies (e.g., Hornung, McCullough, & Sugimoto, 1981). A refinement of the relative resource theory is the gendered resource theory (Atkinson, Greenstein, & Lang, 2005), proposing that the effect of relative resources on abuse will depend on husbands' gender ideologies, where the degree to which men hold breadwinner ideals is crucial.

These different theories operate at different analytical levels. The simplest form of resource theory is concerned only with absolute resources at the micro level. Relative resource theory, on the other hand, is concerned with relative resources within the couple, as is the gendered relative resource theory. Very few theories explicitly address the macro level when analyzing intimate partner violence, but the importance of this level is often implied. Moreover, it may interact with the other levels. We propose to expand existing theory by explicitly taking into account the macro level, both directly and as a moderator. Specifically, we believe that the existence of a violence back-

lash, a situation where female resources increase the risk of abuse, hinges on prevailing acceptance of wife-beating in the surrounding community. In this framework we propose a *contextual acceptance employment hypothesis*, whereby female employment leads to a relatively higher risk of abuse in communities where wife-beating is considered acceptable.

Acknowledging that violence is a "multifaceted phenomenon grounded in an interplay among personal, situational, and sociocultural factors" (Heise, 1998, p. 263), we follow an ecological (or multilevel) approach, allowing the different types of resources to operate at various levels of social organization simultaneously (for other examples of this approach to the study of violence, see Heise & Kotsadam (2015), Uthman, Moradi, & Lawoko (2009) and Uthman, Moradi, & Lawoko (2011)). We explicitly model the correlation of intimate partner violence with resources at the individual, the couple, and the community level, and we allow for interactions across these levels.

With respect to the standard resource theory, our findings show that household wealth, though strongly negatively linked to the acceptance of wife-beating, is only weakly negatively correlated with the risk of *actual* abuse in the household. Furthermore, richer areas are not less violent-prone than poorer areas. Societies with a high degree of economic inequality, however, have higher levels of abuse. We also find little support for the simplest economic bargaining model in our data, as for most women, their level of education—allegedly a source of bargaining power—is positively correlated with abuse risk. Moreover, female employment is consistently associated with higher risk of abuse. With respect to the relative resource theory, we find that intra-household inequality in education, regardless of which spouse has more years of schooling, is associated with more violence. Female resources at the macro level in terms of improved outside options do not seem to imply lower levels of abuse either, as areas with higher levels of female employment and education are relatively more violent prone. Consistent with the contextual acceptance employment hypothesis, we find that being employed is correlated with an even higher risk of abuse in areas with a high level of acceptance of wife-beating.

This paper adds to the literature in several ways: First, we provide a thorough review of the literature as it relates to income, education and employment and women's experience of intimate partner violence. Second, from this literature we extract a number of conflicting hypotheses and we investigate how they fit with the data. Some of these hypotheses have not been tested in the literature that we cover. Third, despite the large amount of previously existing hypotheses, we identify gaps in the literature and we propose new hypotheses that we also investigate empirically. Fourth, we combine data from a whole region, which results in a large data set with substantial variation across communities. This allows us to test hypotheses at different levels of analysis.

Our findings underscore the need for high-quality data and careful consideration of analytical level when exploring the relationship between resources and intimate partner violence. For one, information on attitudes towards wife-beating cannot replace data on actual abuse in analyses of how resources relate to the incidence of abuse. Although being accepting of wife-beating is positively correlated with the probability of actual abuse on part of both victim and perpetrator, it is monotonically negatively correlated with wealth and education, thus masking the more complicated relationship between resources and abuse. Similarly, employment is only weakly related to acceptance but strongly, and positively, related to abuse. The interaction between macro-level acceptance and

micro-level employment is highly relevant for predicting levels of abuse. Moreover, our findings show that aggregates such as household wealth, or the total level of resources in a society, are insufficient predictors of abuse: It is important to consider also the *distribution* of resources; between household members in particular, but also at the macro level and in interactions across different levels.

2. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The relationship between resources and intimate partner violence is given considerable attention in social science research. We give a comprehensive review of this literature, with particular focus on the empirical hypotheses regarding how economic resources influence the risk of abuse. The resources given most attention in the literature are income (or wealth), employment, and education, which will also be the focus of this paper.[2]

(a) *Micro-level resources: The role of absolute and relative resources in the household*

At the individual level, resources are often argued to be empowering and protective against intimate partner violence (Jewkes, 2002). However, the relationship between resources and violence need not be linear, and some even argue for a backlash, whereby increased resources lead to more abuse for women (True, 2012). We here discuss the reasoning behind these opposing predictions.

In the psychological literature, poverty is associated with stress, which is thought to influence the degree of abuse (Jewkes, 2002). The *frustration-aggression hypothesis* is the most common psychological theory on the link between poverty and aggression (Barlett & Anderson, 2013). From a social perspective, *resource theory* regards the family as a power system and suggests that men with few other resources may use violence to maintain dominance within the family (Goode, 1971; Vyas & Watts, 2009). In both cases, the prediction is that income or wealth lowers the incidence of abuse.

Standard resource theory further predicts that employment and education are also protective against abuse, beyond their effect on income and wealth. This is in line with the view of the World Health Organization, which argues that female employment should be strongly supported as a means to reduce intimate partner violence (Garcia-Moreno *et al.*, 2005). High educational attainment is negatively associated with being both a victim and a perpetrator of abuse across a wide range of different studies (see Jewkes, 2002 for an overview).

Education is also assumed to affect behavior via identity and learning about the normative foundations of society, and it may expand horizons as well as increase exposure to global discourses rejecting partner violence (Pierotti, 2013). Friedman, Kremer, Miguel, and Thornton (2011) exploit a randomized scholarship program that raised girls' secondary schooling in Kenya and find a reduction in acceptance of wife-beating. Mocan and Cannonier (2012) use a policy reform in Sierra Leone in 2001 and find that increased primary schooling also reduces women's acceptance of wife-beating.

An additional avenue for the protective role of individual resources is evoked in bargaining theories of the household, where women's *outside options*—usually considered to be the utility level in case of divorce—are crucial in determining the outcome of the bargain (Eswaran & Malhotra, 2011; Farmer & Tiefenthaler, 1997; Lundberg & Pollak, 1996; Manser & Brown, 1980; McElroy & Horney, 1981; Pollak, 2005). In

these models, improved outside options through individual education and employment possibilities should reduce intimate partner violence—all else equal (Farmer & Tiefenthaler, 1997).

On the other hand, an increase in women's resources may yield a higher risk of abuse (referred to as a *violence backlash*). As women become more resourceful, men may resort to violence for instrumental reasons, both to counteract the increased power gained by women in order to reinstate their dominance, and because there are more resources to "extract" from female hands (e.g., Eswaran & Malhotra, 2011; Heise & Garcia-Moreno, 2002; True, 2012).

Lastly, the relationship between resources and violence need not be monotonic. Studies of both the US during the 1970s (Straus, Gelles, & Steinmetz, 1980) and South Africa in 1998 (South Africa Department of Health, 2002), document a hump-shaped ("inverted U") association between female education and exposure to intimate partner violence, with those having the least and the most education suffering relatively less from violence, and those in the middle suffering relatively more. Reviewing the literature, Vyas and Watts (2009) also find that education is negatively correlated with violence only for women with secondary schooling or more.

Jewkes (2002) argues that a likely reason for the hump-shape is that having education enables women to challenge norms, which carries a risk unless the woman is sufficiently empowered. Similar patterns have been observed with respect to income (Jewkes, 2002; True, 2012). More generally, resources can be predicted to increase the risk of violence for women if their initial bargaining power is low. In the bargaining models of Tauchen, Witte, and Long (1991), Eswaran and Malhotra (2011) and Heath (2014), violence is considered to be instrumental to men, and while resources increase women's bargaining power, if they do not do so sufficiently for her to exit the partnership if beaten, the man will counteract the increase in female power by violence. Hence, there may exist a threshold level beyond which education reduces violence, whereas below this level an increase in education is actually harmful.

Different types of resources may also be expected to interact with each other. Hidrobo and Fernald (2013) focus on women's education as a moderator for the effects of increased female income on intimate partner violence. They find that female income decreases psychological violence from male partners in Ecuador only for women with more than primary education. Heath (2014) also shows that female education affects the relationship between employment and violence against women in Bangladesh, and finds a negative correlation between work and violence only for women with low levels of education.

We condense the existing theories regarding the role of the absolute level of resources in the following three hypotheses:

Hypothesis 1a. *Women's access to resources such as wealth, employment, and education, leads to lower risk of abuse (the standard resource view).*

Hypothesis 1b. *Women's access to resources, and to employment in particular, leads to higher risk of abuse (as in theories of a violence backlash).*

Hypothesis 1c. *The relationship between women's access to resources and intimate partner violence is non-monotonic; resources are protective only beyond a certain threshold, and may be harmful at levels below this (consistent with findings of an inverted U).*

The interplay between spouses, and their relative position in the household, is particularly likely to matter for the occurrence of intimate partner violence, as it, by definition, takes place in a relationship. *Relative resource theories* claim precisely that it is not the woman's resource level in itself, but her position within the household, that matters (Vyas & Watts, 2009). As in the literature on the role of absolute resources, the theories about the role of relative resources yield opposing predictions.

The theory of *marital dependency* states that being economically dependent on a male partner increases women's risk of abuse, since it makes them less likely or able to exit the relationship (Vyas & Watts, 2009). In line with this, Aizer (2010) finds that reductions in the gender wage gap—a relative improvement of women's outside options—cause less violence against women in California, US.

In theories viewing *marriage as an exchange relationship*, cultural expectations define and put value on different divisions of labor. Masculinity is constructed in relation to femininity, and wives' employment should be studied in relation to their husbands' (Atkinson *et al.*, 2005; Macmillan & Gartner, 1999; McCloskey, 1996; Pence & Paymar, 1993). According to *status inconsistency theories*, where atypical roles threaten male identity (Hornung *et al.*, 1981), women having more resources than men could lead to increased violence. Hornung *et al.* (1981) find that women with higher occupational status than their partner are more at risk of abuse in the US. They invoke the explanation that expectations about relative status are normative, and deviations lead to psychological stress—resulting in violence. Similar arguments have been made regarding education, where a common finding is that women with more education than their partners experience more violence (Ackerson, Kawachi, Barbeau, & Subramanian, 2008; Flake, 2005; Hornung *et al.*, 1981). The notion that there is an aversion to women earning more than their partners have gained renewed interest with the finding that it impacts marriage, divorce, and division of labor within households (Bertrand, Kamenica, & Pan, 2015).

Lastly, Atkinson *et al.* (2005) propose a *gendered resource theory*, where the effect of relative resources on intimate partner violence is moderated by husbands' gender ideology. In their view, the standard and the relative resource theories do not properly account for cultural variables by assuming all men to hold breadwinner ideals. In their empirical analysis, women's share in total household income is positively related to risk of abuse only when husbands are "traditional" according to an index constructed from questions mainly regarding the appropriateness of mothers working. Since the DHS does not contain information on husbands' view on these matters, the gendered resource theory cannot be tested in its original form with our data. We are however interested in a related hypothesis: Husbands' response to increased female resources may vary with their gender ideology as expressed by their stated acceptance of wife-beating. We therefore propose to investigate how husbands' acceptance works as a moderator for a violence backlash. In particular, we expect a positive interaction between husband's acceptance and resources, implying that a backlash is more likely if the husband finds wife-beating a legitimate response to certain types of female behavior.

The existing theories regarding the role of the relative level of resources, and our proposed extension regarding husband's attitudes, can be summarized in the following three hypotheses:

Hypothesis 2a. *For a given level of male resources, women's access to resources leads to lower risk of abuse, and, by the same token, for a given level of female resources, men's increased access to resources leads to higher risk of abuse (due to, for instance, marital dependency in a simple bargaining framework).*

Hypothesis 2b. *For a given level of male resources, women's access to resources leads to higher risk of abuse, and it is especially harmful once her resource level exceeds his (in accord with, for instance, status inconsistency theory).*

Hypothesis 2c. *Status inconsistency is more harmful—and a violence backlash more likely—in households where the husband considers wife-beating legitimate (an alternative take on the gendered resource theory).*

(b) *Macro-level resources: the role of resources at the community level*

Resources at the macro level may have an influence on intimate partner violence, by shaping the opportunities and constraints provided by society. The effect of macro level resources could work both directly and by way of moderating the effects of individual and relative resources. We first review the literature on the direct link between resources at the macro level and intimate partner violence, then we move on to the interactions across analytical levels.

Empirical studies document a strong negative correlation between economic development and intimate partner violence at the country level (Doepke & Tertilt, 2009; Duflo, 2012). Heise and Kotsadam (2015) show that the relationship between country level GDP and abuse disappears when other variables, in particular acceptance of violence, are controlled for. Benson, Fox, DeMaris, and Van Wyk (2003) argue that there is more violence in poor communities for cultural and institutional reasons. They build on *social disorganization theory*, which predicts poor areas to have weaker social bonds between individuals, leading to less social control and more social isolation. Hence, even for the same level of acceptance of violence, people in poorer areas are less likely to intervene in abusive relationships. As a consequence, abusive men gain a type of impunity and the levels of abuse are higher. The situation is aggravated further if acceptance rates are also higher in poorer areas. Uthman *et al.* (2009) find that individuals living in poorer areas have higher acceptance of wife-beating in their study of 17 African countries during 2003–07. Poverty at the macro level also reduces the quality of social institutions, such as local police, which may worsen problems of violence. In addition to the correlation found between low levels of income and violence against women, *changes* in income seem causally related to violence. In particular, Miguel (2005) finds that murder rates of old women in Tanzania increase when rainfall-induced negative income shocks hit, and Sekhri and Storeygard (2014) document an increase in intimate partner violence in India after droughts.

Female education at the community level may shape local discourses and affect the perception of women in society. It is correlated with political knowledge and participation in Africa (Bratton, Mattes, & Gyimah-Boadi, 2005; Mattes & Bratton, 2007; Isaksson, Kotsadam, & Nerman, 2013). High female educational attainment could also make local policies more gender equal.

Female employment is argued to make women informed about their interests, and more capable of acting on them (Iversen & Rosenbluth, 2008). Women who do not work have their traditional gender roles reinforced, and domestic isolation hinders change, since women are cut off from political discussion and networks (Schlozman, Burns, & Verba, 1999). These effects may spill over on other women, irrespective of whether they work or not. In a bargaining framework, it is also important to consider *potential*, rather than actual, income as determinant of outside options and threat points (Fuwa, 2004; Aizer, 2010). As improved employment opportunities increase the bargaining power of *all* women, including those who are currently not employed, women's employment rates could also in this way lower the risk of abuse.

Though it has not been tested empirically, Jewkes (2002) argues that intimate partner violence is probably more prevalent in more unequal societies, since this holds for the level of violence in general.[3] Inequality has also been linked to less social control and weaker social bonds in social disorganization theory (Benson *et al.*, 2003). From a different perspective, Pearlin (1975) argues for a link between inequality in the community and violence against women, since inequality at the societal level makes status striving and status inequality within the household more important. In this view, thus, marriage interaction in daily life is governed by norms that depend on the level of inequality in society at large.

Since there, to the best of our knowledge, is no theoretical foundation for a violent backlash as a response to women's macro level resources, we propose the following two testable hypotheses regarding the role of resources measured at the macro level:

Hypothesis 3a. *Holding individuals' absolute and relative resource levels constant, a high level of resources at the contextual level—especially of women's resources, such as high female education and employment rates—gives lower levels of intimate partner violence (due to improvements in institutional quality, women's status or their outside options).*

Hypothesis 3b. *Economic inequality at the contextual level increases intimate partner violence (as suggested by social disorganization theory).*

(c) *Cross-level interactions*

Naturally, factors at the macro level may also influence the effect of micro-level resources. In the existing literature, interactions across analytic levels have been most saliently hypothesized with respect to employment. Reviewing the literature on women's income and intimate partner violence, Vyas and Watts (2009) show that the results are heterogenous across countries. They point to differences in contextual factors as a likely reason, in particular to the prevalence of female wage employment (see also Angelucci (2008) and Bobonis, González-Brenes, & Castro (2013)), as "women who pioneer change within a community may be at greatest risk of violence" (Vyas & Watts, 2009, p. 598). We refer to this as the pioneering hypothesis. Heise and Kotsadam (2015) find that the association between abuse and working for cash is most negative in countries where fewer women work. In the same vein, Kabeer (1997) argues for a need to contextualize the effects of resources, as their meaning and effects are shaped by local circumstances and values. Koenig, Ahmed, Hossain, and Mozumder (2003) find that the effect of participation in a credit group in Bangladesh increased abuse in conservative villages, while it decreased violence in relatively more gender equal villages.

We believe that differences across contexts in how women's employment at the micro level impacts their abuse risk can be partly explained when made contingent directly on attitudes at the macro level. The presumed mechanism is that a high tolerance for wife-beating at the community level gives a certain impunity for the violent husband, thereby facilitating a violent response to changes in the household power balance. A woman's employment, more than the other resource indicators, directly challenges the breadwinner status of her husband. Additionally, it has a direct effect on her behavior and daily activities, and it provides her with access to social networks and outside options. Lastly, it is observable from outside the household, and as such it may constitute even more of a threat to the husband's status in a setting which prescribes male dominance. Based on these views, we propose a *contextual acceptance employment hypothesis*, suggesting that female employment is particularly risky in settings where prevailing norms and values are such that wife-beating is considered acceptable.

We propose the following three testable hypotheses regarding the role of cross-level interactions:

Hypothesis 4a. *The contextual level of female employment is not only important in itself, but also as a moderator of how resources at the individual level impact abuse. In particular, individual-level employment is most risky for women in contexts with low levels of female employment* (the pioneering hypothesis).

Hypothesis 4b. *A context with high acceptance of wife-beating leads to more violence, and it moderates how resources at the individual level impact abuse. In particular, individual-level employment is most risky for women in contexts with high tolerance for wife-beating* (the contextual acceptance employment hypothesis).

3. DATA

In all the empirical analyses in this paper, we use data from the Demographic and Health Surveys (DHS). The DHS provide standardized surveys across years and countries at the individual and at the household (couple) level. They also contain finer measures of geographical location in the form of GPS coordinates at the DHS cluster level (a cluster may be one or several geographically close villages, or a neighborhood in an urban area). The surveys are always conducted on a sample of female respondents, and increasingly, men are also being sampled and interviewed.

Since the 1990s, the DHS include questions about attitudes toward wife-beating. At the end of the 1990s, a standardized module was developed with questions about the respondent's experience with being abused. Most of these questions regard intimate partner violence, although there are some questions also about mistreatment by others. For all surveys carried out in SSA that contain information either on attitudes toward or experience with wife-beating, we combine the women's questionnaires into one large data set. In addition, we combine the couples' questionnaires from the surveys that contain the domestic violence module into a separate data set. These surveys form the basis for the main samples used throughout the paper.

The largest sample is what we refer to as the "**Attitudes micro**" sample, consisting of 586,255 women aged 15–49 years, interviewed in 50 different surveys from 30 countries over the years 2003–13. These women live in 22,379 different survey clusters. We have data on their attitudes toward wife-beating, in addition to important background characteristics. [4]

The second main sample, which we refer to as the "**Abuse micro**" sample, is based on the 21 surveys conducted in SSA that include the domestic violence module. The sample consists of 156,929 women aged 15–49 over the years 2003–13. They live in 19 different countries, spread out on 13,067 survey clusters. In the cross-level analysis, this sample reduces to 143,225 individuals, as we add information on partner's employment and education. We label this third sample the "**Abuse cross**" sample.

The last main sample—the "**Abuse couple**" sample—contains information on 45,513 women from 19 couples' questionnaires in 15 countries containing the domestic violence module. This sample differs from the other samples in that the information gathered on men (spouses) is self-reported, while in the other samples this information is reported by the woman being interviewed. In total, 8,721 survey clusters are included and the time period consists of nine years during 2003–13.

(a) Outcome variables

Summary statistics for the main outcome variables used in this paper are shown in Table 1. The outcome variables are similarly distributed across the different samples. We call the main variable capturing attitudes toward wife-beating "Accept". This variable equals one if the respondent agrees that a husband is justified in beating his wife in any of the five following situations: She goes out without telling him, she neglects the children, she argues with him, she refuses to have sex with him, or she burns the food.52% of the women in the "Attitudes micro"-sample agree that husbands are justified in beating their wife in at least one of these situations. The corresponding fraction of men is considerably lower, at 29% (as seen in column (3)). Table 1 also presents the summary statistics for each of the five separate questions, and we can see that wife-beating is considered to be the most acceptable in the case where a woman would neglect the children, and it is considered the least acceptable in the case where she would burn the food.

The lower half of Table 1 displays the data on women's experience with being abused. These data are collected in the special domestic violence module, implying that not all women are selected to answer these questions. Intimate partner violence is measured using a modified Conflict Tactics Scale (CTS), which has several advantages compared to many other datasets on violence (see Kishor (2005) for an extensive overview). A characteristic of CTS is that it uses several different questions regarding specific acts of violence. In this way the measure is less likely to be polluted by different understandings of what constitutes violence. CTS is also argued to reduce underreporting, as it gives respondents multiple opportunities to disclose their experiences of violence (Kishor, 2005; La Mattina, 2013).

The interviewers who use the domestic violence module are trained specifically to handle the sensitive questions of intimate partner violence, and they follow a strict protocol ensuring privacy. In particular, the interviewers are instructed to check all the surroundings within hearing distance for the presence of others. Only children young enough to not understand the questions are allowed to be present. The interviews are not allowed to proceed if privacy is not ensured, and the interview is terminated if someone enters the zone (DHS 2011, Interviewer's manual for the domestic violence module).

Table 1. *Descriptive statistics, outcome variables*

	(1) Attitudes micro		(2) Abuse micro		(3) Abuse couple	
	Mean	SD	Mean	SD	Mean	SD
Respondent deems beating justified if wife						
– goes out without telling	0.36	(0.48)	0.34	(0.47)	0.31	(0.46)
– neglects the children	0.39	(0.49)	0.35	(0.48)	0.33	(0.47)
– argues with him	0.33	(0.47)	0.31	(0.46)	0.29	(0.45)
– refuses to have sex	0.28	(0.45)	0.27	(0.44)	0.25	(0.44)
– burns the food	0.19	(0.39)	0.16	(0.37)	0.16	(0.36)
Any of the above (variable `Accept`)	0.52	(0.50)	0.49	(0.50)	0.47	(0.50)
Husband accepts					0.29	(0.45)
Respondent has during last year been exposed to						
– less severe violence			0.22	(0.41)	0.21	(0.41)
– severe violence			0.03	(0.18)	0.04	(0.19)
– sexual violence			0.09	(0.29)	0.09	(0.28)
Any of the above (variable `Abuse`)			0.25	(0.43)	0.25	(0.43)
Respondent has ever been exposed to						
– less severe violence			0.28	(0.45)	0.26	(0.44)
– severe violence			0.10	(0.30)	0.09	(0.29)
– sexual violence			0.11	(0.31)	0.09	(0.29)
Any of the above (variable `Abuse(ever)`)			0.32	(0.47)	0.30	(0.46)
N	586,255		156,929		45,513	

Note: The table gives the mean and standard deviations for the main outcome variables and their constituting parts in the main samples used in this paper.

The care with which data are collected inspires confidence that the problem of underreporting is as low as possible. Furthermore, the high reported prevalence of violence across the region suggests that a considerable degree of women are willing to report violence. Likewise, the high acceptance of wife-beating that we document suggests that social acceptability bias in reporting may be of less importance than in other settings. Palermo, Bleck, and Peterman (2013) use 24 DHS surveys to provide bounds for other sources of violence data, such as health systems data or police records. They found that only 40% of the women having experienced abuse in the DHS surveys had reported this to someone, and that only 7% had reported it to a formal source. Hence, even though underreporting may still be an issue, it is most likely smaller in this data than in other sources.

Only women who have ever lived with a partner are selected to answer the questions about experience with intimate partner violence. The module includes questions about both emotional and physical (including sexual) violence. Our focus in this paper mainly lies with the latter type of violence. The variable that we call "Abuse" is set equal to one for women who answer that they have ever had a partner doing one of the following to them during the last 12 months prior to being interviewed: Pushing, shaking, slapping, throwing something, twisting an arm, striking with a fist or something that could cause injury, or kicking or dragging (any of which is classified by the DHS as "less severe violence"), attempting to strangle or burn, threatening with a knife, gun, or other type of weapon, and attacking with a knife, gun, or other type of weapon (any of which is classified by the DHS as "severe violence"), and physically forcing intercourse or any other sexual acts, or forcing her to perform sexual acts with threats or in any other way (any of which is classified by the DHS as "sexual violence"). 25% of the women in our module sample were subject to such abuse during the last twelve months and we also see that women are often subjected to several types of abuse.

For all the sub-questions constituting this variable, the women are also asked about whether they *ever* experienced the type of violence asked about. Based on this information, we create the variable called "Abuse (ever)", which equals one if the woman has ever experienced any such form of physical violence. We see that 32% of the women have ever been abused. Hence, the vast majority of women who have ever been abused were also abused during the last year. We focus on abuse last year in our regressions as it connects better to our other variables of interest, such as employment status last year.

(b) *Explanatory variables*

The hypotheses outlined in Section 2 concern the importance of wealth, employment, and education of women and their partners—at both the individual, household, and community level—in predicting the incidence and acceptance of violence against women. Summary statistics for these variables in the different samples are shown in Appendix Table 7. The resource indicators are similarly distributed across the main samples in our study.

Our measure of household wealth is based on the wealth index provided in the DHS. The wealth index is a standardized measure of economic status for households in a given survey. The index uses information on assets and services available within the household, such as type of flooring, water supply, electricity, and the ownership of durable goods such as a radio or a refrigerator, hence it is suited to the economic context of SSA.[5] Education and employment are not included in the index, which allows us to analyze the different factors separately (Pamuk, Fuchs, & Lutz, 2011). The wealth index is standardized within the country and survey year, thus providing information on the relative wealth for households within a survey. We divide households into quintiles based on this index, which are labeled "poorest", "poor", "middle", "rich", and "richest". As wealth is measured at the household level, it

cannot be used to test hypotheses regarding individual wealth or relative wealth within the household.

The educational attainment of women and their partners is measured by years of schooling, and by their highest level of educational attainment. On average, the women and men in our "Abuse couple"-sample have 4.75 and 6 years of schooling, respectively. We create four indicator variables for education level: No formal education, elementary, secondary, and postsecondary education.

Our main measure of employment is the indicator variable "Employed last year", which equals one if the woman has been working during the last 12 months prior to the interview. Close to 70% of the women in our different samples were employed. The surveys also ask whether women work for cash, are paid in kind, or a combination of the two. In addition, they ask in which sector she is employed.[6] The women are also asked if their partners were working the last 12 months and in what type of occupation. Employment is near universal for partners, at 97%. In the couple sample, the same information is generally collected for men and women (with the exception of men's experience with being abused). 96% of the husbands in this sample self-report that they are employed.

In order to generate variables at the contextual level, we first aggregate the information on wealth, employment, education, and the acceptance of wife-beating into averages at the DHS cluster level, excluding the individual's own observation.[7] This method (also known as "jackknifing") ensures that the individual's own characteristics are not mixed up with those of the surrounding community.

In the analysis of the importance of wealth at the contextual level, we create an indicator variable for living in a rich cluster that equals one for everyone living in a cluster that has above median wealth score. We also create a measure of inequality between households in the community.[8] We create a dummy variable indicating whether the individual or household is situated in an unequal cluster, defined as having above median level of inequality. The contextual measures of employment and education are based on the jackknifed averages described above. For both variables, we divide clusters into two by splitting the sample at the median level of female employment and education, giving equally sized groups for each variable.

(c) Additional control variables

The DHS include extensive information on individuals' background characteristics. The ones we use as control variables in our analyses are also presented in Appendix Table 7. Though there are slight differences across samples in women's age, marital status, and number of children, due to the sampling criteria for the domestic violence module (only women currently living with a partner) and the couples' questionnaire (only married or cohabiting women), they are still fairly similar: 30 years old on average, most have a partner and children, 30–40% are Muslim, about 20% are Christian, and about 30% live in urban areas. The men in the couples sample are on average older than their wives and have more children than their wives.

In our regression analysis we use seven indicator variables for 5-year age intervals ranging from 15–19 years to 45–49 years and four fixed effects for marital status: Married, Cohabitant, Divorced, and Widow. We also use dummy variables for having 1–3 children, 4–6 children, and >6 children. We control separately for being Christian, Muslim, or having other religious affiliations, as well as an indicator variable for

whether information on religious affiliation is missing (this is because a few surveys do not report religious affiliation).
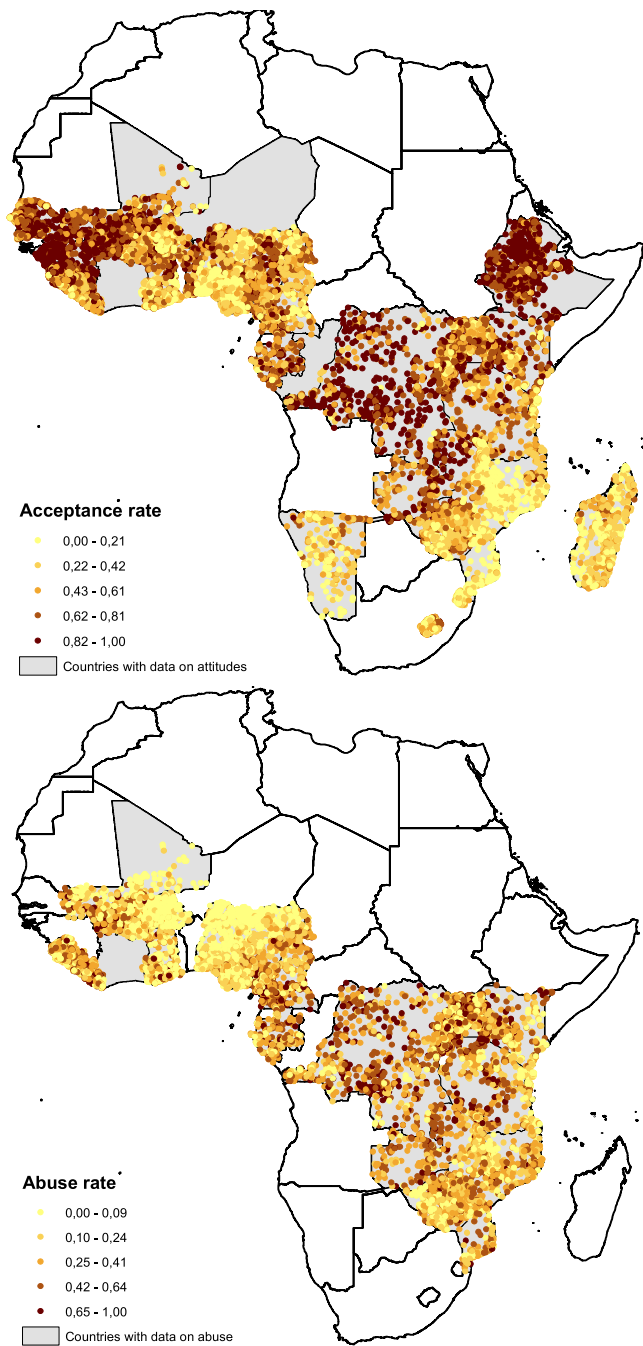
4. GEOGRAPHICAL PATTERNS AND TRENDS OVER TIME

The high number of observations in our data and their spread across years and countries make it possible to track broad patterns in the acceptance and incidence of intimate partner violence across time and space. Table 8 in the Appendix gives the mean values of acceptance and abuse for each survey that contains questions on either attitudes or experience with abuse. There is substantial variation in both acceptance and incidence across location and over time, with the survey of DR Congo in 2007 yielding the highest average reported abuse (a weighted average of 59%), and the survey of Burkina Faso in 2010 yielding the lowest number (9%). Regarding the share of women who find wife-beating acceptable, Guinea and Sao Tome and Principe lie at the two extremes: In Guinea (2005), as many as 88% of women accept wife-beating according to the DHS, whereas in Sao Tome and Principe (2008) only 20% do.

For the surveys containing GPS coordinates, we have plotted the mean responses to the questions about acceptance and incidence of abuse for each survey cluster in the maps in Figure 1. The maps show that there is substantial variation in both acceptance and incidence also within countries. The correlation between acceptance of wife-beating among women and their experience with being beaten is strongly positive, both at the individual level (13%) and at the aggregate level (29% at the cluster level and 33% at the country level).

Using DHS data for 26 countries in Africa, South America, and Asia, Pierotti (2013) documents a clear trend over time in attitudes, whereby women decreasingly accept the legitimacy of wife-beating during the first decade of this century. The upper panel of Figure 2 shows that there is a falling rate over time in women's tendency to condone wife-beating also in our sample of SSA countries.[9] The figure presents yearly means in acceptance and incidence rates. As different countries are sampled in different years, in order to avoid differences between the countries sampled to drive the yearly changes, the upper panel only includes countries for which we have at least two separate surveys, and the means have been adjusted for how the country's mean deviates from the overall mean. The lower panel shows the raw data for all the surveys.

Table 2 gives the corresponding OLS estimates for how acceptance and incidence rates decline with time. Column (1) shows the estimate from regressing the tendency to condone wife-beating on the interview year (entering as a linear, numeric variable), while in column (2) we add country fixed effects and reduce the sample to countries with at least two survey rounds (the columns parallel the lower and upper panel of Figure 2, respectively). The overall trend over time is that the rate of acceptance declines by 1.5 percentage points per year. Adding country fixed effects in column (2), this estimate becomes a 1.9 percentage points decline per year. Columns (3) and (4) show the same estimations with actual abuse as the outcome variable. The overall time trend is a 1.4 percentage points decline per year throughout our sample period. However, looking only in the sample of countries with more than one survey and controlling for country fixed effects, this estimate is reduced by about one third, to a time trend of 0.9 percentage points decline per year. This estimate still shows a substantial, and strongly statistically significant, decline.[10]

Acceptance rate
- 0,00 - 0,21
- 0,22 - 0,42
- 0,43 - 0,61
- 0,62 - 0,81
- 0,82 - 1,00
- Countries with data on attitudes

Abuse rate
- 0,00 - 0,09
- 0,10 - 0,24
- 0,25 - 0,41
- 0,42 - 0,64
- 0,65 - 1,00
- Countries with data on abuse

Note: "Abuse" is short-hand for "Abuse during the last 12 months".

Figure 1. *Acceptance and abuse rates across Sub-Saharan Africa (female respondents).*

The broad differences over time and space suggest that the rate of intimate partner violence depends very much on the context. In the following, we investigate how economic resources at the micro and macro levels interact and correlate with acceptance and abuse throughout our sample. In particular, we will focus on the various hypotheses presented in Section 2.

5. RESOURCES AND INTIMATE PARTNER VIOLENCE

We estimate the relationship between the violence outcomes and resource indicators using multivariate OLS regression (i.e., linear probability models) of the specification:

$$Y_{ict} = \alpha + \beta Z_{ict} + \gamma X_{ict} + u_{ict} \qquad (1)$$

Y_{ict} refers to whether individual i, living in country c and interviewed in year t, experienced being physically abused by her husband/partner during the last 12 months prior to the interview. In some specifications, Y_{ict} denotes acceptance of wife-beating. Z_{ict} is a vector with various resource indicators for the individual or her partner and their relative standing (in the micro analyses), and for their community (in the macro analyses). It contains indicator variables for different categories of household wealth, length of education, and of employment during the last 12 months prior to being interviewed.[11]

X_{ict} is a vector of demographic control variables: Respondents' age, marital status, number of children, religious affiliation, and urbanness. In some cases we use an indicator of the individual's attitudes toward wife-beating as a control variable.[12] In the macro specifications, we include in X_{ict} the cluster aggregates described in Section 3. Country and year dummies are included in all regressions. Standard errors are clustered at the DHS cluster level in all regressions, as the observations are likely to be dependent within DHS clusters. We use the sample weights provided by the DHS in all regressions, to make sure that the samples are representative at the country level.[13]

The hypotheses outlined in Section 2 regard the causal role of resources for intimate partner violence. A causal interpretation of the β coefficients of Eq. 1 rests on the assumption that, conditional on the demographic controls and the country and year fixed effects included in the regression, there are no left-out variables that are correlated *both* with resources *and* with abuse—i.e., that there is no omitted variable bias in our estimates. In addition, a causal interpretation requires that causality does not run *from* abuse to any of the resource indicators. While the relationships between resources and violence documented below are robust to the inclusion of an extensive list of controls, we acknowledge the difficulty of controlling for all potential confounding factors and the potential for reverse causality. We also acknowledge that the resource indicators are potentially endogenous to each other, for instance that wealth is affected by employment and education. We therefore refer to the estimates as conditional correlations/associations.[14]

(a) Intimate partner violence and micro-level resources

For the investigation of the first set of hypotheses, which concern the absolute level of resources, we use the samples based on the individual women's surveys: The "Attitudes micro" and the "Abuse micro" samples (described in Section 3). The estimation results are presented in Table 3.

Acceptance of wife-beating is the outcome in column (1). We see that it is negatively correlated with household wealth and with individual education. Relative to the poorest group (the left out category), the women belonging to the richest quintile of households are 9.2 percentage points less likely to condone wife-beating. The relationship with education is even stronger, where women with secondary education are on average 8.5 percentage points less likely to condone wife-beating than are women with no formal education (and the small elite of women with post-secondary education, constituting 3.4% of our sample, are 24 percentage points less likely to condone it). There is however a small positive correlation between condoning wife-beating and being employed among the women in our sample.

Columns (2)–(4) show regressions where the outcome variable is women's experience with being beaten during the last
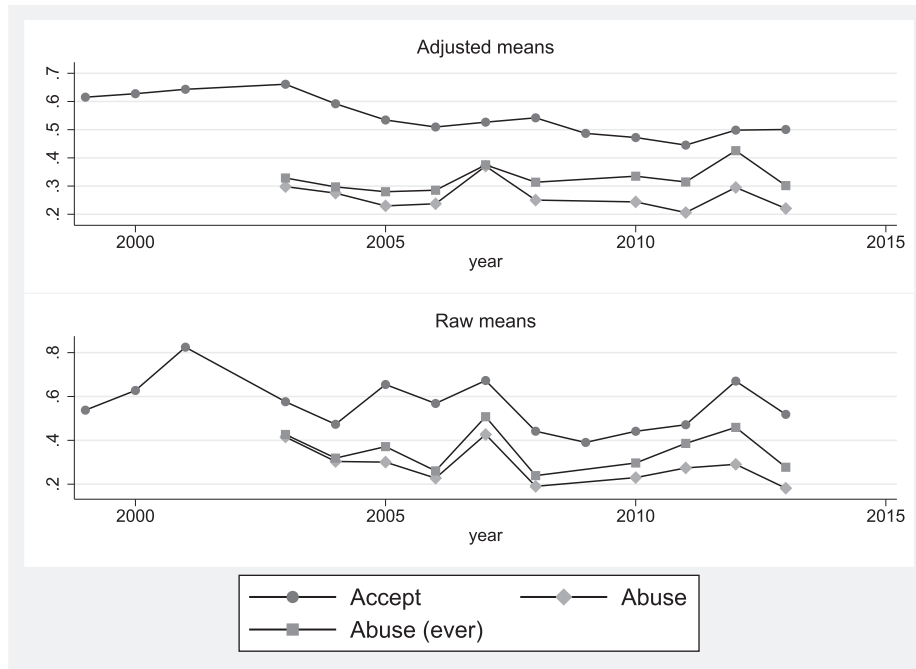
Note: The figure shows the mean value for the rates of acceptance and abuse across different years in our sample. ("Abuse" is short-hand for "Abuse during the last 12 months".) In the upper panel, only countries for which there exist repeated surveys are included, and the means have been adjusted by netting out each country's deviation from the overall mean. In the lower data, raw means for the full sample are shown.

Figure 2. *Acceptance and incidence of violence over time (women only).*

Table 2. *Change in violence acceptance and incidence rates over time.*

	(1) Accept	(2) Accept	(3) Abuse	(4) Abuse
Interview year	−0.015***	−0.019***	−0.014***	−0.0090***
	(0.00058)	(0.00046)	(0.00075)	(0.00082)
Country FE	No	Yes	No	Yes
R-Squared	0.014	0.13	0.0098	0.070
No. of respondents	665,493	596,846	158,396	111,738

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading on the year in which the respondent was interviewed (year enters as a linear variable). ("Abuse" is short-hand for "Abuse during the last 12 months".) In all columns, the full sample is used (it is not restricted to the availability of various resource indicators, as in the analyses in Section 5). In columns (2) and (4), only countries for which there exist repeated surveys are included in the sample. *p < 0.10, **p < 0.05, ***p < 0.01.

twelve months prior to being interviewed, carried out on our sample of 156,929 women who responded to questions in the special domestic violence module. There are notable differences between the estimates in columns (1) and (2). First, wealth is much more weakly linked to a decline in abuse rates. Only the richest quintile has a sizable and statistically significantly lower risk of abuse. The relationship between education and risk of abuse takes is hump-shaped. Women with elementary or secondary education are significantly *more* likely to have been abused during the last year than are the women without formal education, by 5.3 and 3.1 percentage points, respectively. Only the small group of women with post-secondary education are significantly less likely to be victims of abuse, by 3.3 percentage points.

A woman's employment during the last 12 months is associated with a 3.8 percentage points higher risk of having been abused during the same period ($p < 0.01$). Held together with the positive coefficients for education at the elementary and secondary level, and the absence of significant associations with wealth, this yields a very different picture, than what emerges from investigating the relationship between resources and attitudes towards violence. Unlike the correlations with attitudes, the correlations between resources and actual abuse do not point to women's resources being protective against abuse, as is suggested by simple resource theory (Hypothesis 1a). If anything, the correlations are suggestive of a violence backlash (Hypothesis 1b).[15]

An indicator variable for the individual's stated acceptance of wife-beating is added to the specification in column (3). Accepting wife-beating is associated with an eight percentage points higher probability of experiencing abuse ($p < 0.01$). Nonetheless, including attitudes in the estimation causes only

Table 3. *OLS regressions with absolute resource levels*

	(1) Accept	(2) Abuse	(3) Abuse	(4) Abuse
Household wealth				
Poor	−0.0028	−0.0028	−0.0029	−0.0030
	(0.0032)	(0.0041)	(0.0041)	(0.0041)
Middle	−0.0086**	−0.0021	−0.0015	−0.0015
	(0.0036)	(0.0045)	(0.0045)	(0.0045)
Rich	−0.032***	−0.0090*	−0.0057	−0.0057
	(0.0041)	(0.0051)	(0.0050)	(0.0050)
Richest	−0.092***	−0.036***	−0.027***	−0.027***
	(0.0049)	(0.0061)	(0.0061)	(0.0061)
Education				
Elementary	−0.022***	0.053***	0.052***	0.057***
	(0.0028)	(0.0039)	(0.0039)	(0.0061)
Secondary	−0.085***	0.031***	0.036***	0.040***
	(0.0035)	(0.0050)	(0.0049)	(0.0069)
Postsecondary	−0.24***	−0.033***	−0.017**	−0.0021
	(0.0057)	(0.0076)	(0.0076)	(0.013)
Employment				
Last 12 months	0.0063**	0.038***	0.037***	0.041***
	(0.0025)	(0.0033)	(0.0033)	(0.0051)
Attitudes				
Accept			0.080***	0.080***
			(0.0031)	(0.0031)
Interactions				
Elementary × Employed				−0.0059
				(0.0071)
Secondary × Employed				−0.0055
				(0.0076)
Postsecondary × Employed				−0.019
				(0.014)
Demographic controls	Yes	Yes	Yes	Yes
Interview year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
R-Squared	0.16	0.092	0.099	0.099
No. of respondents	586,255	156,929	156,929	156,929

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading. ("Abuse" is short-hand for "Abuse during the last 12 months".) All regressions control for living in urban areas, age, marital status, the number of children, and religious affiliation. Year and country fixed effects are included in all specifications. The reference category is a woman aged 15–19 with no formal education, married with no children to a partner with the same characteristics, neither Christian nor Muslim, who have not been employed during the last 12 months, and who live in a rural area.
*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

minor changes in the estimated correlations between resources and women's risk of abuse. The overall pattern remains the same, indicating that the relationships are not mediated by attitudes.

In column (4), we have added interactions between employment status during the last year, and the woman's education category, in order to see whether employment is equally strongly correlated with abuse in all education groups. The interaction terms are all negative, but not statistically significant. Hypothesis 1c suggests that women's resources become protective beyond a certain level or that different resource types interact in being protective. Keeping in mind the extent of resource poverty in throughout our sample, the relevant thresholds may rarely be reached in the SSA.

This could be interpreted as evidence against Hypothesis 1c, suggesting that women's resources become protective beyond a certain level or that different resource types interact in being protective, but keeping in mind the extent of resource poverty in throughout our sample, this could also just be taken to

mean that the relevant thresholds are rarely reached in the SSA. The significant negative coefficient on postsecondary education hints at the latter interpretation—although it is identified off of a very small part of our sample.

For the investigation of the second set of hypotheses, regarding the role of spouses' (or partners') relative resources, we use the "Abuse couple" sample, based on the couples' surveys (described in Section 3). The estimation results are presented in Table 4. Actual abuse is the outcome variable in all columns. Importantly, as we focus on relative resources, household wealth is still included as a control in all specifications, but the coefficients are not shown (they exhibit the same pattern as in Table 3). In column (1), we have included indicator variables for the husband's level of education and his employment status. Compared with the estimates presented in Table 3, the inclusion of his resource indicators does not change the association between her education level and the incidence of abuse: Elementary and secondary education still signify a higher risk of abuse for her (post-secondary educa-

Table 4. *OLS regressions with spouses' relative resource levels.*

	(1) Abuse	(2) Abuse	(3) Abuse	(4) Abuse
Education				
She elementary	0.051***	0.046***	0.047***	0.038***
	(0.0069)	(0.0075)	(0.0074)	(0.0099)
She secondary	0.033***	0.027***	0.035***	0.034***
	(0.0093)	(0.010)	(0.010)	(0.013)
She postsecondary	−0.018	−0.025	−0.0064	−0.0036
	(0.015)	(0.016)	(0.016)	(0.019)
He elementary	0.025***	0.021***	0.022***	0.0047
	(0.0068)	(0.0075)	(0.0075)	(0.010)
He secondary	0.0075	0.0039	0.0084	−0.014
	(0.0084)	(0.0100)	(0.0099)	(0.013)
He postsecondary	−0.026**	−0.030**	−0.019	−0.032*
	(0.012)	(0.014)	(0.014)	(0.018)
He more education		0.013**	0.012*	0.0056
		(0.0065)	(0.0065)	(0.0088)
She more education		0.021***	0.019**	0.0095
		(0.0077)	(0.0076)	(0.010)
Employment last 12 months				
She employed	0.035***	0.042*	0.043*	0.080**
	(0.0054)	(0.025)	(0.025)	(0.034)
He employed	0.033**	0.038*	0.034*	0.070***
	(0.013)	(0.019)	(0.019)	(0.027)
Both employed		−0.0065	−0.0089	−0.051
		(0.026)	(0.025)	(0.035)
Attitudes on wife-beating				
She accepts			0.071***	0.096***
			(0.0059)	(0.035)
He accepts			0.051***	0.059*
			(0.0079)	(0.035)
Both accept			0.012	0.015
			(0.011)	(0.011)
His attitudes interacted				
× She elementary education				0.023
				(0.015)
× She secondary education				0.030
				(0.021)
× She postsecondary education				0.011
				(0.047)
× He elementary education				0.0064
				(0.016)
× He secondary education				0.015
				(0.021)
× He postsecondary education				0.0053
				(0.036)
× He more education				0.028*
				(0.015)
× She more education				0.000048
				(0.018)
× She employed last 12 months				−0.044
				(0.053)
× He employed last 12 months				−0.039
				(0.035)
× Both employed				0.036
				(0.054)
Wealth controls	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes
Interview year FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
R-Squared	0.092	0.093	0.10	0.10
No. of respondents	45,513	45,513	45,513	45,513

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading. ("Abuse" is short-hand for "Abuse during the last 12 months".) Year and country fixed effects and the covariates displayed in Table 3 are included in all specifications. The first column presents results using the "Abuse cross"-sample and in the other columns the Abuse couples sample is used. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

tion is insignificantly correlated). His education shows a similar pattern: He is more likely to be abusive if he has elementary education compared to no formal education, and only if he has post-secondary education is he (significantly) less likely to be abusive.

Being employed is still associated with increased risk of abuse for women (of 3.5 percentage points) once we control for husbands' employment status. The husband's employment shows a very similar correlation with abuse risk (3.3 percentage points, $p < 0.05$). When both spouses' employment status is controlled for, it does not matter additionally whether both are employed.

The overall picture from Table 3—a positive correlation between women's risk of abuse and their resources (at least up until a certain level)—thus remains once we control for husband's access to the same type of resources. The evidence for the standard resource theory therefore remains weak. The coefficients on the husband's resource indicators give rather limited support to the marital dependency Hypothesis 2a. Yet, the relative resource theories push the interest toward what happens if the woman's level of resources poses a threat to the husband's status. In column (2), we include measures for whether either the husband has more years of schooling than the wife, or vice versa (reference category is those with equally many years of schooling (36% of the total sample)). We also add an interaction term for both spouses' employment.

The coefficients on inequality in education show that women are more at risk of experiencing abuse both when they have fewer and when they have more years of schooling than their spouse. As discussed in Section 2, the marital dependency theory argues that women who have less resources than their men are more at risk, while the status inconsistency theory argues that women with more resources than their partners are more at risk. The two theories need not be contradictory, however, insofar as they both compare the inequality in resources to a situation of resource equality between spouses. Our education estimates could support both versions of the relative resource theory (i.e., both Hypotheses 2a and 2b.)—suggesting that inequality between the spouses yields a higher risk of abuse. In the case of female employment, it does not matter whether the husband is also employed or not. Since we do not observe earnings, and also since virtually all men in our sample are employed, her employment serves as a proxy for challenging his breadwinning status, and it is, like before, highly positively correlated with abuse risk.

The associations between abuse and the indicators of relative resource levels in the household are largely unchanged once indicator variables for both spouses' acceptance of wife-beating are included in column (3).

In column (4), we explore how the associations of the resource measures with abuse vary according to the husband's views on wife-beating, as suggested in our alternative take on the gendered resource theory (Hypothesis 2c), suggesting a positive interaction between husband's acceptance and wife's resources. None of the coefficients are significant at the 5% level.

Additional analyses, presented in Table 5, show a positive association of abuse with almost all types of employment. Exceptions are the higher status categories of "Professionals" (no association) and "Clerical workers" (negative association). Whether the women are family workers, self-employed, or work for someone else, does not matter for the association with abuse. The association is also positive regardless of type of remuneration (being paid in cash, in kind, or a combination).

Table 5. *Other working variables*

	(1) Abuse	(2) Abuse	(3) Abuse
Sector			
Professional	0.0016		
	(0.0092)		
Clerical	−0.039***		
	(0.014)		
Sales	0.041***		
	(0.0043)		
Self empl. agriculture	0.023***		
	(0.0050)		
Employed agriculture	0.075***		
	(0.0068)		
Domestic	0.076***		
	(0.019)		
Service	0.029***		
	(0.0084)		
Skilled manual	0.017***		
	(0.0060)		
Unskilled manual	0.056***		
	(0.010)		
Work for			
Family		0.042***	
		(0.0054)	
Someone else		0.041***	
		(0.0059)	
Self-employed		0.037***	
		(0.0035)	
Remuneration			
Paid in cash			0.017***
			(0.0035)
Paid in both cash and in kind			0.042***
			(0.0054)
Paid in kind			0.042***
			(0.0088)
R-Squared	0.096	0.092	0.092
No. of respondents	153,242	157,674	157,730

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading. ("Abuse" is short-hand for "Abuse during the last 12 months".) All regressions control for living in urban areas, age, marital status, the number of children, and religious affiliation. Year and country fixed effects are included in all specifications. The reference category is a woman aged 15–19 with no formal education, married with no children to a partner with the same characteristics, neither Christian nor Muslim, who have not been employed during the last 12 months, and who live in a rural area. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

(b) *Intimate partner violence and macro-level resources*

For the investigation of the hypotheses concerning factors at the macro level, and how they moderate the associations between intimate partner violence and resources at the micro level, we use the "Attitudes micro" sample and the "Abuse cross" sample (described in Section 3). We include five measures of resources at the aggregate level in the regressions; indicator variables capturing whether the cluster where the respondent lives is *rich* (defined as mean household wealth in this cluster being above the median among the cluster means), has *above median female employment* rates, has an *above median level of average female education*, has an *above median score on the inequality index* (based on the wealth of the respondents in this cluster), and, lastly, whether the cluster's women are *above median prone to condone wife-beating*.

Table 6. *OLS regressions at the macro level*

	(1) Abuse	(2) Abuse	(3) Abuse
Education			
She years of schooling	0.0079***	0.0093***	0.0073***
	(0.0012)	(0.0016)	(0.0014)
She years of schooling squ.	−0.00068***	−0.00073***	−0.00064***
	(0.000081)	(0.00011)	(0.000093)
He years of schooling	0.0048***	0.0029*	0.0024*
	(0.0012)	(0.0016)	(0.0014)
He years of schooling squ.	−0.00045***	−0.00039***	−0.00029***
	(0.000067)	(0.000095)	(0.000079)
He more education	0.014***	0.017**	0.012**
	(0.0047)	(0.0066)	(0.0056)
She more education	0.022***	0.021***	0.020***
	(0.0047)	(0.0069)	(0.0056)
Employment			
She last 12 months	0.030***	0.031***	0.021***
	(0.0036)	(0.0048)	(0.0041)
He is unemployed	0.022	0.017	0.019
	(0.016)	(0.018)	(0.021)
She sole earner	−0.011	−0.015	−0.0094
	(0.016)	(0.018)	(0.023)
Attitudes on wife-beating			
She condones	0.070***	0.070***	0.070***
	(0.0032)	(0.0032)	(0.0032)
Cluster aggregates			
Rich	−0.0013	−0.0011	0.00022
	(0.0056)	(0.0056)	(0.0056)
High female education	0.049***	0.049***	0.048***
	(0.0056)	(0.0056)	(0.0056)
High female employment	0.019***	0.014*	0.018***
	(0.0039)	(0.0087)	(0.0039)
High female acceptance of wife-beating	0.033***	0.033***	0.0092
	(0.0042)	(0.0042)	(0.0084)
High wealth inequality	0.0073*	0.0073*	0.0079*
	(0.0041)	(0.0041)	(0.0041)
Cross-level interactions		*Employed cluster*	*Accepting cluster*
× She years of schooling		−0.0025	0.0029
		(0.0022)	(0.0024)
× She years of schooling squ.		0.000080	−0.00029
		(0.00016)	(0.00019)
× He years of schooling		0.0033	0.0064***
		(0.0022)	(0.0024)
× He years of schooling squ.		−0.00010	−0.00044***
		(0.00013)	(0.00014)
× He more education		−0.0043	0.0020
		(0.0092)	(0.0099)
× She more education		0.0022	0.0057
		(0.0093)	(0.0098)
× She last 12 months		−0.0017	0.025***
		(0.0073)	(0.0071)
× He is unemployed		0.022	0.014
		(0.031)	(0.027)
× She sole earner		−0.0032	−0.012
		(0.035)	(0.030)
Wealth controls	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Interview year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
R-Squared	0.11	0.11	0.11
No. of respondents	143,225	143,225	143,225

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading. ("Abuse" is short-hand for "Abuse during the last 12 months".) Year and country fixed effects and the covariates displayed in Table 3 are included in all specifications. The first column presents results using the "Abuse cross"-sample and in the other columns the Abuse couples sample is used. $^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

The main estimation results are presented in Table 6. Abuse is the outcome variable in all columns. Adding the cluster aggregates (column (1)) does not change the associations between women's experience with abuse and their resource indicators. His unemployment is no longer significantly related to the likelihood of abuse once community-level aggregates are taken into account.

The coefficients for the cluster aggregates do not suggest a protective role of resources at the macro level either (against Hypothesis 3a). Living in a richer cluster is not significantly associated with abuse, but high levels of female employment and education at the cluster level are both significantly associated with higher abuse rates. This is surprising in light of bargaining theories, which predict that the quality of women's outside options affect their likelihood of remaining in a violent relationship. A possible explanation is that these are societies in transition and that risk of abuse is higher during such periods. In line with the predictions of social disorganization theory (Hypothesis 3b), living in a resource unequal cluster is associated with a slightly higher risk of abuse. Lastly, we note that living in a cluster with higher acceptance of wife-beating among women is positively associated with the individual risk of abuse, also when the respondents' own attitudes are included in the regression.

Turning to the cross-level interactions, according to the "pioneering hypothesis" (4a), female employment at the cluster level should matter not only for the risk of abuse itself, but also as a moderator for the relationship between individual resources and abuse, as women who work in a setting with low female employment are more at risk. The interactions terms displayed in column (2), show no significant differences in these associations by the cluster level of female employment. In particular, there is no support for the notion that female sole earners are especially vulnerable in areas where fewer women work.

Acceptance of wife-beating at the macro level seems to matter for the association between abuse risk and the husband's education level, but not for any other resource indicators.[16] In order to investigate whether female employment may be particularly risky in settings where wife-beating is found more acceptable, we interact the resource variables with the indicator for living in a cluster with above median levels of acceptance in column (3). We find that the association of her employment with abuse is more than twice as high in contexts of higher acceptance than in areas with relatively lower levels of acceptance. This is in line, thus, with the contextual acceptance employment Hypothesis 4b.[17]

Summing up, we find that the macro-level matters, though not in all respects and not always in accordance with predictions based on existing theories. Women are actually more at risk of abuse in areas where relatively more women work, and in areas where women have relatively more education. There is no evidence for the notion that working—or being a female breadwinner—is more risky in areas where fewer women work. Regarding aggregate wealth, there is no lower risk of abuse in relatively richer areas, but there is a higher risk of abuse in more wealth unequal areas—in support of social disorganization theory. The latter prediction has not previously been investigated empirically. Finally, we find support for the contextual acceptance employment hypotheses, as being employed in areas with higher acceptance of violence is indeed correlated with a higher risk of abuse.

6. DISCUSSION

In this paper we have explored the relationship between resources and women's risk of intimate partner violence in Sub-Saharan Africa (SSA). We explicitly model the effects of resources at the individual, the couple, and the community level, and we allow for interactions across these levels. The analysis is carried out using high-quality micro data from the Demographic and Health Surveys with information on abuse for over 150,000 women from 19 countries for 10 years. The quality and scope of the data allow us to explore an extensive set of hypotheses on the relationship between violence and resources—in terms of wealth, education, and employment—most of which are derived from existing theory and several of which have not previously been investigated quantitatively.

The notion that resources affect the prevalence of intimate partner violence is widespread, and existing research centers around three different versions of resource theory. First, the simplest version (the standard resource theory) operates entirely at the individual level and posits that women with few resources are more at risk of abuse, and that men with fewer resources are more likely to be abusive. The data presented in this paper gives little evidence in favour of this view. In particular, we find that household wealth is correlated with less abuse, but we note that the relationship is non-linear. Similarly, more education is generally correlated with more abuse. Most strikingly, we find that employment is positively correlated with the probability of being abused. The findings are also difficult to reconcile with bargaining theories positing that violence within marriage ought to be reduced as women improve their outside options. On the other hand, our findings are consistent with "backlash" theories of abuse.

Second, the relative resource theories have two predictions, where in the status inconsistency version, women are predicted to be at more risk of abuse if they have more resources than their partners, while in the marital dependency version, women are predicted to be more at risk if they have less resources than their partners. The correlations found with education in this paper could support both these versions, as we find that both women with fewer and women with more years of schooling than their partners are more likely to be abused. In the case of employment, we find mixed support for the status inconsistency contention that female breadwinners are particularly exposed to abuse, which has been highlighted as a risk factor in the US (Macmillan & Gartner, 1999). Female employment is always correlated with a higher risk of abuse, irrespective of husbands' employment.

Third, the gendered resource theory takes the relative resource theory one step further and proposes that the effects of relative resources on abuse are moderated by the male partner's gender ideology (Atkinson et al., 2005). We do not observe husbands' breadwinner ideals in our data, but we observe their opinion on the legitimacy of wife-beating—a different, but important, expression of gender ideology. According to the alternative formulation of the theory, a backlash should be particularly likely if the husband tends to condone wife-beating. Our results are however not consistent with this prediction, as none of the associations between women's resource indicators and their risk of abuse differ significantly by the husband's attitudes toward wife-beating.

Existing research has to a lesser extent covered the macro-level and cross-level interactions in the relationship between abuse and resources. According to social disorganization theory, men gain impunity in impoverished and unequal areas, as abuse is more accepted there and is also more likely to go unreported even if not accepted. In our data, however, abuse is not more widespread in relatively poorer areas. The link between inequality and abuse, though playing an important role in existing theory (e.g., Jewkes, 2002; Pearlin, 1975), has to our knowledge not been investigated empirically before.

We find that women living in relatively more unequal areas are slightly more likely to be abused.

In terms of cross-level interactions, we propose a contextual acceptance employment hypothesis, whereby female employment leads to higher risk of abuse particularly in settings where prevailing norms and values are such that wife-beating is accepted. This hypothesis leans on the observation that a violence backlash is more likely in a context that sanctions a husband's violent response. Consistent with the hypothesis, we find that the association of abuse with employment is twice as strong in areas with a high level of acceptance of wife-beating.

Our findings more generally point to the importance of having good data at different analytical levels, when exploring the quantitative relationship between resources and intimate partner violence. In particular, we show that attitudes toward wife-beating cannot replace data on actual abuse in analyses of how resources affect violence, as using acceptance as a proxy for actual violence can be highly misleading. Although the two variables are strongly positively correlated with each other, acceptance is more or less linearly negatively correlated with wealth and education, while the relationship between resources and actual abuse is more intricate. Similarly, employment is only weakly related to acceptance but strongly positively related to abuse, and the interaction between macro-level acceptance and employment is highly relevant for predicting levels of abuse. Pierotti (2013) shows that the acceptance of wife-beating declined during the first decade of this century. We show that this holds not only for attitudes, but also for the time trend in actual abuse rates throughout the SSA in our time window.

The correlations documented in this broad study could be interpreted as causal effects only to the extent that the estimations hold constant all other factors that simultaneously affect resources and abuse. While it is impossible in our setting to control for all potential confounding factors, the relationships between resources and violence incidence are robust to the inclusion of an extensive list of controls. In particular with respect to the *backlash* estimates, where more resources are correlated with higher abuse rates, it seems unlikely that omitted variables bias alone could cause the positive sign of the coefficients. We hope that future research may complement our findings with case studies testing causal effects in randomized or quasi-experimental settings, as well as in qualitative work on disentangling the mechanisms and reasoning behind such findings.

NOTES

1. We use the terms "intimate partner violence" (or simply "violence"), "wife-beating" and "abuse" interchangeably, and unless otherwise stated we will mean the violence of men against their female partners.

2. The DHS does not contain income measures, either at the individual or at the household level. The closest measure is household wealth (described in closer detail in Section 3).

3. Stress is often considered to be the mechanism through which more unequal societies have more violence (see Wilkinson (2004) for an overview).

4. As household income is available only from 2003 on, we have chosen to start our data here, though the surveys containing questions about attitudes go as far back as 1999, extending to 665,493 women in total.

5. The assets are connected to an underlying region specific wealth score, and they are assigned a weight by principal components analysis that is used to calculate the overall score. The score is then standardized within the survey and each household is then assigned a relative position. (See Rutstein & Johnson (2004) for an extensive description of the wealth index.)

6. The different sectors, or type of work, are categorized as: professional, clerical, sales, agricultural self-employed, agricultural employed, domestic, service, skilled manual, and unskilled manual.

7. We believe the cluster level (a cluster being either a village, several close villages, or a neighborhood) to be the most important as this is where people meet in everyday life.

8. Following Fenske (2012), we compute the Gini coefficient for each cluster and region, by re-scaling the wealth index to only include positive values and then use the `fastgini`-command in Stata.

9. There is actually no decline since 2010, when Pierotti, 2013's (Pierotti, 2013) analysis ends.

10. Looking at each country individually (as can be done in Table 8), the average level acceptance went significantly down in all countries except Rwanda during 2005–10 and Madagascar. For the average level of actual abuse, it went up in Rwanda, and insignificantly down in Zimbabwe, otherwise it went significantly down in all the other countries for which there are two surveys.

11. In Table 6, where we include a set of cross-level interactions, years of schooling enters as a continuous variable for reasons of exposition. For a thorough description of the variables and the samples used at the different analytic levels, we refer the reader to Section 3.

12. As attitudes may be influenced by experience with abuse, it is important to note that we have run all specifications in the paper both with and without this regressor, and it does not matter for the relationship between resources at any level and abuse (results available upon request).

13. We have also used, as an additional weight, the population size. Results are very similar (available upon request).

14. In the case of omitted variable bias, we expect our results to be biased downwards, as likely left-out confounding factors are unobserved abilities, health, physical strength, and other types of resources, all of which are expectedly positively correlated with the resource measures, and negatively related to abuse. There is therefore less reason to worry about omitted variable bias influencing the positive sign of "backlash estimates", than negative estimates. Reverse causality, on the other hand, could be a competing explanation for backlash findings.

15. In Table 9 in the Appendix, we present the coefficients from country-specific regressions of the relationship estimated in column (2) of Table 3 (except that schooling enters continuously as a polynomial of second degree).

16. Appendix Table 10 shows the interactions with the other cluster aggregates.

17.   We have also rerun the macro-level analysis with the share of women working for cash, rather than the share of women employed and the cross-level result for acceptance is very similar and so are the other results. One difference is that the coefficient for the high female cash employment (the cluster aggregate) is not statistically significant (results are available upon request).

REFERENCES

Ackerson, L. K., Kawachi, I., Barbeau, E. M., & Subramanian, S. V. (2008). Effects of individual and proximate educational context on intimate partner violence: A population-based study of women in india. *American Journal of Public Health, 98*(3), 507–514.

Aizer, A. (2010). The gender wage gap and domestic violence. *American Economic Review, 100*(4), 1847–1859.

Angelucci, M. (2008). Love on the rocks: Domestic violence and alcohol abuse in rural mexico. *The B.E. Journal of Economic Analysis & Policy, 8*(1), 1–43.

Atkinson, M. P., Greenstein, T. N., & Lang, M. M. (2005). For women, breadwinning can be dangerous: Gendered resource theory and wife abuse. *Journal of Marriage and Family, 67*(5), 1137–1148.

Barlett, C., & Anderson, C. (2013). *Examining media effects: The general aggression and general learning models. Media effects/media psychology*. Blackwell-Wiley.

Benson, M., Fox, G., DeMaris, A., & Van Wyk, J. (2003). Neighborhood disadvantage, individual economic distress and violence against women in intimate relationships. *Journal of Quantitative Criminology, 19*(3), 207–235.

Bertrand, M., Kamenica, E., & Pan, J. (2015). Gender identity and relative income within households. *The Quarterly Journal of Economics, 130*(2), 571–614.

Bobonis, G. J., González-Brenes, M., & Castro, R. (2013). Public transfers and domestic violence: The roles of private information and spousal control. *American Economic Journal: Economic Policy, 5*(1), 179–205.

Bratton, M., Mattes, R. B., & Gyimah-Boadi, E. (2005). *Public opinion, democracy, and market reform in Africa*. Cambridge University Press.

Devries, K. M., Mak, J. Y., Bacchus, L. J., Child, J. C., Falder, G., Petzold, M., ... Watts, C. H. (2013). Intimate partner violence and incident depressive symptoms and suicide attempts: A systematic review of longitudinal studies. *PLoS Med, 10*(5), e1001439.

Devries, K. M., Mak, J. Y., Garća-Moreno, C., Petzold, M., Child, J. C., Falder, G., ... Rosenfeld, L. (2013). The global prevalence of intimate partner violence against women. *Science, 340*(6140), 1527–1528.

Doepke, M., & Tertilt, M. (2009). Women's liberation: What's in it for men?. *The Quarterly Journal of Economics, 124*(4), 1541–1591.

Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature, 50*(4), 1051–1079.

Durevall, D., & Lindskog, A. (2015). Intimate partner violence and HIV in ten sub-Saharan African countries: what do the Demographic and Health Surveys tell us. *The Lancet Global Health, 3*(1), e34–e43.

Eswaran, M., & Malhotra, N. (2011). Domestic violence and women's autonomy in developing countries: Theory and evidence. *Canadian Journal of Economics, 44*(4), 1222–1263.

Farmer, A., & Tiefenthaler, J. (1997). An economic analysis of domestic violence. *Review of Social Economy, 55*(3), 337–358.

Fenske, J. (2012). *African polygamy: Past and present*. Germany: University Library of Munich, MPRA Paper 41618.

Flake, D. F. (2005). Individual, family, and community risk markers for domestic violence in Peru. *Violence Against Women, 11*(3), 353–373.

Fried, S. T. (2003). Violence against women. *Health and Human Rights*, 88–111.

Friedman, W., Kremer, M., Miguel, E., & Thornton, R. (2011). *Education as liberation?*, Technical report. National Bureau of Economic Research.

Fuwa, M. (2004). Macro-level gender inequality and the division of household labor in 22 countries. *American Sociological Review, 69*(6), 751–767.

Garća-Moreno, Jansen, Ellsberg, Heise, & Watts (2005). *WHO multi-country study on women's health and domestic violence against women: Initial results on prevalence, health outcomes and women's responses*, Technical report. Geneva: World Health Organization.

Goode, W. (1971). Force and violence in the family. *Journal of Marriage and the Family, 33*, 624–636.

Heath, R. (2014). Women's access to labor market opportunities, control of household resources, and domestic violence: Evidence from bangladesh. *World Development, 57*, 32–46.

Heise, L. (1998). Violence against women: An integrated, ecological framework. *Violence Against Women, 4*(3), 262–290.

Heise, L. (2011). *What works to prevent partner violence: An evidence overview*, STRIVE Research Consortium. London: London School of Hygiene and Tropical Medicine (LSHTM), pp. 27–28.

Heise, L. & Garća-Moreno, C. (2002). World Report on Violence and Health, chapter Violence by Intimate Partners, pages 87–121.

Heise, L. L., & Kotsadam, A. (2015). Cross-national and multilevel correlates of partner violence: An analysis of data from population-based surveys. *The Lancet Global Health, 3*(6), e332–e340.

Hidrobo, M. L., & Fernald, L. (2013). Cash transfers and domestic violence. *Journal of Health Economics, 32*(1), 304–319.

Hornung, C. A., McCullough, B. C., & Sugimoto, T. (1981). Status relationships in marriage: Risk factors in spouse abuse. *Journal of Marriage and the Family, 43*, 679–692.

Isaksson, A.-S., Kotsadam, A., & Nerman, M. (2013). The gender gap in african political participation: Testing theories of individual and contextual determinants. *Journal of Development Studies*, 1–17 (ahead-of-print).

Iversen, T., & Rosenbluth, F. (2008). Work and power: The connection between female labor force participation and female political representation. *Annual Review of Political Science, 11*, 479–495.

Jewkes, R. (2002). Intimate partner violence: Causes and prevention. *The Lancet, 359*, 1423–1429.

Johnson, H., Ollus, N., & Nevala, S. (2008). *Violence against women: An international perspective*. NY: Springer.

Kabeer, N. (1997). Women, wages and intra-household power relations in urban bangladesh. *Development and Change, 28*(2), 261–302.

Kishor, S. (2005). *Domestic violence measurement in the demographic and health surveys: The history and the challenges*, Technical report. United Nations Expert Paper, pp. 1–9.

Koenig, M., Ahmed, S., Hossain, M., & Mozumder, A. (2003). Women's status and domestic violence in rural Bangladesh: Individual- and community-level effects. *Demography, 40*(2), 269–288.

Krishnan, S. (2005). Do structural inequalities contribute to marital violence? Ethnographic evidence from rural south india. *Violence Against Women, 11*(6), 759–775.

La Mattina, G. (2013). Armed conflict and domestic violence: Evidence from Rwanda.

Lundberg, S., & Pollak, R. A. (1996). Bargaining and distribution in marriage. *Journal of Economic Perspectives, 10*(4), 139–158.

Macmillan, R., & Gartner, R. (1999). When she brings home the Bacon: Labor-force Participation and the Risk of Spousal Violence Against Women. *Journal of Marriage and the Family, 61*, 947–958.

Manser, M., & Brown, M. (1980). Marriage and household decision-making: A bargaining analysis. *International Economic Review, 21*(1), 31–44.

Mattes, R., & Bratton, M. (2007). Learning about democracy in Africa: Awareness, performance, and experience. *American Journal of Political Science, 51*(1), 192–217.

McCloskey, L. A. (1996). Socioeconomic and coercive power in families. *Gender and Society, 10*, 449–463.

McElroy, M. B., & Horney, M. J. (1981). Nash-bargained household decisions: Toward a generalization of the theory of demand. *International Economic Review, 22*(2), 333–349.

Miguel, E. (2005). Poverty and witch killing. *The Review of Economic Studies, 72*(4), 1153–1172.

Mocan, N. H., & Cannonier, C. (2012). *Empowering women through education: Evidence from sierra leone*, Working Paper 18016. National Bureau of Economic Research.

Palermo, T., Bleck, J., & Peterman, A. (2013). Tip of the iceberg: Reporting and gender-based violence in developing countries. *American Journal of Epidemiology*.

Pamuk, E. R., Fuchs, R., & Lutz, W. (2011). Comparing relative effects of education and economic resources on infant mortality in developing countries. *Population and Development Review, 37*(4), 637–664.

Pearlin, L. I. (1975). Status inequality and stress in marriage. *American Sociological Review*, 344–357.

Pence, E., & Paymar, M. (1993). *Education groups for men who batter*. New York: Springer.

Pierotti, R. S. (2013). Increasing rejection of intimate partner violence: Evidence of global cultural diffusion. *American Sociological Review, 78*(2), 240–265.

Pollak, R. A. (2005). *Bargaining power in marriage: Earnings, wage rates and household production*, NBER Working Papers 11239. National Bureau of Economic Research Inc..

Rutstein, S., & Johnson, K. (2004). *The DHS wealth index*, Technical report, DHS Comparative Reports No. 6. Calverton, MD, USA: ORC Macro.

Schlozman, K., Burns, N., & Verba, S. (1999). What happened at work today?: A multistage model of gender, employment, and political participation. *The Journal of Politics, 61*(1), 29–53.

Sekhri, S., & Storeygard, A. (2014). Dowry deaths: Response to weather variability in india. *Journal of Development Economics, 111*(0), 212–223, Special Issue: Imbalances in Economic Development..

Straus, M., Gelles, R., & Steinmetz, S. (1980). *Behind closed doors: Violence in the American family*. New York: Anchor Press.

Tauchen, H. V., Witte, A. D., & Long, S. K. (1991). Domestic violence: A nonrandom affair. *International Economic Review, 32*(2), 491–511.

True, J. (2012). *The political economy of violence against women*. Oxford University Press.

Uthman, O. A., Moradi, T., & Lawoko, S. (2009). The independent contribution of individual-, neighbourhood-, and country-level socioeconomic position on attitudes towards intimate partner violence against women in sub-saharan africa: A multilevel model of direct and moderating effects. *Social Science & Medicine, 68*(10), 1801–1809.

Uthman, O. A., Moradi, T., & Lawoko, S. (2011). Are individual and community acceptance and witnessing of intimate partner violence related to its occurrence? multilevel structural equation model. *PLoS One, 6*(12), e27738.

Vyas, S., & Watts, C. (2009). How does economic empowerment affect women's risk of intimate partner violence in low and middle income countries? a systematic review of published evidence. *Journal of International Development, 21*(5), 577–602.

Wilkinson, R. (2004). Why is violence more common where inequality is greater?. *Annals of the New York Academy of Sciences, 1036*(1), 1–12.

APPENDIX A. SAMPLE DISTRIBUTIONS

Table 7. *Summary statistics on background characteristics*

Sample:	Attitudes micro		Abuse micro		Abuse couple			
Respondents:	Women		Women		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Household wealth group								
Poorest	0.18	(0.38)	0.21	(0.40)	0.21	(0.41)		
Poor	0.18	(0.39)	0.21	(0.40)	0.21	(0.41)		
Middle	0.19	(0.39)	0.20	(0.40)	0.19	(0.39)		
Rich	0.21	(0.40)	0.20	(0.40)	0.20	(0.40)		
Richest	0.24	(0.43)	0.19	(0.39)	0.19	(0.39)		
Education								
None	0.36	(0.48)	0.38	(0.49)	0.36	(0.48)	0.27	(0.44)
Elementary	0.35	(0.48)	0.36	(0.48)	0.38	(0.48)	0.36	(0.48)
Secondary	0.26	(0.44)	0.22	(0.42)	0.23	(0.42)	0.30	(0.46)
Postsecondary	0.03	(0.18)	0.04	(0.19)	0.04	(0.18)	0.07	(0.26)
Years of schooling	4.65	(4.49)	4.56	(4.55)	4.75	(4.53)	6.00	(4.88)
He more education					0.43	(0.49)		
She more education					0.18	(0.38)		
Employment								
Last 12 months	0.65	(0.48)	0.71	(0.45)	0.69	(0.46)	0.96	(0.20)
Only she employed					0.02	(0.15)		
Age								
15–19 years	0.21	(0.41)	0.07	(0.26)	0.08	(0.27)	0.00	(0.06)
20–24 years	0.19	(0.39)	0.19	(0.39)	0.21	(0.41)	0.07	(0.26)
25–29 years	0.18	(0.38)	0.22	(0.42)	0.26	(0.44)	0.19	(0.39)
30–34 years	0.14	(0.35)	0.18	(0.39)	0.19	(0.40)	0.23	(0.42)
35–39 years	0.12	(0.32)	0.14	(0.35)	0.14	(0.34)	0.21	(0.41)
40–44 years	0.09	(0.28)	0.10	(0.30)	0.08	(0.27)	0.16	(0.37)
45–49 years	0.08	(0.27)	0.09	(0.28)	0.05	(0.21)	0.13	(0.34)
Age in years	28.88	(9.46)	31.22	(8.49)	29.90	(7.71)	35.26	(7.37)
Marital status								
Single	0.25	(0.43)	0.00	(0.00)	0.00	(0.00)		
Cohabitant	0.10	(0.30)	0.12	(0.33)	0.13	(0.33)		
Married	0.56	(0.50)	0.79	(0.41)	0.87	(0.33)		
Divorced	0.06	(0.23)	0.06	(0.24)	0.00	(0.00)		
Widow	0.03	(0.17)	0.03	(0.17)	0.00	(0.00)		
Children								
No children	0.27	(0.44)	0.07	(0.26)	0.07	(0.26)	0.06	(0.24)
1–3 children	0.37	(0.48)	0.47	(0.50)	0.50	(0.50)	0.43	(0.49)

Table 7 (*continued*)

Sample:	Attitudes micro		Abuse micro		Abuse couple			
Respondents:	Women		Women		Women		Men	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
4–6 children	0.23	(0.42)	0.31	(0.46)	0.30	(0.46)	0.29	(0.46)
>6 children	0.13	(0.33)	0.15	(0.36)	0.12	(0.32)	0.22	(0.41)
No. of children	2.92	(2.84)	3.67	(2.61)	3.45	(2.45)	4.40	(3.60)
Religious affiliation								
Christian	0.39	(0.49)	0.30	(0.46)	0.37	(0.48)	0.35	(0.48)
Muslim	0.22	(0.42)	0.19	(0.39)	0.16	(0.36)	0.16	(0.36)
Other	0.34	(0.47)	0.47	(0.50)	0.45	(0.50)	0.45	(0.50)
Missing	0.05	(0.22)	0.04	(0.20)	0.03	(0.16)	0.02	(0.15)
Location								
Urban	0.34	(0.48)	0.31	(0.46)	0.29	(0.45)		
N	586,255		156,929		45,513		45,513	

Note: The table gives the mean and standard deviations for the main explanatory and control variables for the main samples used in this paper.

Table 8. *Distribution of sample and main outcome variables across surveys*

		Attitudes			Abuse			Abuse (ever)		
Country:	Year	Mean	Wtd. mean	N	Mean	Wtd. mean	N	Mean	Wtd. mean	N
Benin	2001	0.61	0.61	6,187						
Benin	2006	0.49	0.47	17,602						
Burkina Faso	2003	0.74	0.72	12,381						
Burkina Faso	2010	0.43	0.44	17,055	0.09	0.09	9,994	0.12	0.12	10,003
Burundi	2010	0.71	0.73	9,355						
Cameroon	2004	0.56	0.56	10,608	0.43	0.42	2,567	0.47	0.46	2,597
Cameroon	2011	0.46	0.47	15,356	0.31	0.31	3,986	0.52	0.51	4,036
Congo Brazaville	2005	0.66	0.68	6,964						
Congo DR	2007	0.78	0.78	9,740	0.56	0.59	2,839	0.61	0.65	2,858
Congo DR	2013	0.74	0.76	18,623	0.37	0.35	5,671	0.52	0.51	5,721
Cote d'Ivoire	2011	0.49	0.48	9,991	0.22	0.22	4,984	0.28	0.28	5,042
Ethiopia	2000	0.79	0.85	15,281						
Ethiopia	2005	0.75	0.81	13,361						
Ethiopia	2011	0.65	0.69	16,469						
Gabon	2012	0.56	0.51	8,346	0.32	0.29	4,104	0.54	0.50	4,209
Ghana	2003	0.52	0.49	5,664						
Ghana	2008	0.39	0.37	4,883	0.20	0.19	1,829	0.25	0.25	1,848
Guinea	2005	0.88	0.88	7,776						
Kenya	2003	0.68	0.69	8,062	0.42	0.44	4,288	0.43	0.45	4,323
Kenya	2008	0.51	0.54	8,288	0.32	0.31	4,826	0.40	0.39	4,847
Lesotho	2004	0.50	0.49	7,049						
Lesotho	2009	0.39	0.37	7,611						
Liberia	2007	0.58	0.62	6,763	0.35	0.36	3,866	0.43	0.44	3,945
Liberia	2013	0.47	0.43	9,212						
Madagascar	2003	0.28	0.28	7,892						
Madagascar	2008	0.33	0.33	17,210						
Malawi	2000	0.37	0.36	13,089						
Malawi	2004	0.29	0.29	11,510	0.27	0.27	8,271	0.27	0.28	8,279
Malawi	2010	0.13	0.13	22,924	0.22	0.22	5,368	0.30	0.30	5,373
Mali	2001	0.90	0.90	12,676						
Mali	2006	0.74	0.77	14,257	0.19	0.21	8,822	0.20	0.22	8,828
Mali	2012	0.76	0.77	10,334	0.26	0.27	3,096	0.35	0.36	3,107
Mozambique	2003	0.54	0.54	12,405						
Mozambique	2011	0.19	0.21	13,650	0.26	0.29	5,801	0.35	0.37	5,859
Namibia	2006	0.38	0.36	9,617						
Niger	2006	0.71	0.71	9,096						
Nigeria	2003	0.63	0.66	7,453						
Nigeria	2008	0.46	0.44	32,563	0.15	0.15	19,033	0.19	0.19	19,101
Nigeria	2013	0.37	0.35	38,352	0.12	0.11	22,103	0.18	0.17	22,229
Rwanda	2000	0.62	0.64	10,338						
Rwanda	2005	0.47	0.48	11,242	0.35	0.36	2,545	0.39	0.40	2,577
Rwanda	2010	0.55	0.56	13,659	0.45	0.46	3,470	0.57	0.58	3,473

(*continued on next page*)

Table 8 (*continued*)

Country:	Year	Attitudes			Abuse			Abuse (ever)		
		Mean	Wtd. mean	N	Mean	Wtd. mean	N	Mean	Wtd. mean	N
Sao Tome and Principe	2008	0.20	0.20	2,510	0.29	0.27	1,688	0.31	0.30	1,691
Senegal	2005	0.68	0.66	14,436						
Senegal	2010	0.66	0.60	15,639						
Sierra Leone	2008	0.66	0.68	7,030						
Sierra Leone	2013	0.64	0.65	16,088	0.28	0.29	4,217	0.46	0.48	4,286
Swaziland	2006	0.24	0.23	4,816						
Tanzania	2004	0.57	0.60	10,258						
Tanzania	2010	0.48	0.54	10,038	0.31	0.38	5,670	0.38	0.47	5,690
Uganda	2000	0.76	0.77	7,204						
Uganda	2006	0.71	0.71	8,467	0.43	0.42	1,744	0.59	0.59	1,746
Uganda	2011	0.57	0.59	8,612	0.32	0.33	1,695	0.51	0.52	1,713
Zambia	2001	0.87	0.86	7,578						
Zambia	2007	0.62	0.63	7,038	0.41	0.42	4,216	0.50	0.52	4,242
Zimbabwe	1999	0.54	0.51	5,865						
Zimbabwe	2005	0.49	0.48	8,858	0.28	0.28	4,957	0.36	0.37	4,993
Zimbabwe	2010	0.39	0.40	9,142	0.26	0.28	5,279	0.35	0.37	5,303
All surveys		0.54	0.54	664,473	0.25	0.25	156,929	0.32	0.33	157,919

Note: The table gives the mean and standard deviations for the rates of acceptance and abuse across all the surveys used in this paper. ("Abuse" is short-hand for "Abuse during the last 12 months".)

APPENDIX B. ADDITIONAL ANALYSES

Table 9. *Coefficients in single countries*

Country:	N	Years of schooling			Employed last year		
		Coeff	Std.err	t-Value	Coeff	Std.err	t-Value
Burkina Faso	9,993	0.0073	0.0036	2.0387	0.0070	0.0092	0.7606
Cameroon	6,552	0.0168	0.0052	3.2403	0.0533	0.0155	3.4337
Congo DR	8,488	0.0102	0.0058	1.7687	0.0028	0.0201	0.1382
Cote d'Ivoire	4,979	0.0176	0.0052	3.3670	0.0111	0.0192	0.5758
Gabon	4,103	0.0072	0.0121	0.5957	0.0678	0.0254	2.6633
Ghana	1,822	0.0109	0.0069	1.5731	−0.0077	0.0370	−0.2067
Kenya	9,112	−0.0001	0.0053	−0.0246	0.0977	0.0155	6.2982
Liberia	3,862	0.0036	0.0083	0.4270	−0.0536	0.0224	−2.3868
Malawi	13,638	0.0208	0.0039	5.2863	0.0468	0.0108	4.3490
Mali	11,896	0.0085	0.0044	1.9456	0.0854	0.0139	6.1617
Mozambique	5,801	0.0130	0.0056	2.3366	0.0053	0.0163	0.3238
Nigeria	41,110	0.0201	0.0015	13.1153	0.0294	0.0044	6.7217
Rwanda	6,013	0.0159	0.0049	3.2240	−0.0185	0.0203	−0.9119
Sao Tome and Principe	1,688	−0.0206	0.0147	−1.4045	0.0016	0.0359	0.0457
Sierra Leone	4,213	0.0136	0.0069	1.9813	0.0235	0.0323	0.7273
Tanzania	5,670	0.0132	0.0057	2.3230	0.0490	0.0228	2.1454
Uganda	3,439	0.0113	0.0068	1.6720	−0.0019	0.0266	−0.0698
Zambia	4,216	0.0157	0.0064	2.4449	0.0494	0.0168	2.9349
Zimbabwe	10,235	−0.0017	0.0059	−0.2897	0.0764	0.0100	7.6210

Note: The table gives the coefficients and standard errors and *t*-values for the OLS estimates of the association of schooling and employment with abuse last year across all the countries used in this paper.

Table 10. *OLS regressions at the macro level*

	(1) Abuse	(2) Abuse	(3) Abuse
Education			
She years of schooling	0.0099***	0.0082***	0.0072***
	(0.0020)	(0.0026)	(0.0018)
She years of schooling squ.	−0.0010***	−0.00069***	−0.00071***
	(0.00017)	(0.00025)	(0.00013)
He years of schooling	0.0072***	0.0070***	0.0041**
	(0.0019)	(0.0025)	(0.0017)
He years of schooling squ.	−0.00062***	−0.00065***	−0.00037***
	(0.00013)	(0.00015)	(0.00011)
			(*continued on next page*)

Table 10 (*continued*)

	(1) Abuse	(2) Abuse	(3) Abuse
He more education	0.013*	0.0093	0.020***
	(0.0073)	(0.0097)	(0.0068)
She more education	0.023***	0.017*	0.025***
	(0.0067)	(0.0086)	(0.0065)
Employment			
She last 12 months	0.030***	0.024***	0.035***
	(0.0045)	(0.0054)	(0.0046)
He is unemployed	0.052**	0.087***	0.042
	(0.021)	(0.026)	(0.027)
She sole earner	0.0057	−0.0096	−0.018
	(0.022)	(0.022)	(0.034)
Attitudes on wife-beating			
She condones	0.070***	0.070***	0.070***
	(0.0032)	(0.0032)	(0.0032)
Cluster aggregates			
Rich	0.040***	0.00014	−0.0020
	(0.014)	(0.0056)	(0.0057)
High female education	0.049***	0.060***	0.049***
	(0.0056)	(0.011)	(0.0056)
High female employment	0.018***	0.019***	0.018***
	(0.0038)	(0.0039)	(0.0039)
High female acceptance of wife-beating	0.034***	0.033***	0.034***
	(0.0042)	(0.0042)	(0.0042)
High wealth inequality	0.0057	0.0057	0.028***
	(0.0041)	(0.0042)	(0.0095)
Cross-level interactions	*Rich cluster*	*Educated cluster*	*Unequal cluster*
× She years of schooling	−0.0017	−0.00086	0.0018
	(0.0024)	(0.0030)	(0.0023)
× She years of schooling squ.	0.00033*	0.000015	−0.0000056
	(0.00020)	(0.00027)	(0.00016)
× He years of schooling	−0.0045*	−0.0030	0.00053
	(0.0024)	(0.0029)	(0.0023)
× He years of schooling squ.	0.00030**	0.00027	−0.000091
	(0.00015)	(0.00017)	(0.00013)
× He more education	−0.0015	0.0040	−0.013
	(0.0095)	(0.011)	(0.0092)
× She more education	−0.0027	0.0067	−0.0068
	(0.0093)	(0.010)	(0.0093)
× She last 12 months	−0.0016	0.0098	−0.011*
	(0.0067)	(0.0070)	(0.0067)
× He is unemployed	−0.051**	−0.087***	−0.043
	(0.024)	(0.029)	(0.032)
× She sole earner	−0.030	0.00067	0.015
	(0.029)	(0.030)	(0.038)
Wealth controls	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Interview year FE	Yes	Yes	Yes
Country FE	Yes	Yes	Yes
R-Squared	0.11	0.11	0.11
No. of respondents	143,225	143,225	143,225

Note: Each column presents an OLS regression of the outcome variable denoted in the column heading. ("Abuse" is short-hand for "Abuse during the last 12 months".) All regressions control for living in urban areas, age, marital status, the number of children, and religious affiliation. Year and country fixed effects are included in all specifications. The reference category is a woman aged 15–19 with no formal education, married with no children to a partner with the same characteristics, neither Christian nor Muslim, who have not been employed during the last 12 months, and who live in a rural area.
$^*p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.