Violence Against Women: A Cross-cultural Analysis for Africa

Alberto Alesina* Benedetta Brioschi† Eliana La Ferrara‡

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Abstract

Using a new dataset constructed matching the Demographic Health Surveys with Murdock's Ethnographic Atlas, we investigate the determinants of violence against women in Africa. We focus on cultural determinants of violence arising from ancient living arrangements, types of economic activities and marriage patterns. Our outcomes include both violence actually experienced by women and attitudes towards domestic violence reported by men and women. We find evidence consistent with two hypotheses. First, ancient socioeconomic conditions determine social norms about gender roles, family structures and intrafamily violence which persist over time even when the initial conditions change. We show that norms about marriage patterns, living arrangements and the productive role of women in ancient times are associated with contemporary violence. Second, women's economic role affects violence in a complex way. On the one hand, in societies where in pre-colonial times women had an active economic role and/or a brideprice was paid upon marriage, implying a high economic value of women, men are less prone to violence today. On the other hand, we find increases in domestic violence for couples where the woman is currently economically independent, i.e., where she may have more bargaining power and pose a threat to the husband.

*Harvard University and IGIER
†London School of Economics
‡Bocconi University and IGIER

1 Introduction

Violence perpetrated by men against their female partners is widespread around the world. Not only it is a fundamental violation of women's human rights, but domestic violence is also a significant public health problem, with significant economic and social costs. Victims of violence experience physical and psychological distress, they may suffer isolation, experience a decline in labor productivity and loss of wages, together with impediments in child care with consequences on children's health and education.[1]. The World Health Organization (2013) estimates that more than one third of women in the world have been victims of either physical or sexual violence, with low income countries disproportionately affected.

In this paper we assess how economic and cultural factors influence current spousal violence in Africa using data on domestic violence from the Demographic and Health Surveys (DHS). We combine these data with information on ancestral anthropological and cultural practices of the ethnic group to which the woman belongs, taken from Murdock's Ethnographic Atlas. The resulting new dataset allows us to uncover the role played by cultural origin in shaping contemporary attitudes towards and experience of domestic violence.

We find evidence for two interrelated hypotheses. The first is that the economic value of women determines men's violence against them. When in ancient times socioeconomic arrangements made women economically valuable, social norms developed in ways that viewed women as productive, more equal to men and these gender roles bring about less intrafamily violence. However, additional and subtle factors may come into place. An economically more independent woman may also have more bargaining power within the marriage, which may lead to a negative reaction of men and ultimately

[1] See the World Health Organization (2004). Carbone-López, Kruttschnitt and Macmillan (2006) estimate the contributions of different types of intimate partner violence exposure to physical health, mental health and substance abuse. Women's Advocates Inc. (2002) calculates that intimate partner violence costs the US economy $12.6 billion on an annual basis, that is, 0.125 percent of the GDP. This estimate includes legal and medical services, judicial system costs and lost productivity. Lloyd and Taluc (1999) conduct a study on the effect of domestic violence on the labour force participation of 824 randomly selected women in Chicago and they observe that women who experienced male violence were as likely to be currently employed as other women, but were more likely to have been unemployed in the past, to have health problems and to be welfare recipients. Unfortunately, estimates of the costs associated with spousal violence ara available only for developed countries, no similar studies were found for Sub-Saharan Africa.

to an increase –as opposed to a decrease– in violence. Indeed, when exploring contemporaneous correlates of intimate partner violence, we find that if women currently work, spousal violence against them is higher.

The second (related) hypothesis is that past socioeconomic conditions determine persistent cultural values regarding the family, the role of women, and violence against them. These values are persistent even when the initial conditions which generated them evolve or disappear. We find that in societies where women were actively involved in subsistence activities (e.g., those based upon gathering), women's role was more highly regarded and violence against women is lower today. On the contrary, violence is higher in societies based upon plough agriculture, where women participated less in agriculture (see Alesina, Giuliano and Nunn, 2013) and in fishing and hunting societies, which were mainly male activities, at least in our sample. Also ancestral living conditions of different ethnicities affect current levels of violence. We start by investigating the role played by past marriage patterns in shaping domestic violence in the long run. Female descendants of societies characterized by brideprice in the past are exposed to a lower probability and a lower intensity of violence today. This suggests that if men traditionally had to pay for marrying their wives, they felt that the latter had a higher value and they cared more about them. Interestingly, in line with this argument, the effect of lower actual violence seems to be driven by a lower acceptability of wife beating on the part of men. Furthermore, being from an ethnicity that was traditionally endogamous (i.e., where members marry within the same ethnic group) has a positive and significant impact on spousal violence episodes. This may reflect less "modern" cultural values of ethnicities which practiced endogamy, or the possibility that beating a wife from a different ethnic group may bring about retaliation across ethnicities. We also find that where the stem family (a small extended family in which two generations cohabit, as one son stays at the parental homestead with his wife and children) was socially predominant in the past, both men and women tend to be less favorable to violence. This result confirms for Africa the hypothesis advanced by Tur-Prats (2015) for Spain, namely that in stem families wives have more time to work on the farm, (while the mother in law takes care of the children) hence they become more 'valuable'. Finally, we explore the effect of different types of settlements on domestic violence. We find that women whose ancestors lived in nomadic and isolated settlements are exposed to a higher probability of violence and are more prone to justify it. Men whose ancestors lived in compact settlements are less likely to justify abuses against their wives. One interpretation is that nomadic and

isolated settlements represent less developed communities. Another is that societal protection of women is more difficult within these types of living arrangements.

As we discuss in the next section, our paper makes several contributions to the existing literature. First, to the best of our knowledge, our work is the first one to combine data for all DHS surveys available for Africa in order to investigate the correlates of spousal violence and attitudes towards it. Second, by assembling an original dataset that matches ethnic groups in the DHS with information on ancestral characteristics from Murdock's Ethnographic Atlas, we are able to shed light on the origin and long term persistence of gender norms conducive to gender based violence. Specifically, we document a significant association of contemporary violence with pre-colonial features of society related to the economic role of women, to marriage customs, and to residential and living arrangements. Our findings highlight the importance of considering deeply rooted social norms when discussing policies aimed at preventing or stopping domestic violence in low income countries.

The remainder of our paper is organized as follows. Section 2 introduces a brief review of the literature related to this subject. Section 3 describes the data and our matching procedures. Section 4 presents the empirical strategy and the results. Section 5 offers some robustness checks. The last section concludes.

2 Related literature and hypotheses

2.1 The literature

The present paper is related to two different strands of the literature. The first one is, of course, the literature on the determinants of domestic violence. The second one is the work on persistence of cultural values.

The vast literature on domestic violence cuts across disciplinary boundaries (see Lawson (2012) for a survey). One branch of sociological studies embrace a "feminist perspective" which analyzes violence against women as an expression of male dominance (e.g., Dobash and Dobash (1979) and Jonhson (1995). Our approach, as well as that of other economists, is more related to another branch of sociological studies, namely to the 'ecological theory', which underlines the importance of environmental factors and social relations and relates violence against women to various micro and macro

variables inside and outside the family.[2] Also related to our work is the exchange and social control theory that calls attention to the relative benefits and costs of domestic violence for the individual and emphasizes the role of social control against family violence which may increase the cost of violence for men (e.g., Gelles (1983) and Gelles and Strauss (1988)).

In recent years, the bulk of the literature on this subject has investigated the link between income gap and spousal violence, identifying financial independence as the key determinant for promoting women's empowerment. The pioneering study of the relationship between income gap and spousal violence is Gelles (1976), who observes that the fewer resources a woman has, the less likely she is to escape from an abusive relationship. More recent findings are in Farmer and Tiefenthaler (1997), who conclude that in the United States an improvement in women's economic opportunities leads to a decline in spousal violence. Bowlus and Seitz (2006) instead use structural methods to estimate a negative effect of female employment on abuse. Similar findings are reached by Aizer (2010). She exploits administrative data to build a new measure of violence, based on female hospitalizations for assault, and she concludes that the decline in wage gap, occurred in previous years, is an important driver of the decline in violence against women.[3]

Spousal violence has been also framed as a bargaining instrument, a way adopted by the husband to impose his control over his wife (Anderson, 1997; Gartner and Macmillan, 1999). This is the so-called male backlash theory, according to which husbands feel their authority threatened if their wives work, so they use violence as a way to reinstate their power over them. This type of violence is also known as "intimate terrorism" (Johnson and Ferraro, 2000) and is motivated by a wish to exert general control over one's partner. Bertrand, Kamenica and Pan (2015) analyze whether and how the behavioral prescription that "a man should earn more than his wife" affects other social and economic outcomes. Focusing on the United States, they find that the couples where the wife earns more than the husband are less happy, they are more likely to divorce and, in these couples, the wife spends more time on household chores. In societies that are more patriarchal and conservative and where divorce is not socially accepted growing tensions

[2] See Heise (1998) for a discussion of how to incorporate the two perspectives.

[3] The relationship between income gap and intimate partner violence has been analyzed also by criminologists. They developed a theory of exposure reduction according to which an increase in employment among either men or women will negatively affect domestic violence, by reducing the time partners spend together (Dugan, Nagin and Rosenfeld, 1999).

within the couple generated by increasing economic opportunities for women may result in higher levels of intimate partner violence -a finding that we report below.

An interesting study by Bloch and Rao (2002) establishes a link between marriage markets and women's abuse in India. They find that women whose family of origin is richer are more likely to be victims of domestic violence. Given the stigmatization against divorced women in the country, it is extremely difficult for a woman to escape from an abusive relationship. Since violence is interpreted as a signal of husband's dissatisfaction towards the marriage, the only way for a woman's parents to stop the husband's abuses is to increase his utility, transferring him monetary resources.

Economists and psychologists have recently started to investigate a new mechanism through which violence could arise. In this framework, a violent behavior is regarded as a reaction to frustration, which is determined by an unexpected loss. For instance, Card and Dahl (2011), taking advantage of police reports of aggressions during the football season, observe that an unexpected loss when the home team is the favorite is associated with an increase in the rate of intimate partner violence.

The second point of our study is related to the literature that examines the impact of historical legacies on current outcomes regarding family violence. Pollak (2004) devises an intergenerational model of domestic violence, providing evidence of a high degree of intergenerational correlation of spousal violence.[4] The role of family attitudes towards women and their intergenerational transmission in shaping women's role in society have been stressed also by Thornton, Alwin and Camburn (1983) and Fernández, Fogli and Olivetti (2004). Tur-Prats (2015) focuses on Spain, and shows that territories where stem family was socially predominant in the past are characterized by a lower prevalence of domestic violence today.[5] She explains this finding by building a model in which co-residence with another woman (the mother-in-law) increased the productive role of the wife, improving her participation to agricultural activities. The presence of an older woman in the household decreases the burden of domestic work for the wife, freeing up time for farming.

Probably the paper more directly related to ours, at least methodologi-

[4]This is consitent with argument by Wolfang and Ferracuti (1967) on the intergenerational trasmission of a culture of violence.

[5]A stem family is a family arrangement in which two generations cohabit, since one son stays at the parental homestead with his wife and kids. It is the opposite of nuclear family, where all children leave parents' household to start their independent household.

cally, is by Michalopoulos, Putterman and Weil (2014). They estimate the effect of ancestral lifeways on current economic outcomes, focusing on Sub-Saharan Africa and matching individual data from the Demographic and Health Surveys with ethnographic characteristics of distinct ethnic groups from Ethnographic Atlas. They observe that descendants of societies that were traditionally dependent on agriculture are wealthier and better educated. In addition, exploiting data availability on men's attitudes towards domestic violence, they observe that being descendants of agriculturalists has a negative and significant effect on the reported acceptability of wife beating. While they investigate the impact of descending from ethnicities that traditionally practiced agriculture on distinct current outcomes (men's education, wealth, etc.), we focus on outcomes related to domestic violence and we try to uncover the role played by a broader set of cultural and societal factors.

The economic literature has also tried to provide an explanation about the origin of gender roles. Alesina, Giuliano and Nunn (2013) empirically test Ester Boserup's hypothesis that differences in gender roles are determined by historical agricultural practices. In particular, she argues that descendants of societies that practiced plough agriculture prior to industrialization are characterized by more unequal gender norms today. This is due to the fact that the use of plough required more physical strength, so in societies based on plough women started to be relegated into the domestic sphere. Conversely, in hoe culture, women were more likely to work outside the home and assume more important social roles, a feature that was then transmitted to their female descendants. They test these predictions and conclude that descendants of societies that practiced plough agriculture are characterized by a higher degree of gender inequality today, measured through female participation in the workplace, politics and entrepreneurial activities.

The role of historical legacies on current outcomes related to gender is also estimated by Fenske (2015). He focuses on Africa and shows that districts that received more colonial teachers in French West Africa and areas that received more Christian missions have lower polygamy rates today.

2.2 Our hypothesis

The available literature suggests two main interrelated hypotheses which we will test on African data. The first is the role of the economic productivity of women as a determinant of domestic violence. To the extent that women

are more valuable, in economic terms, violence should decline since the husband does not want to damage physically and psychologically a productive member of the family. On the other hand, women who are more economically active also gain power in intrafamily bargaining. This may be difficult for the husband to accept, and even become unacceptable for some men in cases where the wife is more productive (e.g, receives a higher wage or more generally brings home more money or goods) than the husband. This second effect may lead to an increase in intrafamily violence.

The second hypothesis we test relates to the persistence over time of cultural values, and specifically of values regarding gender roles, family organization and gender based violence. Pre-colonial socioeconomic arrangements, often related to geographic conditions, led to certain family structures and gender roles, which in turn favoured or discouraged violence against women. We hypothesize that these cultural traits may have persisted even when the original socioeconomic conditions changed.

3 Data

3.1 Demographic and Health Surveys

To test the above hypotheses we combine different data sources. Our main data source is constituted by the Demographic and Health Surveys (DHS), a series of representative cross-sectional surveys of women and men aged 15-49 in randomly selected households. We use the most recently available DHS wave for those African countries for which either the domestic violence module or data on attitudes towards intimate partner violence are available.[6] Furthermore, in order to match DHS individual-level survey data with Murdock's Ethnographic Atlas, (see below) we need to restrict the analysis to only those DHS waves in which ethnicity or language of the household members was collected as part of the survey. Language spoken at home or native language is used as a proxy for ethnicity when information on respondent's ethnic group is not available. We analyze intimate partner violence at three different levels: (i) actual episodes of violence experienced by women, and attitudes towards violence of (ii) women and (iii) men.

Actual violence experienced. We consider all the women selected and interviewed for the domestic violence module which is included in some

[6] We decided to consider only African countries because the number of non-African countries for which both the violence module and data on the ethnicity (or language) of the respondent are available is negligible.

DHS survey rounds for 18 countries.[7] Eliciting information on domestic violence is difficult for obvious reasons, but the DHS protocol has high standards to ensure high data quality. First, the domestic violence module is administered to only one (randomly selected) woman per household: this ensures that other respondents in the household will not know about the questions she was asked. Informed consent for the survey is obtained from the respondent at the beginning of the individual interview. At the beginning of the domestic violence section, respondents are read an additional statement informing them that the subsequent questions could be sensitive and reassuring them of the confidentiality of their responses. The domestic violence module is then implemented only if privacy is obtained. For each one of the 18 countries, we merge the women dataset with the household one, so that each woman is attributed to her corresponding household. Then we match individual-level data with Murdock's Ethnographic Atlas, assigning to each individual in the DHS the ancestral characteristics of her ethnic group in the Atlas. We end up with 96077 women in the sample.

Attitudes towards violence. We also examine the effect of historical legacies on women's and men's attitudes towards wife beating. We exploit a set of attitudinal measures that reflect a combination of attitudes towards domestic violence and attitudes towards women. The respondents are asked whether a husband is justified in hitting or beating his wife under different circumstances: the wife goes out without telling him; the wife neglects their children; the wife argues with him; the wife refuses to have sex with him; the wife burns the food. The women sample includes 28 African countries, while the male sample 27.[8] After having assigned each individual in the

[7]The survey rounds in the respective countries are: BF6(Burkina Faso, 2010), CD6(Congo Democratic Republic, 2013-2014), CI6(Cote d'Ivoire, 2011-2012), CM6(Cameroon,2011), GA6(Gabon, 2012), GH5(Ghana, 2008), KE5(Kenya, 2008-2009), ML5(Mali, 2006), MW5(Malawi, 2006), MZ6(Mozambique, 2011), NG6(Nigeria, 2013), NM6(Namibia, 2013), RW6(Rwanda, 2010), SL6(Sierra Leone, 2013), TG6(Togo, 2013-2014), UG6(Uganda, 2011), ZM5(Zambia, 2013-2014), ZW6(Zimbabwe, 2010-2011).

[8]The survey rounds in the respective countries are: BF6(Burkina Faso, 2010), BJ6 (Benin, 2011-2012), CD6(Congo Democratic Republic, 2013-2014), CG6(Congo-Brazzaville, 2011-2012), CI6(Cote d'Ivoire, 2011-2012), CM6(Cameroon,2011), GA6(Gabon, 2012), GH5(Ghana, 2008), ET6(Ethiopia, 2011), GN6(Guinea, 2012), KE5(Kenya, 2008-2009), LB6(Liberia, 2013), LS5(Lesotho, 2009), ML5(Mali, 2006), MW5(Malawi, 2006), MZ6(Mozambique, 2011), NI6(Niger, 2012), NG6(Nigeria, 2013), NM6(Namibia, 2013), RW6(Rwanda, 2010), SL6(Sierra Leone, 2013), SN6(Senegal, 2010-2011), SZ5(Swaziland, 2006-2007), TD4(Chad, 2004), TG6(Togo, 2013-2014), UG6(Uganda, 2011), ZM5(Zambia, 2013-2014), ZW6(Zimbabwe, 2010-2011). Niger (NI6) is not included in the male sample because data on religion, which we include in all regressions as a control, is not collected

DHS to his/her corresponding ethnic group in the Ethnographic Atlas, we have 266657 observations for women and 120099 for men.

3.2 Murdock's Ethnographic Atlas and matching with DHS

Our second data source is the Ethnographic Atlas, a worldwide ethnicity-level database constructed by George Peter Murdock, which collects ethnographic information for 1267 ethnic groups and contains over one hundred ethnographic variables taken from societies prior to industrialization. We use the Atlas to combine individual level data from contemporary Africa with information on the ancestral ethnicities of respondents.

Matching the DHS with the Ethnographic Atlas requires the construction of a concordance of ethnicities, since names of ethnic groups in the DHS do not always coincide with the ones in the Atlas. Overall, we have 717 ethnicities in the DHS and we are able to match 315 of them. Our matching procedure follows and adapts Michalopoulos, Putterman and Weil (2014).[9] In order to reconcile the ethnic affiliation in the DHS with the one in Murdock's Atlas, we consider seven possible methods and we order them on the basis of their accuracy. Then, following this ordered list, we adopt the first method that allows to achieve a match between the two datasets. Table 1 illustrates all the matching strategies, with the number and the share of observations and ethnicities that are matched using each strategy.

[Insert Table 1]

for men.

[9]Even though in our matching procedure we follow Michalopoulos, Putterman and Weil (2014), we make some changes. First of all, they do not distinguish between Ethnologue and the Joshua Project, but they devise three different matching techniques which use data on ethnicities' names from either Ethnologue or the Joshua Project: : (i) DHS and Murdock names are alternative names according to Ethnologue or the Joshua Project; (ii) a name in Murdock's Atlas is listed as a macro ethnicity that includes the ethnicity in the DHS, according to Ethnologue or the Joshua Project; and (iii) an ethnicity in the Murdock's Atlas is part of a larger ethnicity in the DHS, according to either Ethnologue or the Joshua Project. Since this distinction is not relevant for our purposes, we do not distinguish among these three cases, while we consider Ethnologue and the Joshua Project as separate sources. Secondly, Michalopoulos, Putterman and Weil mention "other sources" in the list of their matching strategies, including also Wikipedia in this category. Given that Wikipedia allows us to match a significant number of observations, we decide to list it as a separate source. Finally, we introduce a new source, referred to as "two sources" in Table 1. More specifically, when the available information is ambiguous, we use two sources together to achieve a concordance between the DHS and Murdock names.

The easiest case is the one in which the name of the ethnicity in the DHS is exactly the same as the one used by Murdock. For example, this is the case for the groups "Bodi" and "Tamil". Unfortunately, using this strategy we are able to directly match only 18.1 percent of the DHS ethnic groups, corresponding to 32.9 percent of the observations. When direct matching is impossible, we use the dataset constructed by Nunn and Wantchekon (2011), which provides a concordance between the ethnicities in the Afrobarometer and those in the Ethnographic Atlas. An example is the DHS ethnicity "Urhobo", which is included among the Afrobarometer ethnic groups in Nunn and Wantchekon's (2011) dataset, where it is associated to the ethnic group that appears as "Isoko" in the Atlas. Using this approach, we match 6.6 percent of the DHS ethnicities, corresponding to 10.9 percent of the observations in our sample. The third method relies on Ethnologue, a catalogue of more than 6700 languages spoken in 228 countries. Three different cases are possible: (i) DHS and Murdock names are listed as alternative names by Ethnologue; (ii) a name in Murdock's Atlas is listed as a superset of the ethnicity in the DHS, i.e. it is a macro category that includes also the ethnicity in the DHS ; and (iii) a name in Murdock's Atlas is a subset of a DHS ethnic group, i.e. it is a smaller ethnic group which is included in a larger ethnicity. Michalopoulos, Putterman and Weil (2014) keep these three approaches separate. However, since this distinction is not relevant for our purposes, we combine these three categories into a single category, referred to as Ethnologue. For instance, the DHS ethnic group "Ndola" can be called also "Ndoola", "Njoyane", "Nundoro" or "Ndoro". Since the last one appears in the Ethnographic Atlas, we are able to match it with the DHS ethnicity of interest. Overall, 12.3 percent of the ethnicities are matched using Ethnologue, which accounts for 14.3 percent of the observations. The fourth method uses data on alternative ethnicity names from the Joshua Project and we can have the same three cases described for Ethnologue. For example, according to the Joshua Project, the DHS name "Sheko" is an alternate name of "Shako", an ethnicity that is present in Murdock's Atlas. The Joshua Project allows us to match 1.4 percent of the ethnicities and 0.5 percent of the observations in the sample. When the ethnicity name reported in the DHS does not appear neither in Ethnologue nor in the Joshua Project, we check whether Wikipedia mentions possible alternate names for that ethnic group. For instance, the DHS name "Gourmatché"is listed as an alternative name for "Gurma", present in the Ethnographic Atlas. Overall, 2.9 percent of the DHS ethnic groups are matched with the Atlas using Wikipedia, for a total of 8 percent of the observations. In some

cases, two sources are needed in order to achieve a concordance between the DHS and Murdock names. For example, "Mandingue"is a DHS ethnicity which has some alternate names according to Ethnologue ("Mande", "Mandingo", "Mandinka"). However, none of them appears in Murdock's Atlas, while "Mandinka" is listed by Nunn and Wantchekon (2011) within the Afrobarometer names and it is associated with "Malinke" in the Atlas. 1.8 percent of the DHS ethnicities are matched with the Ethnographic Atlas using two sources, for a total of 6.5 percent of the observations. Finally, we employ two additional sources (peoplegroups.org and zyama.com) when the available information is ambiguous and leaves some doubts on the reliability of the matching. They allow to match 0.8 percent of the DHS names, corresponding to 0.1 percent of the observations.

Overall we are able to match 73.2 percent of the DHS observations: a total of 386802 individuals are matched to a Murdock's Atlas group and assigned ancestral characteristics of the corresponding ethnicity in the Ethnographic Atlas.

3.3 Descriptive statistics

Appendix Table A.1 lists the variables we use in our empirical analysis and their sources. Section A2 and Section A3 of the Appendix provide a detailed description of the construction procedure for dependent and independent variables, respectively.

Domestic violence

[Insert Table 2]

Table 2 reports summary statistics on our domestic violence variables for the sample of women and men aged 15 to 49. The indicator variable '*Violence attitude*' takes value 1 if the respondent believes that violence is acceptable in at least one out of five circumstances included in the survey: going out without telling the husband; neglecting the children; arguing with the husband; refusing to have sex with the husband; and burning the food. Focusing on the first row of Table 2, we see that on average 46 percent of women justify wife beating in at least one circumstance, while the corresponding figure for men is 34 percent. As an alternative measure, we construct the '*Violence attitude index*' as the sum of the circumstances in which the respondent thinks it would be acceptable for a man to beat his wife. The average number of episodes in which spousal violence is justified is

1.3 (out of 5) for female respondents and 0.76 for male ones. We also report the fraction of women and men justifying wife beating in each of the five circumstances included in the '*Violence attitude index*'. The circumstance under which both female and male respondents justify more husband's abuses is when the wife neglects the children: 32 percent of women believe that violence is acceptable in this case, while this share reduces to 21 percent for men. Almost one out of three women justifies spousal violence if the wife argues with the husband and a similar share of female respondents believes that wife beating is acceptable when the wife goes out without telling the husband.[10] Note that men's attitudes towards spousal violence may be affected by underestimation, because men could hinder their true views in order not to look bad in front of the interviewer, although this may hold also for women.

In the bottom part of Table 2 we examine variables that capture the actual violence experienced by female respondents. Note that the sample size is smaller because this module is administered by the DHS only in 18 African countries, as we discussed in Section 3.1. According to our first indicator variable, '*Violence ever*', 29 percent of women have experienced either sexual or physical violence since the age of 15. In the latest twelve months prior to the survey ('*Violence last year*'), the fraction is 22 percent. The information on the occurrence of each episode of spousal violence allows us to also construct an indicator for the intensity of violence. This variable is computed as the sum of different types of physical and/or sexual aggression to which the woman has been exposed ever since age 15 ('*Violence index ever*') and during the twelve months prior to the survey ('*Violence index last year*'). This index ranges from 0 to 6 and it has a mean of 0.63 when focusing on violence ever experienced and of 0.46 when considering the past year.

Overall, the descriptive patterns in Table 2 suggest that domestic violence is relatively widespread in contemporary Africa. This is even more striking when considering that these figures are likely affected by underreporting.

[10] Intimate partner violence seems to be slightly less accepted by both women and men when the wife refuses to have sex with the husband and when she burns the food, even if the share of individuals justifying violent behaviors under these circumstances remains worrisome.

Ancestral characteristics

[Insert Table 3]

Table 3 reports summary statistics on the long term cultural and economic variables we employ in the analysis. In this table we report the summary statistics for the sample of all women with data on domestic violence attitudes. Summary statistics of ancestral characteristics for the sample with information on actual violence are reported in Appendix Table A.2. After matching modern ethnicities in the DHS with ancestral tribes in the Ethnographic Atlas, we assign to each respondent the characteristics of his/her corresponding ethnic group in Murdock's dataset.

Murdock's Atlas contains detailed information on production activities prior to industrialization. For instance, 6 percent of women's ancestors in our sample traditionally used the plough.[11] In our African sample, agriculture was the main source of subsistence prior to industrialization: 97 percent of respondents' ancestors mainly relied on agriculture, while the average share of subsistence provided by agricultural activities was 62 percent (variable '*Dependence on agriculture*'). The Ethnographic Atlas lists four other production activities (gathering, hunting, fishing and animal husbandry) and the share of subsistence they provided is, respectively, .06, .09, .09 and .19.

In addition, the Atlas reports for each production activity the following gender participation categories: males only, males appreciably more; equal participation; females appreciably more; females only. Using this information, we construct an indicator variable equal to one if there was equal gender participation, or if women contributed more than men or if women were the only participants to the production activity, and zero otherwise.[12] Descriptive statistics reported in Table 3 suggest that gathering and agriculture were characterized by equal gender participation or higher female participation compared to men's (recall that for the vast majority of our sample

[11] In Murdock's data, ethnicities are classified into one of the following mutual exclusive categories: the plough was absent; the plough existed but it was not aboriginal; the plough was aboriginal and found in the society prior to contact. Using this categorization, we construct an indicator variable equal to 1 if the society used the plough (whether aboriginal or not) and zero otherwise.

[12] The original classification in Murdock's Atlas makes a distinction between "differentiated but equal participation" and "equal participation, no marked differentiation". Since this distinction is not relevant for our purpose, we *combine* these two categories. If the activity is present but participation by gender is not specified, or if the activity is absent, our variable takes a missing value.

we have plough negative agriculture). Animal husbandry was practiced by both men and women, while hunting and fishing were almost exclusively male activities.

We next focus on a set of variables describing ancestral marriage and living arrangements. 92 percent of women have ancestors whose mode of marriage was characterized by brideprice, that is a payment in monetary terms or in kind to the bride's family (variable '*Brideprice*').[13]. 22 percent of women's ancestors practiced endogamy, the custom of marrying exclusively within a specific ethnic or social group. The prevalence of 'stem family', i.e., an arrangement where two generations cohabit, is 25 percent. Polygyny (a form of plural marriage in which a man is allowed to have more than one wife) is an ancestral characteristic of 97 percent of the respondents, and virilocality (a marriage arrangement according to which a married couple resides with or near the husband's parents) was prevalent for 85 percent of them.

We then provide descriptive evidence also for alternative types of settlements (sedentary, nomadic, compact and isolated): the vast majority of women's ancestors lived in sedentary settlements. The last rows of Table 3 report summary statistics for inheritance norms adopted by ancestral societies. Gender equality in land inheritance, with land equally divided between daughters and sons, was practiced in only 5 percent of the cases. In addition, 14 percent of women's ancestors followed a matrilineal descent system, meaning that an individual's descent was traced through the mother and her maternal ancestors, and a man's property was inherited by his sister's sons instead of his own children. Finally, the last row of Table 3 suggests that primogeniture was applied to land inheritance in 63 percent of the cases, at least before the economy opened up to industrialization.

Summary statistics for the socioeconomic controls that we use in our regressions are reported in Appendix Table A.3. The first panel of this table refers to the sample of all African countries for which data on attitudes towards domestic violence are available, while the second panel refers to the 18 African countries where data on actual violence experienced are collected.[14]

[13]The dummy '*Brideprice*' is equal to 1 if the prevalent mode of marriage prior to industrialization was characterized by brideprice or wealth to bride's family, bride service to bride's family or token brideprice in the definition of Murdock's Atlas.

[14]For the attitudes regressions, the female sample includes 28 countries, while the male sample includes 27 countries.

4 Empirical strategy and results

4.1 Empirical model

We investigate whether cultural legacies explain intimate partner violence (both its actual incidence and its acceptance as a practice) by estimating the following regression:

$$Violence_{igc} = \alpha_c + \beta \cdot Ethno_g + \gamma X_{igc} + \epsilon_{ih} \quad (1)$$

where $Violence_{igc}$ is the outcome of interest for individual i from ethnicity g in country c. This is the 'actual' violence dummy (or index) when we consider violence episodes experienced by the woman, and the violence 'attitudes' dummy or index when we focus on women's and men's attitudes.[15] $Ethno_g$ indicates the ancestral characteristic of interest of a given ethnicity g, derived from Murdock's Ethnographic Atlas. It can refer to ancient living arrangements, distinct types of production activities, different marriage patterns or different inheritance norms. X_{igc} is a vector of individual controls including woman's and partner's age and years of education, a dummy equal to one if the woman is currently working, the number of children ever born and the household size, a wealth index, a dummy for urban residence and a set of religion dummies.[16]. α_c is a vector of country fixed effects. Standard errors are clustered at the ethnicity level.

We estimate equation (1) using four different models. When the outcome is binary, we estimate the regression using a linear probability model (OLS) and Probit. When the dependent variable is a count variable (i.e., in the case of the violence index), we use ordinary least squares (OLS) and a Poisson model. We report OLS estimates in the main text, and refer the reader to Section 5 for robustness checks using the Probit and Poisson models.

[15] In the appendix we provide a detailed description of how these different measures of violence are constructed.

[16] The DHS wealth index is an indicator of household's economic status. It is a continuous variable and it is constructed using principal component analysis, starting from household's assets.

Angelucci (2008), evaluating the impact of the program *Oportunidades* on domestic violence and alcohol abuse, observes that violence increases with woman's age but with diminishing marginal returns. In order to check whether the relationship between age and violence is non linear, we included woman's and partner's age squared. Since the coefficients of woman's and man's age squared were rarely significant, we decided to include only age, without its square, in our final specification.

4.2 Current economic correlates of domestic violence

Table 4 shows the individual and contemporaneous correlates of various measures of violence against women, separately for male and female respondents.

[Insert Table 4]

The results reported in Table 4 are quite intuitive. Violence (actual and tolerated) decreases with age and education both of the woman and of the partner and the propensity to justify husband's abuses is also negatively correlated with wealth. This may reflect the fact that wealthier and more educated families are subject to less stressful conditions and this makes them less likely to resort to violence, consistent with the resource theory advanced by Goode (1971), or it may simply reflect unobserved preferences for exerting violence that negatively correlate with education and wealth. Household size and the number of births that the woman had are positively correlated with violence, perhaps due to the stress of supporting large families. Other explanations are also possible, though, such as the presence of unobserved factors correlated with household size, or reverse causality if the violence was motivated by an attempt on behalf of the man to induce the woman to have more children. In urban areas violence occurs more frequently but it is less justified by men and women.

Urbanization is one of the few variables for which the results on actual violence reported and on attitudes do not go in the same direction. Reporting bias could be one interpretation of this discrepancy: urban women may be more open to revealing that they have been beaten, while at the same time being less accepting of it. Another possibility is that residents of urban areas in Africa are experiencing a faster transition from traditional norms that considered gender based violence acceptable to modern ones that condemn it, and that the dichotomy between tradition and modernization in the short run gives rise to increasing levels of violence by men whose identity is challenged by the new systems of beliefs.

Interestingly, the occurrence of violence (but not an attitude of acceptance) is increasing when women work. This may be associated with women having a stronger bargaining power within the family and therefore posing a potential threat to the dominating role of the husband, consistent with the 'male backlash' theory (Anderson, 1997; Gartner and Macmillan, 1999). Note that the variable *'Working'* captures whether the woman under cosideration (the respondent in columns 1-4, and the spouse of the male

respondent in columns 5-6) is currently working. Below we will investigate how the economic role of women in the past generated cultural attitudes which lead to different consequences on current violence.

We now move to examine how past socioeconomic arrangements may affect current level of violence due to the persistence of attitudes and cultural values. All the variables listed in Table 4 are included as controls in every regression we present in the next sections but their coefficients are not reported for brevity. The coefficients on the individual controls are very stable and robust.

4.3 Long term cultural determinants of domestic violence

4.3.1 Economic value of women

Table 5 reports our results on how ancestral characteristics of one's ethnic group pertaining to the economic value and occupational prospects of women affect contemporary violence. Each panel in the table reports the coefficient on the variable of interest, the number of observations, the R-squared and the mean of dependent variable in the subsample considered, to help assess the magnitude of the estimated effect in relation to the mean. Although we only display one coefficient for each regression, we always include the individual controls listed in Table 4 and country fixed effects, as in equation (1).

[Insert Table 5]

In the first regression we consider the economic value of the woman as implicit in marriage payments. The dummy '*Brideprice*' is equal to 1 if the prevalent mode of marriage of the respondent's ethnic group prior to industrialization was characterized by brideprice, i.e., if the husband had to make a payment to obtain a wife, as opposed to receiving a dowry or not making any payment.[17] More than 90 percent of individuals in our sample have ancestors who practiced brideprice.

Anthropologists, demographers and economists have advanced various theories to explain under which conditions brideprice, instead of dowries, is more likely to prevail (Botticini, 2003). According to Becker (1981), marriage payments clear the market when sex ratios are unbalanced. Therefore, in a society where women are less numerous, a man will pay a brideprice in

[17] In terms of Murdock's classification, our variable includes brideprice or wealth to the bride's family, bride service to the bride's family and token bride price.

order to attract a bride. Goody (1973) instead claims that dowry is a form of inheritance from the bride's parents to the bride. In societies with dowries, sons receive inheritance, while daughters receive wealth transfers from their parents in the form of dowries at the time of marriage. According to this theory, dowries are more likely to prevail in stratified societies, characterized by higher wealth and status inequality. On the contrary, brideprice is more likely to emerge where there is little social and economic stratification, and this could explain why brideprice is more common than dowries in many African societies. Finally, Boserup (1970) argues that brideprice is more likely to emerge in economies in which agriculture is based on shifting hoe cultivation, such as most African societies. In this context, women are actively engaged in agricultural activities and, by paying a brideprice to the bride's family, the groom acquires the right to the bride's labor force. Thus, on the one hand, brideprice could be interpreted as an explicit recognition of women's value. On the other hand, it could limit women's independence, due to shame and fear deriving from escaping an abusive relationship and returning to their parental house, without being able to repay the brideprice (Ansell, 2001).[18]

Our results support the first argument. Having brideprice in the past is associated with a decrease of 11.5 percentage points in the probability of ever being exposed to spousal violence , which is a very large effect considering that the average probability of violence in our sample is 27.1 percent. When we use as dependent variable the violence index (column 2), which counts the number of violence episodes to which the woman has been subjected, the coefficient on brideprice is -0.35 , significant at the 1 percent level. Interestingly, in line with the argument about the values of wives, the effect of lower actual violence seems to be driven by a lower acceptance of wife beating on the part of the man: the likelihood of justifying a husband's choice to beat his wife declines by 6 percentage points for the male sample (column 5) and also the number of circumstances in which beating is justified by men (column 6) is significantly lower in brideprice-paying societies.

The remaining panels of table 5 refer to a different assessment of the economic value of women, based on traditional modes of production and income generation. We start by investigating whether plough use prior to industrialization influences intimate partner violence today. We construct a

[18] In line with this argument, Horne, Nii-Amoo Dodoo and Dodua Dodoo (2013) conduct a vignette experiment in Ghana's Volta region and observe that when a man has paid a brideprice, he gains the right to the woman's reproductive services. In other words, after brideprice payment, wives defer to their husbands for reproductive choices.

binary variable equal to one if the society used the plough (whether aboriginal or not) and zero otherwise.[19] The coefficients of the variable '*Plough*' in columns 1 and 2 of panel B indicate that the descendants of societies that practiced plough agriculture are exposed to higher degree of violence today. Women whose ancestors practiced plough agriculture are 13.2 percentage points more likely to be victims of husband's aggressions and this effect is significant at 1 percent level. This is a large effect, representing a 50 percent increase over the mean.

We next consider overall dependence on agriculture for income generation in ancestral societies, as opposed to hunting, fishing, gathering and pastoralism. The idea is that in economies based on agriculture, especially without the plough like in most of our sample, women could participate more in the labor force and develop a more equal status in society and in the family, and this may generate norms of greater respect for women, similar to the effect of brideprice we found above. Indeed, the qualitative pattern of results in panel C of table 5 is consistent with this interpretation: the dummy '*Agriculture main source*' (equal to one for societies where agriculture contributed most to economic activity) displays negative coefficients in all regressions, although it is only significant when we consider the violence attitude index for the female sample (column 4).

In the next five panels of Table 5, instead of relying on dichotomous variables to proxy for economic specialization in ancestral societies, we employ continuous indicators aimed at capturing the share of total production accounted for by various activities. For example, the variable '*Dependence on agriculture*' in panel D indicates the share of total subsistence activities accounted for by agriculture in the respondent's ethnic group. This variable is insignificant, although with the correct sign. On the other hand, dependence on gathering significantly reduces the likelihood and intensity of violence experienced by women (columns 1-2 of panel E), consistent with the fact that gathering is the activity with the highest share of female labor force participation relative to men (see Table 3). Dependence on fishing, which is practiced almost exclusively by men in our sample, is associated with more violence towards women today. Along the same lines, dependence on hunting (a male activity) in the past is associated with a 29.2 percentage points increase in the likelihood that a woman justifies beating by the husband. No evidence is found of a correlation between dependence on animal husbandry and spousal violence.

[19] Note that in our sample very few ethnicities used the plough.

Finally, we consider the role of geography in determining the extent to which women may be actively employed in agriculture and hence have higher economic value. Following Alesina, Giuliano and Nunn (2013) we consider land suitability for plough cultivations as an exogenous determinant of whether the plough is used and of whether women traditionally engaged in farming. In panel I of Table 5 we regress our domestic violence outcomes on land suitability for plough-positive and plough-negative crops.[20] The two measures for plough-positive and plough-negative crops have been constructed following Alesina, Giuliano and Nunn (2013), using the information on the suitability of a location for cultivating different types of crops collected in the FAO's Global Agro-Ecological Zones (GAEZ) 2002. In particular, we identify the land inhabited by each of the ethnic group in the Ethnographic Atlas. Then we use all land within 200 kilometers of an ethnic group's centroid and measure the amount of land within this area that can grow each of the cereal crops that comprise our measures of land suitability. Wheat, barley and rye are plough-positive crops, while sorghum, foxtail millet and pearl millet are plough-negative ones.[21] So the variables *'Plough-positive crops'* and *'Plough-negative crops'* capture the average suitability for each type of crop, normalized by the overall suitability for cultivation in general. When considering the relationship between land suitability and domestic violence, we observe that having an ancestral environment that was more suitable to cultivate plough-positive crops is associated with a higher female acceptability of partner violence, while no significant effect is found on male attitudes towards partner violence and actual violence experiences. When the environment was better able to cultivate plough-negative crops, then the number of episodes in which women think violence would be acceptable is higher, while no significant effect is found on other domestic violence variables.

Overall, the results in Table 5 are very consistent with our two hypotheses. First, when women are more economically valuable (i.e., because men have to pay for them and/or they are productive for the economic structure of the family) they are less subject to intrafamily violence and this type of violence is less acceptable. Second, ancestral characteristics of society which

[20] Notice that these variables are not collinear because a given area may be suitable for plough positive crops only, plough negative only, for both types or for neither one.

[21] As in Alesina, Giuliano and Nunn (2013), we assume that land suitability for different types of crops provided by GAEZ is an unbiased measure of relative historical suitability. Nunn and Qian (2011) show that there is a positive correlation between a country's suitability for potato cultivation today and historical potato production.

led to a different economic role of women determine cultural attitudes that persist even today when socioeconomic conditions have evolved.[22]

4.3.2 Marriage patterns

We next consider another set of cultural determinants of the propensity to violence, arising from distinct marriage patterns among ethnic groups in pre-colonial times.

[Insert Table 6]

Panel A of Table 6 shows the impact of endogamy, i.e., the practice of marrying within a specific social or ethnic group, on spousal violence. We find that being from an ethnicity that was traditionally endogamous has a positive and significant effect on domestic violence episodes, increasing the likelihood of ever being victim of violence by 6.9 percentage points, a 26 percent increase over the mean. This effect is accompanied by a positive and significant effect on the reported male acceptability of violence towards women. We can think of two possible interpretations. One is that ethnicities which practiced endogamy were more closed, less open to new ideas and in some respect more 'backward'. The second interpretation is that beating a wife of a different ethnic group may bring about retaliation across ethnicities. The possibility of retaliation and open conflict with other ethnic groups may have acted as a deterrent to domestic violence in societies practicing exogamy, in a similar way in which it may deter inter-ethnic conflict (Fearon and Laitin, 1996).

The second marriage arrangement we consider is the stem family, which is a small extended family in which two generations cohabit in the same homestead, as one son stays at the parental house with his wife and children. Columns 3 to 6 of panel B show that where the stem family was socially predominant in the past, both men and women tend to be less favorable to violence. This result is consistent with the evidence from Spain provided by Tur-Prats (2015). She argues that co-residence with another woman (the mother-in-law) increased the productive role of the wife, since it decreased

[22]To explore the role of economic factors further, we tested whether customary inheritance practices of one's ethnic group affect domestic violence. In particular, we focused on equal transmission of land inheritance to daughters and sons, on matrilineal inheritance and on primogeniture. None of these variables was significantly associated with violence in our sample. Results are available upon request.

the burden of domestic work for the latter, thus freeing up time for farming work. The same explanation can rationalize our results.

Another widespread social institution in Sub-Saharan Africa prior to industrialization was polygyny, a custom that allows men to have multiple wives.[23] Interestingly, there seems to be no correlation between intimate partner violence and polygynous unions (panel C). The lack of an effect may result from two contrasting forces. On the one hand, to the extent that having more than one wife indicates an attitude less progressive and a lower consideration of women's status, one would expect to see an increase in violence associated with polygyny. On the other hand, some of the motives that typically instigate violence against one's wife may be alleviated by the presence of other wives. For example, if the inability of the first wife to deliver a son is compensated for by a second wife who delivers one, this may reduce the husband's propensity to beat the first wife.[24]

Finally, we consider the role played by customary residence patterns upon marriage. For the majority of ethnic groups in our sample (85 percent of respondents), traditional norms prescribe that upon marriage the couple resides in the same village or clan territory of the husband and/or of his family (patrilocal or virilocal residence). In panel D we find no evidence that virilocal residence affects domestic violence incidence or attitudes.

4.3.3 Types of settlements

Table 7 reports results regarding the impact of traditional living arrangements on intrafamily violence. We include three dummies corresponding to the three different types of settlements prior to industrialization –nomadic, isolated and compact– while the omitted category is sedentary settlements.[25]

[23] While we do not investigate the origins of polygyny in this paper, Goody (1973) argues that "the reasons behind polygyny are sexual and reproductive rather than economic and productive" (ibidem, p.189).

[24] Milazzo (2014) finds that women with a first-born daughter are significantly more likely to be involved in a polygynous union, compared to women with a first-born son. She also observes that the probability of being in a polygynous relationship when having a first born daughter is higher for first-rank wives, while she finds no effect for higher rank wives, confirming that husbands choose to marry another woman because the first had a daughter.

[25] In Murdock's Atlas, ethnicities are grouped into different categories based on settlements patterns: nomadic or fully migratory; seminomadic; semisedentary; compact but impermanent settlements; neighborhoods of dispersed family homesteads; separated hamlets forming a single community; compact and permanent settlements; and complex settlements. Starting from this classification, we create a dummy *'Nomadic'* equal to one

[Insert Table 7]

We find that violence tends to be higher in nomadic communities, that women tend to justify more husband's abuses in isolated settlements, while men whose ancestors lived in compact settlements are less prone to justify wife beating today. These results are consistent with several non-exclusive interpretations. One is that nomadic and isolated settlements represent less developed organizational patterns and that this feature correlates with domestic violence. Another possible interpretation is that societal protection of women is more difficult within these types of living arrangements. The latter interpretation is consistent with the social control theory by Gelles (1983) and Gelles and Straus (1988) since in these types of settlement social control against violence is likely to be low.

5 Robustness checks

We test the robustness of our results along several dimensions. First of all, we experiment with different estimation methods, in particular we re-estimate equation (1) with Probit and Poisson models. While in the tables discussed so far all coefficients were estimated using OLS, in Appendix Tables A.4 to A.6 we alternatively use a Probit model when the outcome is a dummy variable (corresponding to columns 1, 3 and 5 of the tables) and a Poisson model when the dependent variable is a count variable (i.e., in the case of the violence indices used in columns 2, 4 and 6). For Probit estimates we report marginal effects, so that results are easily interpretable, while for Poisson models we report incidence-rate ratios, meaning that all coefficients presented in the tables are 'exponentiated' (we report $exp(coefficient)$ rather than $coefficient$).[26]

if the traditional settlements patterns were nomadic or seminomadic, a dummy *'Isolated'*, equal to one when ancestral settlements were characterized by neighborhood of dispersed family homesteads, a dummy *'Compact'*, which refers to those ethnic groups who had compact but impermanent settlements or compact and relatively permanent settlements, and a dummy *'Sedentary'*, including semisedentary settlements, neighborhoods of dispersed family homesteads, separated hamlets forming a single community, compact and relatively permanent settlements and complex settlements, which is used as the omitted category.

[26] Poisson regression is a form of regression analysis used to model count data. It assumes that the dependent variable follows a Poisson distribution and the logarithm of its expected value can be modeled using a linear combination of unknown parameters.

The results in Appendix Tables A.4 to A.6 confirm the OLS results in Tables 5 to 7. In Appendix Table A.4 brideprice and plough remain highly correlated with current violence. Also when considering the impact of marriage patterns on the propensity to violence in Appendix Table A.5, the results are in line with the OLS estimates. The same holds for cultural correlates related to different settlements types (Appendix Table A.6).

The second robustness check we perform relates to the different samples used for the analysis of actual violence levels (columns 1-2 in the previous tables) and attitudes towards wife beating (columns 3 to 6). Due to the fact that the survey module on experience of domestic violence was not administered in all DHS countries, our sample for these regressions is typically smaller than for the attitude regressions. As a robustness check, we therefore re-estimate the impact of historical and cultural legacies on women's and men's attitudes towards spousal violence, restricting the sample to the 18 African countries for which the domestic violence module is available.[27] By doing so, we are able to test whether previous results were driven by the larger number of countries for which information on acceptance of violence as a practice is collected. The results, reported in Appendix Tables A.7 to A.9, are very similar to the ones we reported in the main tables. Here we point out only a few differences.

First, we find no evidence of a correlation between dependence on hunting and the likelihood that a woman justifies husband's aggression. Second, we no longer find evidence of a relationship between stem family and acceptability of domestic violence. Third, concerning polygyny, when we consider the restricted sample we observe that the number of episodes in which women think violence would be acceptable is lower. Fourth, we find that men whose ancestors lived in nomadic settlements are more likely to justify spousal violence, while this impact was not found in the extended sample. This is consistent with the view that in nomadic environment social protection of women is likely to be lower. Overall, our results are largely robust to different definitions of the sample.

[27]The DHS survey rounds in the respective countries are: BF6(Burkina Faso, 2010), CD6(Congo Democratic Republic, 2013-2014), CI6(Cote d'Ivoire, 2011-2012), CM6(Cameroon,2011), GA6(Gabon, 2012), GH5(Ghana, 2008), KE5(Kenya, 2008-2009), ML5(Mali, 2006), MW5(Malawi, 2006), MZ6(Mozambique, 2011), NG6(Nigeria, 2013), NM6(Namibia, 2013), RW6(Rwanda, 2010), SL6(Sierra Leone, 2013), TG6(Togo, 2013-2014), UG6(Uganda, 2011), ZM5(Zambia, 2013-2014), ZW6(Zimbabwe, 2010-2011).

6 Conclusions

Using a new dataset constructed matching the Demographic Health Surveys with Murdock's Ethnographic Atlas we have investigated the role of individual characteristics as well as ancestral features of individuals' ethnic groups in explaining domestic violence in the African continent. Our conclusions can be summarized in two points.

First, ancient socioeconomic conditions determine social norms about gender roles, family structures and intrafamily violence which persist over time even when the initial conditions change. We have shown how norms about marriage patterns, living arrangements and the productive role of the wife in ancient times are associated with violence experienced by women and with attitudes about violence within the family today.

Second, we have focused on how women's economic role affects violence and found a complex pattern of effects. On the one hand, in societies where in pre-colonial times women had an active economic role and/or a brideprice was paid upon marriage, men are less prone to violence even today, given the nature of gender roles determined by these past arrangements. On the other hand, we find increases in domestic violence for couples where the woman is currently economically active and independent, i.e., where she may have more bargaining power within the family and pose a threat to the husband. Our results are consistent with the hypothesis of long term persistence of gender norms.

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Tables

Table 1: Matching DHS ethnicities to Ethnographic Atlas

	Number observations	Percentage observations	Number ethnicities	Percentage ethnicities
Direct	174129	32.94	130	18.13
Nunn and Wantchekon (2011)	57453	10.87	47	6.56
Ethnologue	75310	14.25	88	12.27
Joshua Project	2850	0.54	10	1.40
Wikipedia	42301	8.00	21	2.93
Two sources	34262	6.48	13	1.81
Other source	497	0.09	6	0.84
Not matched	141813	26.83	402	56.07

Table 2: Summary statistics violence measures - attitudes & actual violence

	Women			Men		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Attitudes towards violence						
Violence attitude	0.462	0.499	255242	0.338	0.473	115013
Violence attitude index	1.306	1.76	246053	0.76	1.337	112260
Violence justified if the wife:						
Goes out without telling	0.299	0.458	258972	0.179	0.384	117668
Neglects the children	0.326	0.469	259716	0.21	0.408	117889
Argues with the husband	0.301	0.459	252395	0.187	0.39	114293
Refuses to have sex	0.237	0.425	256827	0.114	0.318	117093
Burns the food	0.161	0.368	252843	0.083	0.275	114537
Actual violence experienced						
Violence ever	0.285	0.452	77821	-	-	-
Violence index ever	0.63	1.235	77683	-	-	-
Violence last year	0.215	0.411	77719	-	-	-
Violence index last year	0.461	1.083	77683	-	-	-

Notes. Source: Murdock's Ethnographic Atlas and Demographic and Health Survey (DHS). Survey weights are always included. Concerning violence attitudes, all DHS African countries with data on domestic violence attitudes are considered. There are 28 countries for women sample and 27 countries for male sample. Concerning actual violence, countries with violence module are considered. The sample is composed by women selected and interviewed for domestic violence module. Overall, 18 African countries are included.

Table 3: Summary statistics ancestral characteristics

	Women		
	Mean	Std. Dev.	N
Ethnographic variables			
Plough	0.063	0.243	259651
Agriculture main source	0.965	0.184	266361
Dependence on agriculture	0.618	0.123	266361
Dependence on gathering	0.064	0.046	266361
Dependence on hunting	0.09	0.061	266361
Dependence on fishing	0.087	0.068	266361
Dependence on husbandry	0.194	0.113	266361
Female participation agriculture	0.671	0.47	230396
Female participation gathering	0.866	0.341	117603
Female participation hunting	0	0	179164
Female participation fishing	0.176	0.38	147649
Female participation husbandry	0.454	0.498	168421
Brideprice	0.921	0.269	265612
Endogamy	0.221	0.415	249919
Stem family	0.248	0.432	264000
Polygyny	0.973	0.161	262236
Virilocality	0.846	0.36	264917
Sedentary	0.984	0.126	259283
Nomadic	0.016	0.126	259283
Compact	0.548	0.498	259283
Isolated	0.154	0.361	259283
Gender equal land inheritance	0.046	0.209	244914
Matrilineal land inheritance	0.142	0.349	244914
Primogeniture land inheritance	0.629	0.483	232667

Notes: Source: Murdock's Ethnographic Atlas and Demographic and Health Survey (DHS). Survey weights are always included. All DHS African countries with data on women's attitudes towards domestic violence are considered. Overall there are 28 countries in the sample.

Table 4: Contemporaneous correlates

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
Age	-0.002**	-0.003	-0.004***	-0.015***	-0.004***	-0.009***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Education (years)	-0.001	-0.003	-0.011***	-0.039***	-0.008***	-0.025***
	(0.001)	(0.003)	(0.001)	(0.004)	(0.001)	(0.004)
Wealth index	-0.001	-0.004	-0.002	-0.018**	-0.005***	-0.020***
	(0.001)	(0.003)	(0.002)	(0.008)	(0.002)	(0.005)
Working	0.043***	0.117***	-0.005	-0.038	-0.014	-0.035
	(0.010)	(0.026)	(0.009)	(0.033)	(0.016)	(0.062)
Number of births	0.012***	0.031***	0.007***	0.030***	0.005***	0.011***
	(0.003)	(0.008)	(0.001)	(0.006)	(0.001)	(0.004)
Household size	0.002**	0.003	0.002**	0.006	0.001	0.003
	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)	(0.003)
Partner's age	-0.002***	-0.004***	-0.000	0.002	-0.002***	-0.005***
	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.002)
Partner's education	-0.001	-0.005*	-0.003***	-0.010***	-0.005***	-0.013***
	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.002)
Urban	0.037***	0.086***	-0.061***	-0.289***	-0.027***	-0.123***
	(0.010)	(0.029)	(0.011)	(0.045)	(0.008)	(0.028)
Constant	0.123***	0.216***	0.281***	0.845***	0.231**	-0.057
	(0.028)	(0.063)	(0.026)	(0.102)	(0.095)	(0.428)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.119	0.100	0.226	0.245	0.150	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721

Notes. Survey weights are included. Standard errors clustered at the ethnicity level. Coefficients and standard errors of the variable *Wealth index* are multiplied by 100000. Contry fixed effects and religion dummies are included. Focusing on actual violence, all 18 African countries with domestic violence module are included. Considering violence attitudes, there are 28 African countries for female sample and 27 for male one. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table 5: Cultural correlates - economic value of women

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
A. Brideprice	-0.115**	-0.354***	-0.008	-0.009	-0.061***	-0.147*
	(0.049)	(0.130)	(0.029)	(0.105)	(0.020)	(0.075)
Observations	67,996	67,892	156,391	151,909	49,210	48,343
R-squared	0.122	0.104	0.226	0.245	0.152	0.137
Mean dep. var	0.271	0.576	0.478	1.410	0.312	0.720
B. Plough	0.132***	0.344**	0.006	-0.274	-0.023	-0.295
	(0.035)	(0.146)	(0.050)	(0.254)	(0.087)	(0.334)
Observations	66,030	65,926	153,111	148,728	48,307	47,448
R-squared	0.123	0.102	0.226	0.243	0.152	0.137
Mean dep. var	0.270	0.576	0.483	1.426	0.314	0.725
C. Agriculture main source	-0.037	-0.007	-0.030	-0.183*	-0.022	-0.117
	(0.035)	(0.091)	(0.025)	(0.100)	(0.035)	(0.095)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.119	0.100	0.226	0.245	0.150	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721
D. Dependence on agriculture	-0.068	-0.116	0.056	0.053	0.049	0.078
	(0.068)	(0.189)	(0.059)	(0.205)	(0.055)	(0.154)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.119	0.100	0.226	0.245	0.151	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721
E. Dependence on gathering	-0.346*	-0.957**	-0.082	-0.012	-0.120	0.110
	(0.195)	(0.479)	(0.167)	(0.653)	(0.177)	(0.506)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.120	0.100	0.226	0.245	0.151	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721
F. Dependence on hunting	0.319	0.773	0.292**	0.782	0.051	0.209
	(0.242)	(0.686)	(0.143)	(0.576)	(0.196)	(0.535)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.119	0.100	0.226	0.245	0.150	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721
G. Dependence on fishing	0.227**	0.536**	-0.135	-0.416	0.047	-0.029
	(0.093)	(0.248)	(0.099)	(0.360)	(0.075)	(0.213)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.120	0.100	0.226	0.245	0.150	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721

Table 5: Cultural correlates - economic value of women (CONTINUED)

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
H. Dependence on husbandry	-0.041	-0.147	-0.038	0.056	-0.084	-0.158
	(0.086)	(0.218)	(0.062)	(0.248)	(0.063)	(0.183)
Observations	68,224	68,119	156,869	152,374	49,351	48,483
R-squared	0.119	0.100	0.226	0.245	0.151	0.136
Mean dep. var	0.272	0.578	0.479	1.413	0.313	0.721
I. Plough-positive crops	0.022	0.057	0.184***	0.796***	0.079	0.273
	(0.060)	(0.153)	(0.064)	(0.250)	(0.071)	(0.214)
Plough-negative crops	0.052	0.113	0.068	0.397**	-0.004	0.065
	(0.094)	(0.258)	(0.042)	(0.166)	(0.055)	(0.152)
Observations	66,288	66,193	153,080	148,872	48,117	47,290
R-squared	0.118	0.099	0.229	0.248	0.151	0.137
Mean dep. var	0.268	0.568	0.479	1.420	0.313	0.724
Equality of coefficients (p-value)	0.800	0.867	0.075	0.057	0.352	0.403

Notes. Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. Focusing on actual violence, all 18 African countries with domestic violence module are included. Considering violence attitudes, there are 28 African countries for female sample and 27 for male one. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table 6: Cultural correlates - marriage patterns

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
A. Endogamy	0.069***	0.188***	-0.014	0.004	0.033*	0.113*
	(0.023)	(0.066)	(0.019)	(0.087)	(0.019)	(0.062)
Observations	64,313	64,223	147,292	142,932	46,072	45,231
R-squared	0.120	0.101	0.234	0.251	0.157	0.141
Mean dep. var	0.266	0.562	0.478	1.419	0.311	0.719
B. Stem family	-0.022	-0.061	-0.035*	-0.160**	-0.011	-0.074*
	(0.020)	(0.049)	(0.020)	(0.078)	(0.017)	(0.041)
Observations	68,054	67,949	155,899	152,070	49,090	48,388
R-squared	0.119	0.100	0.223	0.246	0.146	0.136
Mean dep. var	0.272	0.577	0.478	1.416	0.311	0.722
C. Polygyny	-0.009	-0.059	-0.006	0.051	0.037	0.259
	(0.015)	(0.053)	(0.025)	(0.196)	(0.055)	(0.196)
Observations	67,710	67,605	154,966	151,153	48,433	47,737
R-squared	0.119	0.100	0.224	0.246	0.148	0.138
Mean dep. var	0.272	0.578	0.477	1.416	0.311	0.724
D. Virilocality	0.010	0.054	0.006	0.079	-0.016	-0.003
	(0.018)	(0.056)	(0.027)	(0.099)	(0.022)	(0.064)
Observations	67,856	67,751	156,167	151,690	48,853	47,991
R-squared	0.119	0.100	0.226	0.245	0.152	0.138
Mean dep. var	0.272	0.578	0.479	1.412	0.313	0.722

Notes. Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. Focusing on actual violence, all 18 African countries with domestic violence module are included. Considering violence attitudes, there are 28 African countries for female sample and 27 for male one. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table 7: Cultural correlates - types of settlements

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
Settlements types						
Nomadic	0.077*	0.068	-0.018	0.030	-0.017	0.037
	(0.043)	(0.113)	(0.031)	(0.128)	(0.033)	(0.100)
Isolated	0.046	0.127	0.059*	0.281**	-0.026	0.006
	(0.035)	(0.096)	(0.032)	(0.137)	(0.031)	(0.102)
Compact	0.000	-0.001	-0.020	-0.038	-0.048***	-0.114**
	(0.017)	(0.041)	(0.027)	(0.094)	(0.014)	(0.049)
Observations	65,850	65,746	152,904	148,521	48,251	47,393
R-squared	0.123	0.103	0.227	0.244	0.153	0.137
Mean dep. var	0.270	0.577	0.483	1.428	0.314	0.725

Notes. Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. The omitted category is sedentary settlements. Focusing on actual violence, all 18 African countries with domestic violence module are included. Considering violence attitudes, there are 28 African countries for female sample and 27 for male one. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Appendix

The appendix reports some additional tables and it provides further details of the data used in the paper, as well as a detailed description of how dependent and independent variables have been constructed.

A1 Additional tables

Table A.1: Variables used in the analysis and their sources

Variable	Source
Dependent variables	
Violence ever	DHS
Violence index ever	DHS
Violence attitude dummy (women)	DHS
Violence attitude index (women)	DHS
Violence attitude dummy (men)	DHS
Violence attitude index (men)	DHS
Ethnographic variables	
Plough	Ethnographic Atlas
Agriculture main source	Ethnographic Atlas
Dependence on agriculture	Ethnographic Atlas
Dependence on gathering	Ethnographic Atlas
Dependence on hunting	Ethnographic Atlas
Dependence on fishing	Ethnographic Atlas
Dependence on husbandry	Ethnographic Atlas
Brideprice	Ethnographic Atlas
Endogamy	Ethnographic Atlas
Stem family	Ethnographic Atlas
Polygyny	Ethnographic Atlas
Virilocality	Ethnographic Atlas
Nomadic	Ethnographic Atlas
Isolated	Ethnographic Atlas
Compact	Ethnographic Atlas
Gender equal land inheritance	Ethnographic Atlas
Matrilineal land inheritance	Ethnographic Atlas
Primogeniture land inheritance	Ethnographic Atlas
Contemporary controls	
Age	DHS
Education	DHS
Wealth index	DHS
Working	DHS
Number of births	DHS
Household size	DHS
Partner's age	DHS
Partner's education	DHS
Urban	DHS
Religion	DHS
Country FE	DHS

Notes. A detailed description of how dependent and independent variables have been constructed is provided in Section A2 and Section A3 of the Appendix, respectively.

Table A.2: Summary statistics

	Mean	Std. Dev.	N
Ethnographic variables			
Plough	0.002	0.042	92835
Agriculture main source	0.986	0.116	96077
Dependence on agriculture	0.638	0.13	96077
Dependence on gathering	0.065	0.048	96077
Dependence on hunting	0.089	0.059	96077
Dependence on fishing	0.086	0.073	96077
Dependence on husbandry	0.177	0.1	96077
Female participation agriculture	0.704	0.456	82467
Female participation gathering	0.903	0.297	42992
Female participation hunting	0	0	61663
Female participation fishing	0.16	0.367	50771
Female participation husbandry	0.398	0.489	59416
Brideprice	0.947	0.224	95769
Endogamy	0.197	0.398	90290
Stem family	0.27	0.444	95788
Polygyny	0.994	0.075	95275
Virilocality	0.843	0.364	95538
Sedentary	0.989	0.105	92553
Nomadic	0.011	0.105	92553
Compact	0.531	0.499	92553
Isolated	0.189	0.391	92553
Gender equal land inheritance	0.042	0.201	87962
Matrilineal land inheritance	0.139	0.346	87962
Primogeniture land inheritance	0.638	0.481	84386

Notes: Source: Murdock's Ethnographic Atlas and Demographic and Health Survey (DHS). Countries with violence module are considered. The sample is composed by women selected and interviewed for domestic violence module. Overall, 18 African countries are considered.

Table A.3: Summary statistics (controls)

	Women			Men		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Attitudes towards violence						
Age	28.438	9.425	266361	30.397	11.625	120099
Education (years)	4.873	4.632	266242	6.62	4.776	120014
Wealth index	0.183	2.074	266361	0.23	2.063	120099
Working	0.575	0.494	265785	0.776	0.417	119900
Number of births	2.857	2.767	266361	2.55	3.552	119932
Household size	6.885	4.302	266361	6.307	4.147	120099
Partner's age	39.731	11.616	174184	30.424	8.081	51291
Partner's education	5.327	5.221	191533	4.275	4.512	51272
Urban	0.384	0.486	266361	0.402	0.49	120099
Actual violence experienced						
Age	29.095	9.075	96077	-	-	-
Education (years)	5.208	4.75	96033	-	-	-
Wealth index	0.057	1.87	96077	-	-	-
Working	0.629	0.483	95840	-	-	-
Number of births	3.011	2.662	96077	-	-	-
Household size	5.569	2.921	96077	-	-	-
Partner's age	38.927	11.21	69873	-	-	-
Partner's education	5.939	5.245	76080	-	-	-
Urban	0.367	0.482	96077	-	-	-

Notes. Source: Murdock's Ethnographic Atlas and Demographic and Health Survey (DHS). Descriptive statistics for the variable *Wealth index* have been obtained by dividing the wealth index factor score by 100000. Survey weights are always included. Concerning violence attitudes sample, all DHS African countries with data on domestic violence attitudes are considered. There are 28 countries for women sample and 27 countries for male sample. Concerning actual violence sampple, countries with violence module are considered. The sample is composed by women selected and interviewed for domestic violence module. Overall, 18 African countries are included.

Table A.4: Cultural correlates - economic value of women (Probit & Poisson estimates)

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
A. Brideprice	-0.099**	0.637***	-0.008	0.993	-0.059***	0.841*
	(0.038)	(0.098)	(0.031)	(0.078)	(0.020)	(0.083)
Observations	67,996	67,892	153,849	151,909	48,636	48,343
Pseudo R-squared	0.110		0.170		0.108	
Mean dep. var.	0.271	0.576	0.470	1.410	0.304	0.720
B. Plough	0.097***	1.214*	0.006	0.868	-0.014	0.813
	(0.025)	(0.131)	(0.048)	(0.092)	(0.066)	(0.180)
Observations	66,030	65,926	150,569	148,728	47,733	47,448
Pseudo R-squared	0.111		0.170		0.109	
Mean dep. var.	0.270	0.576	0.474	1.410	0.305	0.725
C. Agriculture main source	-0.045	0.914	-0.027	0.941	-0.023	0.883
	(0.031)	(0.139)	(0.023)	(0.047)	(0.032)	(0.096)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.107		0.170		0.107	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721
D. Dependence on agriculture	-0.066	0.769	0.069	1.088	0.052	1.112
	(0.066)	(0.265)	(0.061)	(0.170)	(0.055)	(0.217)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.107		0.170		0.107	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721
E. Dependence on gathering	-0.367*	0.146*	-0.105	1.070	-0.114	1.275
	(0.204)	(0.144)	(0.173)	(0.451)	(0.173)	(0.784)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.108		0.170		0.107	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721
F. Dependence on hunting	0.301	3.552	0.338**	2.115	0.040	1.298
	(0.239)	(4.595)	(0.151)	(1.188)	(0.213)	(1.165)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.108		0.170		0.107	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721
G. Dependence on fishing	0.240***	3.011**	-0.135	0.754	0.042	0.936
	(0.091)	(1.350)	(0.100)	(0.196)	(0.077)	(0.277)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.108		0.170		0.107	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721

Table A.4: Cultural correlates - economic value of women (Probit & Poisson estimates) - CONTINUED

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
H. Dependence on husbandry	-0.044	0.769	-0.055	0.947	-0.076	0.829
	(0.084)	(0.332)	(0.060)	(0.139)	(0.057)	(0.170)
Observations	68,224	68,119	154,327	152,374	48,777	48,483
Pseudo R-squared	0.107		0.170		0.108	
Mean dep. var.	0.272	0.578	0.470	1.413	0.305	0.721
I. Plough-positive crops	0.006	0.996	0.201***	1.973***	0.081	1.477
	(0.048)	(0.201)	(0.072)	(0.400)	(0.067)	(0.393)
Plough-negative crops	0.032	1.143	0.084	1.346***	-0.012	1.086
	(0.077)	(0.380)	(0.052)	(0.148)	(0.061)	(0.250)
Observations	66,288	66,193	150,755	148,872	47,552	47,290
Pseudo R-squared	0.107		0.172		0.108	
Mean dep. var.	0.268	0.568	0.471	1.420	0.305	0.724
Equality of coefficients (p-value)	0.769	0.719	0.111	0.044	0.314	0.402

Notes. Columns (1), (3) and (5) report probit estimates (marginal effects reported), while columns (2), (4) and (6) report poisson estimates (incidence-rate ratios reported, meaning that coefficients are exponentiated). Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table A.5: Cultural correlates - marriage patterns (Probit & Poisson)

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
A. Endogamy	0.059***	1.298***	-0.014	0.996	0.032*	1.141*
	(0.021)	(0.122)	(0.018)	(0.052)	(0.018)	(0.084)
Observations	64,313	64,223	144,750	142,932	45,498	45,231
Pseudo R-squared	0.108		0.175		0.112	
Mean dep. var.	0.266	0.562	0.469	1.413	0.303	0.719
B. Stem family	-0.031	0.844	-0.034*	0.906*	-0.009	0.923
	(0.027)	(0.134)	(0.018)	(0.051)	(0.016)	(0.061)
Observations	68,054	67,949	154,022	152,070	48,682	48,388
Pseudo R-squared	0.108		0.170		0.107	
Mean dep. var.	0.272	0.577	0.471	1.416	0.305	0.722
C. Polygyny	-0.004	0.911	0.003	1.105	0.031	1.256
	(0.014)	(0.074)	(0.028)	(0.093)	(0.045)	(0.180)
Observations	67,710	67,605	153,089	151,153	48,025	47,737
Pseudo R-squared	0.107		0.170		0.109	
Mean dep. var.	0.272	0.578	0.471	1.416	0.306	0.724
D. Virilocality	0.008	1.094	0.005	0.973	-0.022	0.939
	(0.016)	(0.092)	(0.032)	(0.097)	(0.025)	(0.091)
Observations	67,856	67,751	153,625	151,690	48,279	47,991
Pseudo R-squared	0.107		0.170		0.109	
Mean dep. var.	0.272	0.578	0.470	1.412	0.305	0.722

Notes. Columns (1), (3) and (5) report probit estimates (marginal effects reported), while columns (2), (4) and (6) report poisson estimates (incidence-rate ratios reported, meaning that coefficients are exponentiated). Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table A.6: Cultural correlates - types of settlements (Probit & Poisson estimates)

	Women				Men	
	(1) violence ever	(2) violence index	(3) attitude dummy	(4) attitude index	(5) attitude dummy	(6) attitude index
Settlements types						
Nomadic	0.083**	1.243	-0.021	0.975	-0.016	1.002
	(0.035)	(0.223)	(0.030)	(0.063)	(0.025)	(0.079)
Isolated	0.044	1.221	0.053*	1.176*	-0.030	0.945
	(0.037)	(0.232)	(0.030)	(0.101)	(0.028)	(0.114)
Compact	-0.008	0.943	-0.020	0.971	-0.052***	0.821**
	(0.022)	(0.127)	(0.026)	(0.065)	(0.014)	(0.066)
Observations	65,850	65,746	150,362	148,521	47,677	47,393
Pseudo R-squared	0.111		0.171		0.109	
Mean dep. var.	0.270	0.577	0.475	1.428	0.306	0.725

Notes. Columns (1), (3) and (5) report probit estimates (marginal effects reported), while columns (2), (4) and (6) report poisson estimates (incidence-rate ratios reported, meaning that coefficients are exponentiated). Survey weights are included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. The omitted category is sedentary settlements. Focusing on actual violence, all 18 African countries with domestic violence module are included. Considering violence attitudes, there are 28 African countries for women sample and 27 for male one. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table A.7: Cultural correlates - economic value of women (restricted sample)

	Women		Men	
	(1) attitude dummy	(2) attitude index	(3) attitude dummy	(4) attitude index
A. Brideprice	-0.004	-0.031	-0.076***	-0.243***
	(0.035)	(0.134)	(0.022)	(0.071)
Observations	118,453	116,914	37,702	37,467
R-squared	0.178	0.190	0.110	0.110
Mean dep. var	0.453	1.306	0.295	0.676
B. Plough	0.042	0.002	0.064***	0.056
	(0.050)	(0.174)	(0.014)	(0.041)
Observations	115,173	113,733	36,799	36,572
R-squared	0.178	0.186	0.110	0.108
Mean dep. var	0.458	1.325	0.296	0.681
C. Agriculture main source	0.028	0.074	-0.045	-0.209
	(0.046)	(0.171)	(0.057)	(0.188)
Observations	118,931	117,379	37,843	37,607
R-squared	0.179	0.190	0.108	0.108
Mean dep. var	0.454	1.311	0.295	0.677
D. Dependence on agriculture	0.095	0.173	0.031	0.037
	(0.073)	(0.259)	(0.069)	(0.207)
Observations	118,931	117,379	37,843	37,607
R-squared	0.179	0.190	0.108	0.108
Mean dep. var	0.454	1.311	0.295	0.677
E. Dependence on gathering	-0.058	0.225	-0.186	-0.294
	(0.189)	(0.722)	(0.190)	(0.510)
Observations	118,931	117,379	37,843	37,607
R-squared	0.178	0.190	0.109	0.108
Mean dep. var	0.454	1.311	0.295	0.677
F. Dependence on hunting	0.227	0.499	0.102	0.239
	(0.198)	(0.811)	(0.226)	(0.617)
Observations	118,931	117,379	37,843	37,607
R-squared	0.179	0.190	0.108	0.108
Mean dep. var	0.454	1.311	0.295	0.677
G. Dependence on fishing	-0.135	-0.391	0.122	0.175
	(0.110)	(0.389)	(0.081)	(0.232)
Observations	118,931	117,379	37,843	37,607
R-squared	0.179	0.190	0.109	0.108
Mean dep. var	0.454	1.311	0.295	0.677

Table A.7: Cultural correlates - economic value of women (restricted sample) - CONTINUED

	Women		Men	
	(1) attitude dummy	(2) attitude index	(3) attitude dummy	(4) attitude index
H. Dependence on husbandry	-0.087	-0.090	-0.152	-0.202
	(0.092)	(0.358)	(0.103)	(0.292)
Observations	118,931	117,379	37,843	37,607
R-squared	0.179	0.190	0.109	0.108
Mean dep. var.	0.454	1.311	0.295	0.677
I. Plough-positive crops	0.185***	0.767***	0.083	0.194
	(0.069)	(0.271)	(0.072)	(0.209)
Plough-negative crops	0.037	0.310	0.001	0.097
	(0.060)	(0.219)	(0.075)	(0.188)
Observations	116,115	114,628	36,842	36,616
R-squared	0.181	0.192	0.109	0.109
Mean dep. var.	0.454	1.316	0.295	0.679
Equality of coefficients (p-value)	0.040	0.014	0.406	0.654

Notes. In order to double check previous results, the sample has been restricted to only those countries for which domestic violence module is available. Survey weights are always included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table A.8: Cultural correlates - marriage patterns (restricted sample)

	Women		Men	
	(1) attitude dummy	(2) attitude index	(3) attitude dummy	(4) attitude index
A. Endogamy	0.009	0.114	0.061***	0.197***
	(0.023)	(0.097)	(0.018)	(0.065)
Observations	111,395	109,963	35,206	34,994
R-squared	0.183	0.193	0.115	0.115
Mean dep. var	0.451	1.311	0.291	0.667
B. Stem family	-0.021	-0.102	-0.007	-0.063
	(0.024)	(0.092)	(0.017)	(0.040)
Observations	118,626	117,075	37,748	37,512
R-squared	0.178	0.190	0.108	0.108
Mean dep. var	0.455	1.315	0.296	0.678
C. Polygyny	-0.031	-0.307***	0.117	0.195
	(0.019)	(0.042)	(0.102)	(0.296)
Observations	118,014	116,478	37,281	37,051
R-squared	0.179	0.190	0.110	0.109
Mean dep. var	0.455	1.314	0.296	0.679
D. Virilocality	0.007	0.074	-0.015	0.007
	(0.028)	(0.099)	(0.023)	(0.063)
Observations	118,243	116,708	37,355	37,125
R-squared	0.179	0.190	0.111	0.110
Mean dep. var	0.453	1.310	0.295	0.678

Notes. In order to double check previous results, the sample has been restricted to only those countries for which domestic violence module is available. Survey weights are always included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

Table A.9: Cultural correlates - types of settlements (restricted sample)

	Women		**Men**	
	(1) attitude dummy	(2) attitude index	(3) attitude dummy	(4) attitude index
Settlements types				
Nomadic	-0.032	0.009	0.112***	0.491***
	(0.076)	(0.278)	(0.034)	(0.181)
Isolated	0.075*	0.343**	-0.037	-0.060
	(0.041)	(0.166)	(0.035)	(0.105)
Compact	-0.007	0.032	-0.041***	-0.118**
	(0.034)	(0.112)	(0.014)	(0.047)
Observations	114,966	113,526	36,743	36,517
R-squared	0.179	0.188	0.111	0.110
Mean dep. var	0.459	1.327	0.296	0.681

Notes. In order to double check previous results, the sample has been restricted to only those countries for which domestic violence module is available. Survey weights are always included. Standard errors clustered at the ethnicity level. Country fixed effects and religion dummies are included. Age, education (years), wealth index, working dummy, number of births, household size, partner's age and education and a urban dummy are included as controls. The omitted category is sedentary settlements. ***,** and * indicate significance at 1%, 5% and 10% levels, respectively.

A2 Dependent variables

The dependent variable of interest is domestic violence, in terms of actual episodes and its acceptance as a practice.

Concerning actual violence, the individual-level data on violence exposure to intimate partner violence are taken from the most recent wave of the Demographic and Health Surveys (DHS), for all the African countries for which the domestic violence module is available. This is a special module included only in some DHS survey rounds for some countries, designed to obtain information on the extent to which women experience spousal violence. Two different functional forms are employed: a dummy called *'Violence ever'*, indicating whether the woman has ever been victim of at least one form of domestic violence, and a *'Violence index'*, given by the sum of different forms of intimate partner violence to which the woman has ever been exposed. We need to restrict the attention to six different forms of aggressions common to all the countries included in the sample[28]. The list of violence related questions is reported in Appendix Table A.10.

Table A.10: Questions about domestic violence, perpetrated by spouse

Types of Violence	**DHS Questions**
Physical Violence	(1) Ever been pushed, shook or had something thrown (2) Ever been slapped (3) Ever been punched with fist or hit by something harmful (4) Ever been kicked or dragged (5) Ever been strangled or burnt
Sexual Violence	(6) Ever been physically forced into unwanted sexual intercourse

Notes. Source: DHS, Women's Questionnaire.

The dummy *'Violence ever'* permits to investigate the impact of ancestral lifeways on the probability of violence. According to this variable, a woman who has experienced just one type of aggression and a woman who has been victim of several forms of violence, are classified in the same way. In order to distinguish between these two scenarios, we adopt a measure of violence intensity, the *'Violence index'*. The *'Violence index'* is generated as the sum of different types of domestic violence episodes to which the woman has ever been exposed. More specifically, this index is equal to 0 if the woman has

[28]Some questions on the occurence of specific types of either physical or sexual violence are not included in all the considered survey rounds.

never experienced any of the spousal violence forms listed in Table A.10; it takes value 1 when the woman has ever experienced just one of the abuses listed in Table A.10; it takes value 2 when she has been victim of two of these aggressions, and so forth. Focusing on 6 acts of either physical or sexual violence, we end up with an index ranging from 0 to 6.

Concerning women's and men's attitudes towards domestic violence, we take the individual-level data on the acceptance of violence from women and men DHS datasets, respectively. These two datasets contain a set of attitudinal measures that reflect some combination of women's and men's attitudes towards both spousal violence and women. Five questions in the DHS ask respondents about the circumstances under which it would be acceptable for a man to beat his wife. These circumstances are: wife goes out without telling him; wife neglects the children; wife argues with him; wife refuses to have sex with him; wife burns the food. As our dependent variable, we use a *'Violence attitude dummy'*, equal to 1 if the respondent believes that violence is acceptable in at least one out of the five circumstances included in the survey. In addition, we construct a *'Violence attitude index'*, given by the sum of the circumstances in which the respondent thinks it would be acceptable for a man to beat his wife.

A3 Independent variables

In this section, we present how independent variables have been constructed, distinguishing between the main regressors (the ethnographic variables) and the contemporary controls.

A3.1 Ethnographic variables

Brideprice: it is a dummy variable, indicating whether the prevalent mode of marriage prior to industrialization was characterized by brideprice or wealth to bride's family, bride service to bride's family or token brideprice. It comes from variable v6 of the Ethnographic Atlas.

Plough: the measure is constructed from variable v39 of the Ethnographic Atlas. According to this variable, ethnicities are classified into one of the following mutual exclusive categories: *(i)* the plough was absent; *(ii)* the plough existed but it was not aboriginal; and *(iii)* the plough was aboriginal and found in the society prior to contact. Using this categorization, we construct an indicator variable equal to 1 if the society used the plough

(without distinguishing between aboriginal or not) and 0 otherwise.

Agriculture main source: it is a dummy variable, constructed from variable v42 of the Ethnographic Atlas. Ethnicities are grouped into one of the following categories: *(i)* gathering contributes most; *(ii)* fishing contributes most; *(iii)* hunting contributes most; *(iv)* pastoralism contributes most; *(v)* casual agriculture contributes most; *(vi)* extensive agriculture contributes most; *(vii)* intensive agriculture contributes most; *(viii)* two or more sources equally contribute; *(ix)* agriculture contributes most (type unknown). Our constructed indicator variable captures societies belonging to categories *(v)*, *(vi)*, *(vii)* or *(ix)*.

Dependence on agriculture/gathering/hunting/fishing/husbandry: we measure the level of dependence from these five production activities using variables v1, v2, v3, v4 and v5 of Murdock's Atlas, which report the share of subsistence obtained from each activity into 9 broad bands. Our measures of dependence on these activities are generated using the middle point of these intervals.

Female participation in agriculture/gathering/hunting/fishing/husbandry: the measure uses variables v50, v51, v52, v53 and v54 from the Ethnographic Atlas. Ethnicities are grouped into one of the following categories measuring female participation in each of the activities of interest: *(i)* males only; *(ii)* males appreciably more; *(iii)* equal participation[29]; *(iv)* females appreciably more; *(v)* females only[30]. Using this information, we construct an indicator variable that takes value 1 if there was equal gender participation or if women contributed more than men or if women were the only participants to the considered production activity.

Endogamy: it is constructed from variable v15 of the Ethnographic Atlas. We define endogamous those ethnicities whose community marriage organization was characterized by demes, i.e. communities which reveal a marked tendency toward local endogamy, and clan communities.

[29]The original classification in Murdock's Atlas makes a distinction between "differentiated but equal participation" and "equal participation, no marked differentiation". Since this distinction is not relevant for our purpose, we decide to combine these two categories.

[30]If the activity is present but sex participation is not specified or if the activity is absent, then there is no measure of female participation.

Stem family: this variable is constructed from variable v8 of the Ethnographic Atlas, to identify ethnic groups historically characterized by stem families. The other categories in the original variable include: independent nuclear family (both monogamous and occasional polygyny), independent polyandrous families, polygynous (distinguishing between unusual co-wives pattern and usual co-wives pattern), and large extended family.

Polygyny: the measure uses variable v9 from the Ethnographic Atlas, which classifies ethnicities into the following categories based on marital composition: *(i)* independent nuclear (monogamous); *(ii)* occasional polygyny; *(iii)* preferentially sororal (cowives in same dwellings); *(iv)* preferentially sororal (cowives in separate dwellings); *(v)* non-sororal (cowives in separate dwellings); *(vi)* non-sororal (cowives in same dwellings); and *(vii)* independent polyandrous families. Our constructed indicator variable captures societies belonging to categories *(ii)*, *(iii)*, *(iv)*, *(v)* or *(vi)*.

Virilocality: it is constructed from variable v12 of the Ethnographic Atlas. Ethnicities are grouped into the following categories based on postmarital residence rules: *(i)* avuncular; *(ii)* ambilocal; *(iii)* optionally uxorilocal or avunculocal; *(iv)*optionally patrilocal or avunculocal; *(v)* matrilocal; *(vi)* neolocal; *(vii)* no common residence; *(viii)* patrilocal; *(ix)* uxorilocal; and *(x)* virilocal. We create an indicator for ethnic groups that are patrilocal or virilocal.

Nomadic/sedentary/isolated/compact settlements: this measure comes from variale v30 of Murdock's Atlas. Ethnicities are grouped into the following categories based on settlement patterns: *(i)* nomadic or fully migratory; *(ii)* seminomadic; *(iii)* semisedentary; *(iv)* compact but impermanent settlements; *(v)* neighborhood of dispersed family homesteads; *(vi)* separeted hamlets forming a single community; *(vii)* compact and permanent settlements; and *(viii)* complex settlements. Starting from this classification, we create a dummy 'Nomadic' equal to one for societies belonging to categories (i) or (ii), a dummy 'Isolated', equal to one for societies beloging to category (v), a dummy 'Compact', which refers to those ethnic groups belonging to categories (iv) or (vii), and a dummy 'Sedentary', including societies belonging to categories (iii), (v), (vi), (vii) or (viii).

A3.2 Contemporary controls

Throughout the analysis, we use a set of individual covariates as contemporary controls in all our regressions. This set of controls includes respondent's and his/her partner's age and years of education, a dummy indicating whether the wife is currently working, the total number of children ever born, the household size, a dummy equal to 1 if the household resides in a urban area and a wealth index. This last control is a composite measure of household's socioeconomic status. It is a continuous variable, calculated by the DHS using data on a household's ownership of selected assets, materials used for housing construction and types of water access and sanitation facilities. It is constructed using principal component analysis and it places individual households on a continuos scale of relative wealth. All these variables come from the Demographic and Health Surveys.