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Tim Krieger, Laura Renner

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D-79085 Freiburg

Polygyny, Inequality, and Social Unrest*

Tim Krieger† Laura Renner‡

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Abstract

This paper proposes three theoretical mechanisms through which polygyny may be related to social unrest. The mechanisms are related to different dimensions of grievance-inducing and, partly, greed-related inequality, which may occur in polygynous societies. These dimensions include (i) economic, reproductive and social inequality resulting in relative deprivation among non-elite men; (ii) inequality within elites when it comes to the distribution of resources and inheritance, both related to the relative position of dependent family members in a clan; and (iii) gender inequality in general. Using data for 41 African countries from 1990–2014, we provide evidence for these mechanisms and their relationship to social unrest. We find that especially the first and third dimension of inequality are correlated with social unrest. Furthermore, we consider several potential counter-arguments but do not find support for them.

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†Department of Economics, University of Freiburg, Wilhelmstr. 1b, 79085 Freiburg i. Br., Germany; E-mail: tim.krieger@vwl.uni-freiburg.de; Phone: +49 761 203 67651; and CESifo, Munich, Germany.

‡Department of Economics, University of Freiburg, Wilhelmstr. 1b, 79085 Freiburg i. Br., Germany; E-mail: laura.renner@vwl.uni-freiburg.de; Phone: +49 761 203 67652.

Plural marriage, bred of inequality, begets violence

The Economist, Dec 19, 2017

1 Introduction

Polygyny, i.e., the practice of one man being married to more than one wife at the same time,[1] is a surprisingly common phenomenon. According to WomanStats, it is practiced in 89 countries worldwide by at least minority groups of the population. In 50 out of these 89 countries five per cent or more of women live in a polygynous marriage.[2] Polygyny is most present in Africa, where it occurs in all countries with varying intensity. Africa is also a continent with a history of intense conflict activity ranging from local unrest to civil and interstate war (Elbadawi and Sambanis 2000; Salehyan et al. 2012).

Previous research has linked polygyny with violence and conflict by, e.g., attributing the onset of armed conflict and civil war to the existence of polygyny. The respective contributions share a common reasoning: because of polygyny only some men can marry, while others cannot. Hudson and Matfess (2017) argue that the tightening of marriage markets comes with the emergence of bride prices,[3] so that poorer families cannot afford marriages of their sons. As a consequence, a 'pool of frustrated unmarried men' is created, arguably willing to attack other groups so that (large-scale internal) conflict (Kanazawa 2009) or intergroup violence (Koos and Neupert-Wentz 2019) emerges. Furthermore, these unmarried men are said to be easily mobilized for organized group violence such as terrorism (Hudson and Matfess 2017) or rebellions (Mokuwa et al. 2011). However, this argument—culminating in the claim that polygyny constitutes "the first law of intergroup conflict (civil wars)" (Kanazawa 2009, p. 25)— is not undisputed in the literature; e.g., Gleditsch et al. (2011) argue that—if at all—gender inequality, but not polygyny, explains armed conflict.

This paper argues that a narrow focus on the pool of unmarried men and unequal marriage markets neglects important further mechanisms that may explain how polygyny is linked to instability, social unrest and conflict within societies. Our aim is to provide a comprehensive theory of various types of inequality serving as mediating effects in the polygyny-conflict nexus. Specifically, we identify three different dimensions of grievance-inducing and, partly, greed-related inequality that are associated with polygyny. Acknowledging that at least some types of polygyny-related grievances are felt personally in the first place, we turn—in contrast to the existing literature—our attention to

[1] The term 'polygyny' is often used synonymously with the subordinate term 'polygamy' which also comprises 'polyandry', i.e., the (rare) practice of one woman marrying more than one husband.

[2] In these countries, polygyny is practiced either (i) in accordance with existing family law, or (ii) under a parallel (religious) legal system, or (iii) against the law, but ignored by the judiciary.

[3] Bride prices can take the form of money, cattle, land or jewelry and are paid by the family of the groom to the family of the bride.

small-scale conflict activities, where collective action problems ought to play a lesser role. We distinguish four different types of social unrest (violent, non-violent, organized and spontaneous) that may result from the prevalence of polygyny in a society and test them. We thereby ask whether and how strongly the underlying mechanisms that we propose affect these outcomes.

As a very old, but specific marriage institution with interesting implications, polygyny has become the object of ongoing research in many disciplines including anthropology, biology, economics, political science and (social) psychology. Theoretical contributions make a strong case that the existence of polygynous marriage institutions in a society raises—either directly or indirectly—the potential for conflict. For instance, according to the 'male compromise theory' (Alexander 1987; Betzig 1986; Lagerlöf 2010; Henrich et al. 2012) monogamy became more common only when the power and privileged position of existing polygynous elites were threatened by the rapidly growing frustration among unmarried non-elite men. Others argue that these very frustrations are related to artificially biased sex ratios (Henrich et al. 2012; McDermott 2015a), economic (Becker 1974; Jacoby 1995) and status concerns (Zeitzen 2008; Betzig 1986). Since polygyny can hamper economic development (Tertilt 2005, 2006), with low growth rates being strongly positively related to civil conflict (Miguel et al. 2004), there may also be indirect channels that explain the positive relationship between polygyny and conflict.

In our own theoretical framework, we focus specifically on norms, traditions and social patterns that are associated with polygyny and may serve as mediating channels to foster social unrest in the first place, but which also may ultimately result in larger-scale conflicts. We argue that polygyny is closely connected to three different forms of mostly grievance-inducing, but to some degree also greed-based inequality that potentially threaten the peace and stability of societies:

(i) *Vertical inequality between elite and non-elite men*: Polygyny implies a monopolization of women by the (local or ruling) elite. This reinforces both economic inequality and unequal reproductive opportunities for men. Specific outcomes include low social mobility of males, tight marriage markets which exclude poor men through high bride prices, and reproductive frustration among non-elite men.

(ii) *Horizontal inequality within the polygynous elite:* The polygynous elite (often organized as clans) may themselves be prone to instability and internal violence as they compete for resources as well as affection on a daily basis. Especially when it comes to inheritance and succession, large polygynous families face the challenge that many (male) heirs exist who may try to (selfishly) secure their share.

(iii) *Gender inequality:* While the previous two types of inequality refer to inequality among men (since they will mainly be the ones who enter into conflict), highly patriarchal structures and inequality between sexes make up the core of polygynous family structures. In order to earn the bride price, women are often 'sold' into marriages by their families, thereby reinforcing the dominant role of males while foregoing the benefits of more gender-diverse societal and political structures.

Despite relatively strong theoretical predictions about the conflict-inducing effect of polygyny, existing empirical evidence is limited to specific channels linking polygyny and conflict or specific local settings. The lack of a sufficiently large number of comparable studies leaves the empirical evidence somewhat inconclusive. Large-n studies sometimes lead to opposite results, such as said contributions by Kanazawa (2009) and Gleditsch et al. (2011) who cannot agree on whether it is polygyny or misogyny that explains the onset of civil war. Except for Mokuwa et al. (2011), who discover a direct conflict effect of polygyny in Sierra Leone, country studies consider the polygyny-conflict nexus at most in passing.

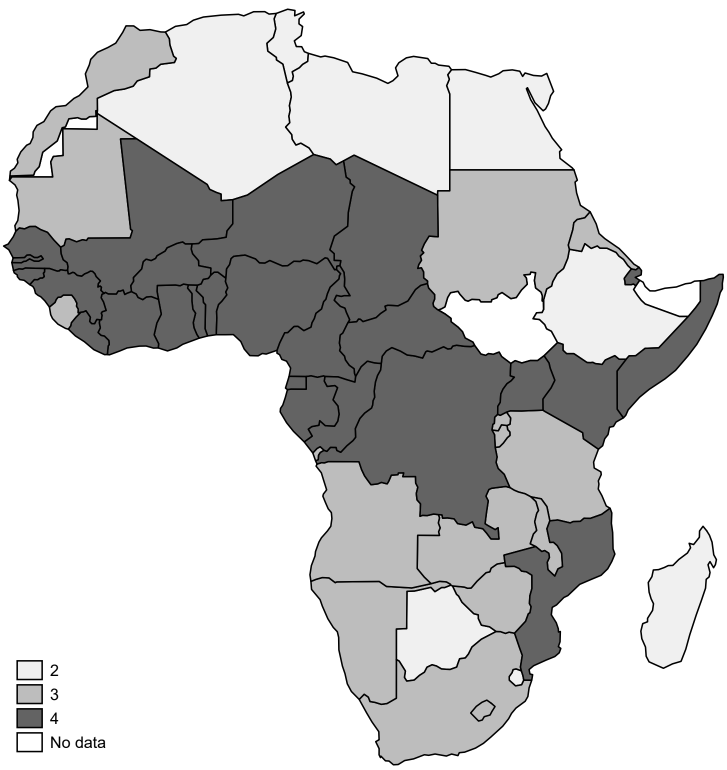
It is, however, possible to arrive at a clearer picture by extending the scope of analysis to variables that are broadly related to both polygyny and conflict. For instance, with respect to polygyny, Hudson and Matfess (2017) show that bride prices, which are often an immediate consequence of polygyny, increase violent conflict. Summarizing marriage market obstruction due to polygyny, bride prices or skewed sex ratios with males outnumbering females, Hudson and Hodgson (2020) find a positive association with terrorism. Hudson et al. (2015) investigate clan governance, where the power of clans is secured by polygynous marriages, and its negative effects on state stability and security across societies. When it comes to outcomes similar to conflict in their negative effects on society, e.g., McDermott (2015a) finds that polygyny lowers the physical security of children and women while increasing defense spending.

Even if it is not polygyny itself, in all these cases polygyny appears, at the very least, to lay the basis for or significantly contribute to the onset of social unrest and other types of conflict. Nevertheless, neither the underlying theoretical mechanisms nor the empirical evidence are sufficiently well developed to provide a comprehensive perspective on the polygyny-conflict nexus, let alone on the specific linkages between polygyny, inequality and conflict. Our paper will shed light on this nexus by developing a comprehensive theory of these linkages, which we will then put to a first empirical test using time-series cross-section data from 41 African countries (see Figure 1 for the prevalence of polygyny in Africa) for the years 1990-2014 with data drawn from the 'Social Conflict in Africa Database' (SCAD).

As another important addition to the existing literature, we test a newly compiled measure of horizontal inequality within polygynous families. More specifically, we provide data on inheritance laws and traditions in polygynous societies, which ought to provide substantial insights on the social and economic stratification among wives and potential heirs, arguably fostering within-elite conflict dynamics (Andreski 1968).

To preview our findings, our empirical analysis suggests that medium levels of polyg-

Figure 1: ***Polygyny scale 2010, Africa***



Notes: Own map using data from WomanStats (PW-Scale), scaled in 2010. A darker color (corresponding to a higher category of the scale) indicates greater prevalence of polygyny, with more than 25% of women in polygynous unions in the highest category.

yny, gender inequality and vertical economic inequality are positively associated with both the intensity and incidence of all four types of social unrest under consideration, i.e. (i) violent and (ii) non-violent unrest as well as (iii) organized and (iv) spontaneous social unrest. For horizontal inequality, the feasibility of mobilization seems to be particularly important. Countries with higher average incomes and high levels of inequality within polygynous families have a higher probability of unrest compared to similar countries without horizontal inequality. To test the robustness of our analysis, we challenge our theoretical arguments by testing alternative and complementary hypotheses such as strategic behavior of elites, population growth that relaxes tight marriage markets, and an excess of male deaths that could possibly be balanced by polygynous marriages.

The remainder of the paper is organized as follows. Section 2 develops our theoretical argument in detail and introduces three types of inequality that are related to polygyny. We elaborate on the linkages between these inequalities and polygyny and show how they could ultimately lead to social unrest. Section 3 is on data and methodology, followed by section 4 presenting our empirical results. Section 5 discusses alternative hypotheses and, finally, section 6 concludes.

2 Polygyny, Inequality and Social Unrest: Theoretical Considerations

2.1 Vertical inequality between elite and non-elite men

Rebellions and social unrest occur when grievances are sufficiently acute that people want to engage in violent conflict (Collier and Hoeffler 2004). This argument, which corresponds to the *frustration-aggression* (FA) hypothesis (Dollard et al. 1939), assumes that at some point personal frustrations become so pressing that they are converted into violent action.[4] Our paper focuses on grievances that are related to a lack of reproductive and social or economic opportunities. We argue—in line with the existing literature—that among males an (externally imposed) scarcity of women increases *intra-sexual competition for reproduction* (Henrich et al. 2012; McDermott 2015a), arguably resulting in substantial frustration among those who ultimately end up in the pool of unmarried men.

This frustration is further aggravated when the number of wives and children serves as an indicator of social status (Zeitzen 2008; Betzig 1986),[5] increases (e.g., agricultural) productivity (Becker 1974; Jacoby 1995) or is a means to provide for one's old age (Tertilt 2005). That is, we argue that men—at the individual level—experience frustration resulting from the unfulfilled desire to marry and start a family. This spurs feelings of

[4] Davies (1973, p. 251) even states that "violence is *always* a response to frustration" (emphasis added).

[5] A prominent example for polygyny used as a status symbol is Jacob Zuma, former president of South Africa, for whom polygyny indicated both status as well as his link to tradition (Zeitzen 2010).

relative deprivation (Gurr 1970) because other males have easier access to the marriage market, but are felt not to deserve it. This is further aggravated by a lack of economic opportunities.

The literature documents several negative consequences resulting from these grievances. For example, skewed sex ratios with men outnumbering women are associated with higher crime rates (Hudson and den Boer 2004) and violence (Hudson and den Boer 2002; McDermott 2015a). A biological reason for that could be higher levels of aggression or testosterone among unmarried young men (McDermott et al. 2007; Mazur and Michalek 1998). More specifically, Henrich et al. (2012) link the pool of unmarried men resulting from polygyny with higher occurrences of rape, murder, assault and robbery. Edlund et al. (2013) explain increasing crime rates in China with skewed sex ratios and tight marriage markets.

Individual grievances are reinforced at the societal level. Polygyny implies a monopolization of women by a small group of men in society, usually the (local) ruling elite or a clan. Because women are scarce, bride prices go up. Furthermore, households with several wives and—due to their high fertility—many children are bigger (Tertilt 2005), making polygyny costly. Therefore, only rich, highly productive, or powerful men can afford polygynous marriages (Becker 1974; Betzig 1986; Jacoby 1995; Gould et al. 2008, 2012; Lagerlöf 2010; Tertilt 2005; Hudson and Matfess 2017). For instance, Gould et al. (2012) show that in Cote d'Ivoire especially men with high *non-labor* income spend their wealth on as many women (and eventually children) as possible. This leads to a divide in society, or *vertical inequality*, between elite and non-elite men. The low social mobility of males perpetuates economic inequality and unequal opportunities of non-elite men.[6]

Combining this divide in society with ethnic cleavages, Koos and Neupert-Wentz (2019) use recent Afrobarometer survey data and show that unmarried men in ethnic groups that have been polygynous historically are more prone to violence and feel more often deprived than unmarried men in monogamous ethnic groups. Ethnic cleavages may aggravate frustrations when the ruling elite also monopolizes women from an ethnic minority, leaving minority men without reproductive opportunities. Furthermore, intergroup conflict is more likely to emerge when polygynous and monogamous groups share a common regional border (Koos and Neupert-Wentz 2019).

When elite families grow faster than the rest of society because of polygynous marriages, low social mobility will be experienced by non-elite men particularly strongly on the labor market (De la Croix and Mariani 2015). Elite families need more resources and jobs, which is why they extract resources from the rest of society or allocate influential

[6] According to Zeitzen (2008, p.159-161), African countries, mostly in their urban areas, experience 'modern' forms of polygyny today. Men are officially married monogamously but have 'outside wives' signaling status and adherence to both Western and traditional norms. Note that since private polygynous unions are typically not registered officially, our empirical analysis may underestimate current polygyny levels. Hence, our results should be interpreted as lower bounds.

jobs within their group (Andreski 1968). For instance, Hudson et al. (2015) argue that jobs in state ministries or state-owned firms are of particular interest for elite families to secure power and the influence of their clan. Through this mechanism, polygyny helps to avoid—potentially efficient—inter-group competition (Henrich et al. 2012) that could increase the pie that is available to satisfy economic needs. Effectively, the outcome is a zero-sum game in which the ruling elite or clan attracts the prize. Therefore, polygynous clan rule and clan-based job allocation increase instability and conflict (Hudson et al. 2015).[7]

In sum, there is a complex link between polygyny, vertical inequality and conflict. Only when some men are of higher status, have higher productivity or are wealthier, can they afford polygynous marriages. Once polygyny is established, however, it hampers the social mobility of non-elite men, thereby strengthening the position of the elite further. Since the lack of reproductive opportunities in combination with negatively perceived social stratification and relative deprivation is assumed to foster personal frustration and grievances, we expect a high potential for unrest and ultimately conflict (Gurr 1970; Collier and Hoeffler 2004). For instance, the promise of money (for bride prices) or easier access to women as well as the prospect of overthrowing the current ruling elite could be reasons to start a rebellion or—at least—enter into social unrest.

Numerous case studies on violent events, mobilization and violent rebel groups are supportive of this view, although the link to polygyny is often only indirect. For instance, rising bride prices in South Sudan (paid mostly in the form of cattle) resulted in increasingly violent cattle raids (Hudson and Matfess 2017; Guardian 2017). Rising bride prices also influenced the recruiting strategies of *Boko Haram* in Nigeria (Hudson and Matfess 2017).[8] In the beginning, Boko Haram covered wedding costs for their members as otherwise they would not have been able to marry. Later on, the group resorted to abducting women (and girls) and marrying them to fighters.

In Uganda and South Sudan, the *Lord's Resistance Army* abducted both girls and boys in order to recruit soldiers. While boys had to fight, girls were married to fighters, especially to those high in rank (Baines 2014). Finally, vertical inequality arguably also explains Islamic suicide terrorism. In their belief, suicide terrorists have few earthly benefits to lose but much to gain in terms of heavenly rewards, possibly including 72 virgins (Thayer and Hudson 2010). These anecdotes indicate that tight marriage markets

[7]Anecdotal evidence from the Gulf countries supports this view: It is not (managerial) capabilities that are decisive for succession in family business, but family ties: the "scope for feuds is increased by the complexity of family structures, thanks to high fertility rates and occasional polygamy" (Economist 2016, Feb 4th).

[8]Note that Cook and Thies (2019) have challenged this view, as their empirical analysis does not find support for a link between rising bride prices and political violence in a cross-country study. However, as the data on bride prices on a cross-country level is scarce and time invariant, we do not think that their analysis can invalidate the findings by Hudson and Matfess (2017). We will return to this issue in section 5.

indeed provide fertile ground for personal frustration and conflict.

They also reveal, however, that personal frustrations are more likely to result in small-scale conflicts than in large-scale conflicts such as civil war, although it cannot be excluded that continued local conflicts will eventually grow to a severe nation-wide conflict. This is supported by theory. The FA hypothesis suggests that personal frustration ought to lead to aggression and violence as an *individual* response, which arguably will rarely extend beyond a very narrow local context. In order to evolve to a larger local or even societal conflict, similar personal frustrations must be felt by larger groups in society. To actually result in a conflict, at least two conditions need to be fulfilled: First, like-minded (frustrated) non-elite men need to join and form an in-group, which will start a rebellion against the elite (the out-group); and second, the collective-action problem (Olson 1965) needs to be overcome.

Unless some broader identity issues (e.g., ethnic divides) are involved, sufficiently large groups are relatively unlikely to be mobilized to enter into larger-scale conflicts. Therefore, it is reasonable to assume small-scale conflicts and social unrest as the natural outcomes of polygyny-induced grievances. Furthermore, as most pressure is on young and unmarried men, we expect unrest, if it occurs, to be violent and organized. In practical terms, we expect to see young men raiding, starting rebellions against the (local) elite, and being easy recruits for those actors who are interested in organized violence.

For our subsequent empirical analysis, we summarize these arguments in our first hypothesis:

Hypothesis 1: *Vertical inequality (in terms of reproductive and/or economic inequality) between elite and non-elite men increases the likelihood of social unrest in polygynous societies.*

2.2 Horizontal inequality within the polygynous elite

At first glance, being part of the elite appears to be a privilege, seemingly providing each single (male) elite member with access to power and resources. In a polygynous society, however, this very access might be highly unequally distributed among members of the elite, implying *horizontal inequality* and possibly leading to elite-internal conflicts which result from personal frustrations of elite members. More specifically, there is often an unequal treatment within polygynous families with respect to the rank of wives which translates to a similar ranking of sons. Typically, one observes 'favorite wives', 'first wives', or wives who are considered 'lesser wives', e.g., because of infertility. This ranking ought to be reflected in the allocation of resources within the family, too.

For example, Wagner and Rieger (2015) show that the ranking of wives has implications for their children's body height, arguably caused by different levels of nutrition or nursing.[9] Competition among co-wives may lead to strategic fertility choices with an attempt to be particularly fertile or have a son, as Rossi (2019) shows for polygamous families in Senegal. According to Senegalese Islamic inheritance laws (Lambert and Rossi 2016), having a son in particular insures a co-wive against inheriting little or nothing once her husband passes away.

Evidence from Ethiopia indicates that the ranking of wives matters for the socio-economic outcomes of their children: Sons of first wives receive more education compared to second wives' sons or sons from monogamous unions (Uggla et al. 2018). Experimental evidence from public good games in Nigeria shows that spouses in polygynous unions behave less altruistic and more reciprocal than monogamous spouses (Barr et al. 2019). Akresh et al. (2016) find that cooperation is higher among co-wives than between wives and husbands in Burkina Faso, which results in increasing agricultural productivity of polygynous households compared to monogamous ones because co-wives can condition their own behavior on that of the other wives.

Finally, one observes that it may not be possible for a polygynous family—despite belonging to the wealthier part of society—to pay the bride price for every son, as observed, e.g., in rural Ethiopia by Gibson and Gurmu (2011). This is more likely, the higher the bride price and the larger the number of sons. Hence, sons effectively compete today for resources available to them tomorrow (Hartung et al. 1982).

Another dimension of conflict-inducing inequality between elite members is related to generational succession (Andreski 1968). Once the elite leader or a clan chief passes away, a successor must be found.[10] Violent conflict may arise when candidates for the leading position in the elite are hostile toward each other. In addition to the struggle for power, most of these conflicts are also about resources. Polygyny enters the picture once the successor is to be selected among the sons of the late leader, who may again try to secure—possibly violently—as many assets as possible as their share of the bequest.

The resulting conflicts may intensify when inheritance is organized unequally from the outset; e.g., when the ranking of wives translates into the heirs' claims or when one person is strongly preferred and selected to be the sole heir. More generally, any unequal treatment during the patriarch's lifetime and any inequality-inducing inheritance rule may aggravate conflict within the elite. For instance, unequal inheritance rules feed back into today's parental investment in education in Ethiopia (Gibson and Gurmu 2011; Gibson and Lawson 2011).

Note that while we stick to the grievances literature in most of our paper, this type of inequality—although certainly causing individual-level grievances—may also be inter-

[9] Arthi and Fenske (2018) find that polygyny correlates with higher child mortality, which the authors explain by selection of less-educated and poor women into polygynous marriages, not by a lack of resources in these families.

[10] Many leaders plan their own succession during lifetime by, e.g., appointing a crown prince. However, this does not solve the general problem discussed here.

preted as 'greed' in the terminology of Collier and Hoeffler (2004). In this respect, the death of the clan chief ought to be seen as "atypical circumstances that generate profitable opportunities" (Collier and Hoeffler 2004, p. 564) for utility-maximizing—or *greedy*—family members to increase their share by starting a violent family feud.

As we will propose inheritance rules in polygynous societies as a proxy for within-elite conflict below, it is worthwhile to take a closer look at these rules. Often, inheritance follows institutionalized rules which are either codified in family or inheritance law or constitute (religious) traditions. Islamic family law, for example, includes the rather strict provision that a man may marry up to four wives as long as he treats them equally (Rohe 2015, p. 274). In addition, it prescribes rather rigid quotas for different classes of heirs. When there are sons, daughters and multiple wives, the wives share together the *wife's quota* (which is one-eighth) while all sons get a similar share (always double the share of daughters) (Rohe 2015, pp. 127-130).[11] Thus, inheritance following Islamic law can be considered rather equal.[12]

In contrast, in Uganda, the first wife has larger claims than subsequent wives as matrimonial property is assigned differently (Ugandan Marriage and Divorce Bill 2009).[13] This ranking ultimately translates to their children as well. In South Africa, strict *primogeniture* (i.e. the oldest son inherits everything) applies. Here, the oldest son of the first wife is the sole heir (Scholz and Gomez 2004). In yet other countries, differentiated inheritance practices due to, e.g., the existence of ethnic groups with their own traditions can be found.[14]

In case of differential inheritance or primogeniture, those sons who receive little or nothing may feel deprived and therefore be tempted to violently push away the sole heir or the heirs receiving larger shares, respectively. Given that there are multiple wives of the old leader, the number of potential heirs is large and family (or kin) bonds are more often

[11] Note that throughout the paper we do not consider daughters with regard to inheritance or unequal treatment within families. The reason is that girls have very little rights or power in polygynous societies; furthermore, daughters/sisters are married as early as possible to either build coalitions with other elite families or to earn the bride price, thereby reducing the need to support them through inheritance.

[12] Islamic inheritance law has been very persistent over time because of existing patriarchal structures in society and the importance of inheritance rules in the Quran (Rohe 2015, p. 292). Muslim countries do not necessarily apply *shari'ah*-based inheritance laws when secular inheritance laws exist at the same time. Then, which law is applied is usually a matter of legal practice. More traditional parts of society may (informally) use the religious rules, even if this is illegal.

[13] Interestingly, this unequal treatment prevails in spite of Islamic law formally banning it.

[14] The existence of different ethnic groups with differences in marriage and inheritance law is a major challenge for our empirical analysis as collecting group-specific data on traditions, laws and norms is difficult. If grievances are severe enough in a sufficiently large sub-population, however, their consequences ought to be felt at the national level as well. In our collection of inheritance laws and patterns at the country level, we apply a conservative coding rule and assign lower levels of inequality in inheritances when a sub-population with unequal inheritance rules is relatively small and/or there are other groups with equal inheritance rules. For example, the people of Arsi Oromo in Ethiopia practice primogeniture (Gibson and Gurmu 2011, p. 2203), the most unequal form of inheritance. However, since the majority of the population follows equal inheritance practices, we assign only a slightly unequal inheritance pattern. More details on the coding will be provided in section 3. The complete coding is available upon request.

competitive or even hostile than friendly. This is mainly due to the fact that the sons are half-brothers who are not next-of-kin and who have different mothers who themselves may compete with each other. Note, however, that even a strictly equal treatment of all sons with respect to the allocation or inheritance of assets, resources and wealth may not shield the polygynous elite from internal conflict. In particular, this ought to be a problem when the number of heirs is so large that individual shares turn out to be very small. Then, some heirs could try to (violently) reduce the number of competitors in order to seize as much power and resources as possible, e.g., by plotting a coup. This would again speak more to *greed* as the main motivation and polygyny would have a direct rather than indirect effect (via inheritance) on ensuing unrest.

So far, the described mechanisms speak to small-scale feuds which are limited to a relatively small group within a society, the elite. As long as the elite accommodates the broader population's basic needs and provides security (similar to Olson (1993)'s 'stationary bandit'), the limited within-elite feuds may not spread to the rest of society. However, it is doubtful that those who aim to start a fight against other elite members will refrain from involving broader parts of population to increase their power, while those who need to defend themselves will almost certainly resort to the help of loyal supporters. Conditional on all involved elite members having access to sufficient influence and—even without having inherited—resources for mobilization or organization (Collier et al. 2009), larger rebellions, coups and civil wars become more likely.

In sum, unequal treatment within polygynous elites and clans ought to foster unrest and destabilization of societies in at least two ways: first, through the distribution of resources during the lifetime of the patriarch, and second, through inheritance and succession of the late leader. These effects may be conditional on the availability of resources. Accordingly, we formulate our second hypothesis as follows:

Hypothesis 2a: *Horizontal inequality within the polygynous families—directly or indirectly—increases the risk of social unrest.*
Hypothesis 2b: *For horizontal inequality within the elite to extend to broader parts of the population, sufficient resources for mobilization are necessary.*

2.3 Gender inequality

Conflict and war are usually associated with men, as societies typically assign roles in conflict and war according to gender, with men as the primary—and usually the only—fighters (Goldstein 2003). Summarizing the reasons for this role played by men, Goldstein (2003) mentions, e.g., biological and evolutionary aspects (e.g., men's physique or hormonal endowment), women's status in society (e.g., whether their more peaceful approaches of conflict resolution are valued; see below) and marriage patterns (e.g., patrilocality vs.

matrilocality[15]).

Similarly, more general gender norms have been argued to be rooted in specific past circumstances, which became relevant in the course of evolution. For instance, Boserup (1970) and Alesina et al. (2013) argue that traditional agricultural practices influenced the historical gender division of labor and the evolution and persistence of gender norms, including gender inequality.[16] Furthermore, norms and constructions of masculinity serve functional roles in war systems (Goldstein 2003). Therefore, after discussing the conflict-inducing inequality between men (i.e., potential fighters), we now turn to the role of inequality between sexes as a potential trigger for destabilization and social unrest, especially in polygynous societies.

Polygyny is—by definition—an unequal gender norm, since men can have more than one wife, but not women several husbands. Polygynous marriage systems are associated with patriarchal values (McDermott 2015a), the subordination of women (Hudson et al. 2015, 2020), bride prices (which hardly ever go to the bride) and patrilineality (Goody 1973; Hudson and Matfess 2017). Henrich et al. (2012) link polygyny to higher spousal age gaps, higher fertility rates and lower gender equality. Thus, polygyny may be seen as a subset of misogynous practices in a society or might help to reinforce misogyny. This would speak to the argument by Gleditsch et al. (2011) that polygyny needs to be interpreted as a proxy for misogyny only. Hence, the question needs to be answered whether, and how, polygyny and misogyny—after accounting for vertical and horizontal inequality between men—interact to explain social unrest.

In order to answer this question, let us start by investigating the theoretical arguments for the nexus between gender inequality and conflict or violent behavior in societies. Hudson et al. (2012) assume that when a society discriminates against women this can make discrimination and violence in general more acceptable. Persistent subordination of women in private and public life shapes the political order and has consequences for stability, peace and governance (Hudson et al. 2020). Even more pessimistic is Caprioli (2005) who argues that gender inequality is a form of systematic discrimination and inequality due to its association with subordination, strict hierarchies, and the limiting of women's participation in society by assigning them strict family and household duties. Empirically, several studies find—for various measures of gender inequality—that the likelihood of participating in interstate and violent intrastate disputes increases with gender inequality (Caprioli 2005; Hudson et al. 2009, 2012) and that attitudes towards minorities and other nations are shaped by how tolerant individuals are with respect to the other sex. Bjarnegård and Melander (2017) link attitudes that favor gender equality to more

[15]In patrilocal cultures, women may have mixed loyalties—to their current husband's and their birth families—in the event of war between the two communities. According to Adams (1983), this could explain why many cultures exclude women from war-fighting, planning, and access to weapons.

[16]According to Alesina et al. (2013), societies that traditionally practiced plough agriculture today show a greater prevalence of attitudes favoring gender inequality.

peaceful attitudes in general and to less hostility towards other groups or nations.

The reason for the pacifying effect of gender equality is often seen in the empirical observation that women show—on average—less violent behavior and are opposed to fighting by nature. For instance, McDermott (2015b) points out that some biological differences between sexes are undeniable (e.g., child-bearing) and that men and women might differ with respect to their motivations for fighting as well as psychological differences with respect to offensive or defensive behavior. Both sexes will ultimately fight to protect "territory, food, or children" (McDermott 2015b, p. 768), but women might be more reluctant to risk their child bearing (and rearing) capacities or the lives of their children in order to fight for status. Goldstein (2003, p. 112) adds that "(m)ost women support most wars, but others often organize *as* women to work for peace". Regardless of whether women are in general less violence-prone or a subgroup of women actively engages for peace, the increased political participation of women ought to exert a pacifying effect on politics. Empirically, one would therefore expect to see a pacifying effect of increased gender equality. The effects of gender inequality on social unrest may be further aggravated in polygynous societies. This is because polygyny reinforces patriarchal structures and further increases inequality between the sexes, e.g., when women are 'sold' into marriages by their families in order to earn a bride price.

There are ostensible measures of gender equality, such as assumed political participation or empowerment of women through a higher share of women in parliament (Sundström et al. 2017) or female labor force participation, which measure de jure gender equality. However, without (physical) security and equal rights and liberties regarding, e.g., marriage, mobility or property rights, the possibilities for women to actively participate in the political process are likely to still be bounded (Ertan et al. 2018; Hudson et al. 2015; Robeyns 2003). This is even more the case when discriminatory family laws or limited efforts to enforce physical security of women come into play, both of which reinforce high levels of gender inequality despite—de jure—political participation of women.

For instance, gender inequality may be deeply rooted and bolstered in a society with physical and social insecurity, which would, e.g., be the case when legal consequences for sexual violence—in- and outside (polygynous) marriage—are absent. Under such circumstances, there may be too little influence of women on the (internal) political process and on groups engaged in conflict to promote peaceful solutions (Caprioli 2005); in addition, more hostile behavior in general (Bjarnegard and Melander, 2017) could reinforce the direct effects of polygyny or the other two mechanisms of vertical and horizontal inequality as mobilization and use of violence are more likely. Thus, interacting polygyny and measures for gender inequality is reasonable.

By reinforcing misogyny in a society, polygyny thus contributes to one-sided and uniform strategies for conflict and unrest resolution. Since women prefer more peaceful concepts of conflict resolution on average, while—at least some—men believe that conflicts need to be resolved aggressively rather than, e.g., in negotiations, the lack of gender diversity in political leadership increases the probability of open conflict and social unrest. In sum, when gender inequality keeps women from participating in political, social or economic spheres of society, the unrest-inducing effects of vertical and horizontal inequality due to polygyny might become even more severe. In turn, when unequal treatment of women in family and marriage laws is reduced and gender equality is more advanced in political participation, this could reduce unrest potential. If this leads to less prevalence of violence, we would expect this effect to be particularly strong for violent unrest. This adds up to our third hypothesis:

Hypothesis 3: *Gender inequality increases the likelihood of social unrest in polygynous societies.*

3 Data and Methodology

In the following, we will explain the empirical strategy employed to test our theoretical predictions from section 2. Before doing so, however, we introduce the data that we will use.

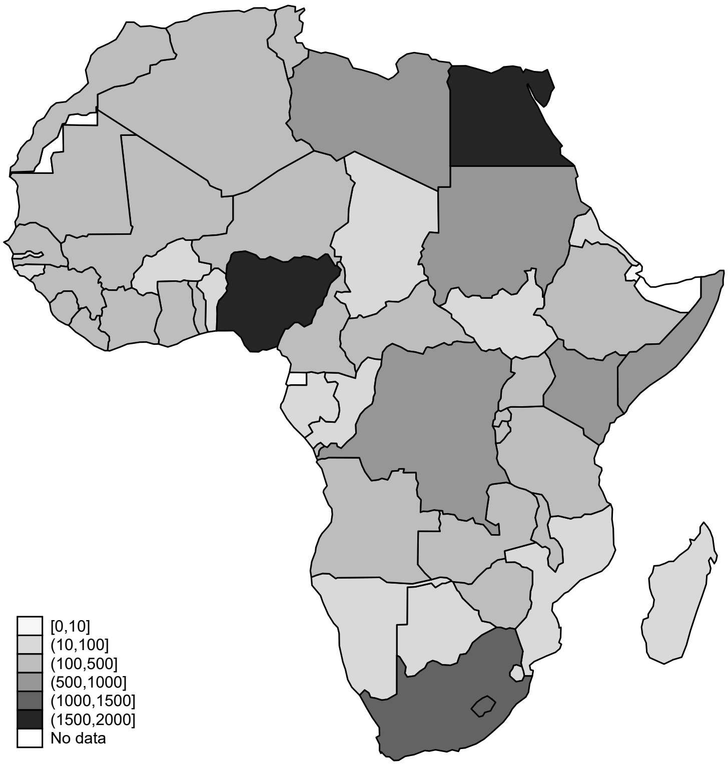
3.1 Dependent variable

Our dependent variable is a dummy for the presence of a social unrest event, using data from the *Social Conflict in Africa Database* (SCAD, Version 3.2) for the time period 1990–2014 (Salehyan et al. 2012). First, we code whether at least one violent unrest event took place in a specific country-year. In addition, we create a count variable of how many such events took place within a country-year, measuring the intensity of social unrest. As shown in Figure 2, we see large variation in the intensity of unrest across Africa.

We code four different types of social unrest to allow for a more fine-grained analysis of our hypotheses. First, *violent unrest* includes organized violent riots, spontaneous violent riots, pro-government violence, anti-government violence as well as extra- and intra-government violence. Second, we create a dummy which is '1' whenever *non-violent* unrest occurred. Here, we consider organized and spontaneous demonstrations as well as general or limited strikes.[17] Furthermore, we create a dummy for *organized unrest*, comprising organized violent riots, organized demonstrations as well as strikes. Lastly, *spontaneous unrest* considers the existence of spontaneous violent riots and spontaneous demonstrations.

[17]Table A-1 in the Appendix shows summary statistics for all our variables.

Figure 2: ***Sum of unrest events 1990-2014, Africa***



Notes: Own map using data from SCAD, summing all unrest events over the time period in a country. Darker colors indicate more events.

3.2 Main independent variables

Polygyny For the prevalence and legality of polygyny, we use the respective measure from WomanStats. Its scale ranges from '0' (no polygyny) to '4' (polygyny is legal or, if it is illegal, it is common nevertheless).[18] Figure 1 in the introduction has already shown the prevalence of polygyny in Africa in the year 2010, with a clear clustering along the so called *polygyny belt* in Sub-Saharan Africa.

Since time-dependent data on polygyny is rare, we rely on WomanStats' time-invariant variable, which was collected between 2005 and 2010. Anecdotal evidence and family laws indeed suggest that it is rather unlikely to see fast changes in the prevalence of polygyny, i.e. today's prevalence should not differ significantly from the one decades ago. Tertilt (2006) even argues that it is unlikely that a newly introduced formal ban of polygyny reduces its prevalence at all.[19] Dalton and Leung (2014) underpin the long-

[18]The exact coding is as follows. '0': polygyny is extremely rare and illegal; '1': polygyny is illegal and the respective law is enforced, i.e. less than 2 percent of the female population are polygynously married; '2': polygyny is deemed legal for minorities, but less than 5 percent of women are married polygynously; '3': polygyny is legal under customary or religious law and between 2 and 25 percent of women are in such a union; '4': polygyny is legal or at least 25 percent of women are in such a relationship. Further details, including the data points underlying the coding of the indicator, are available from WomanStats Project (2016).

[19]Gould et al. (2012) analyze polygyny and its consequences in regions in which it is formally banned.

term persistence of polygyny by analyzing the potential influence of past slave trade.[20] Similarly, Fenske (2015) provides evidence that polygyny in Africa is rather persistent. Hence, while the pattern of polygyny might change over time, this change ought to happen only very slowly.

Vertical inequality (H1) In order to capture vertical inequality among men in society, we employ two different measures. *Reproductive frustration* is approximated by a continuous variable of the prevalence of a *son bias*. Taken from the *Social Institutions and Gender Index* (SIGI) (OECD 2014; Branisa et al. 2014) for the year 2014, this variable includes whether there are 'missing women', i.e. a deviation from normal sex ratios, and whether fertility preferences show that sons are preferred to daughters. We further include the estimated *sex ratio for the cohort aged 15-49 years* from the UN Department of Economic and Social Affairs (2017). This variable measures the ratio of men per 100 women in a given society. Values above 100 imply a 'surplus' of men or 'missing women'.[21] If the sex ratio is skewed towards men, the scarcity of women becomes even more severe, when some men have several wives. Both patterns often coincide, e.g., in India (Hudson and den Boer 2002).

For *economic inequality*, we include the time-invariant measure of the *dispersion of economic power resources* from Vanhanen (1990). A higher value implies that economic resources are less centralized but more dispersed across society. Since this measure is time invariant and dates back to the 1990s, we include the *Gini coefficient* for post-tax income from Solt (2016) in a robustness check (available in the Online Appendix C). While this measure is available on a yearly basis, its availability reduces the sample significantly and has certain drawbacks, especially for Africa (Wittenberg 2015).

To capture extreme levels of inequality, we furthermore include the share of population that has *access to electricity* (from WDI). Arguably, if there is little electricity coverage, it will be available mostly for the (ruling) elite but not for non-elite men. Hence, this time-variant measure may capture more fundamental forms of economic inequality, with a lack of access to such basic resources like clean water and electricity being decisive for the prospect of getting married, as shown by Stopnitzky (2017) for the case of access to sanitation in India.

[20] Our research is, in this respect, closely linked to recent research on the persistence of institutions, such as gender roles (Alesina et al. 2013) and the legacy of slave trade for trust (Nunn and Wantchekon 2011).

[21] For the total population, a 'standard' sex ratio would be around 100 men per 100 women. At birth, the sex ratio is around 105 (Hesketh and Xing 2006). Reasons for skewed sex ratios with (adult) men outnumbering (adult) women might be sex selection via sex-selective abortion, negligence of girls or female infanticide. Hudson and den Boer (2002) give an in-depth analysis how skewed sex ratios relate to son preference in many Asian countries. Anderson and Ray (2010) find that disease and age matter for the analysis of skewed sex ratios.

Horizontal inequality (H2) For horizontal inequality among polygynous (elite) men, we include a newly compiled measure for *unequal inheritance*. For this measure, we coded information on family and succession laws as well as information on practices, traditions and customary laws. The information comes from—among other sources—the *Food and Agriculture Organization* of the United Nations, family laws and reports from NGOs as well as the CIA Factbook. We have assigned a country to one of the following categories only when an inheritance rule in a country is confirmed by more than one reliable source. First, a reference category, coded '0', for countries in which there is no polygyny and/or polygyny is illegal. Because there is no polygyny in these countries, inheritance laws do not include any provisions leading to polygyny-induced inequality.[22] We assigned '1' when equal or almost equal treatment is common and/or legally prescribed;[23] '2' when inheritance includes a certain degree of inequality or ranking (e.g., when sons born out of wedlock have almost no chance to be considered as heirs; or a transfer of the wives' ranking to their sons; or favoritism towards one son, often the first-born); finally, '3' implies *primogeniture*, i.e. the concentration of the bequest on only one single heir. Figure 3 shows that the degree of inequality in inheritance varies substantially across African countries.

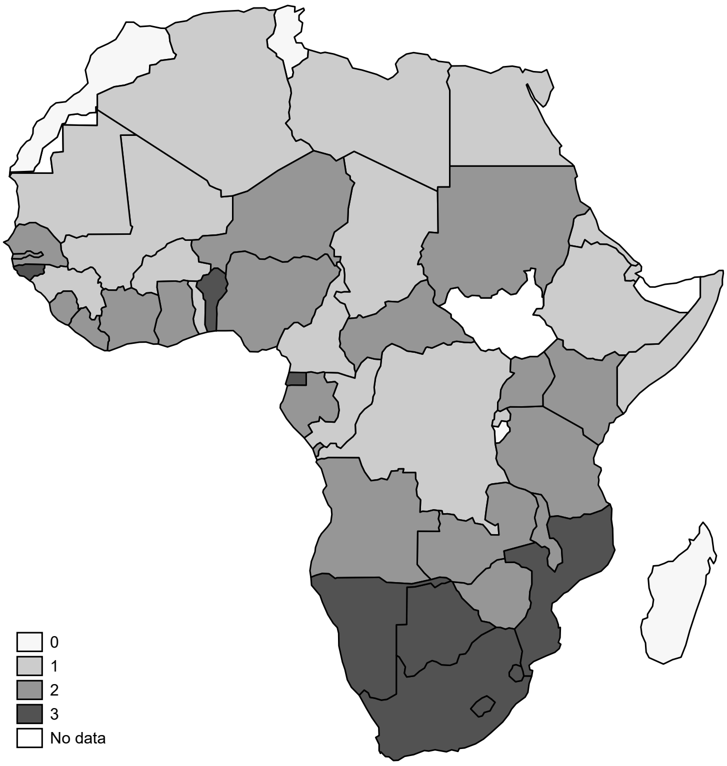
Gender inequality (H3) In our baseline estimation, we use two standard measures of gender inequality. *Female labor force participation* (FLFP, taken from the World Development Indicators) measures the visibility of women in economic life. In addition, the indicator *female political participation* from V-DEM comprises the influence of women in legislature and the power distribution by gender (Coppedge et al. 2019). The latter is a sub-indicator of the Women's Political Empowerment Index by Sundström et al. (2017). By using this sub-indicator we aim to capture whether and how women are integrated in the political process, which we consider decisive in order to test the (pacifying) effect of female participation in politics.

For a robustness check, we go beyond participation of women in public life. Simple participation in politics would not provide the full picture of gender (in)equality. If women lack social, legal and physical rights in society, pure participation remains a 'de jure' measure that is insufficient for our purposes. However, combining such a measure with the level of polygyny might be informative, as polygyny reflects gender inequality in private (family) life which may extend to or be influenced by gender inequality in the political arena, too. To capture this, we use a summary indicator (*CIRI*) that combines women's economic and political rights. The data are taken from Cingranelli and Richards

[22] Note that we also include countries (such as Morocco) here, in which polygyny is illegal but still practiced, for which, however, we could not identify any sources describing unequal inheritance rules.

[23] All countries with Islamic family law are coded here, unless traditions or practices deviate from the law. We also include countries here in which concubines and lesser wives might receive less, but with equal treatment of all legal spouses.

Figure 3: ***Inheritance, Africa***



Notes: Own map using our own indicator (based on our data collection) on inheritance laws and practices. Darker colors indicate more unequal inheritance.

(2010) and range continuously from '0' (gender inequality) to '1' (gender equality).

3.3 Control variables

We control for a variety of factors that capture the state of the economy, a nation's political and demographic structures as well as geographic characteristics. All of them may influence the probability of a country experiencing social unrest as they are related to either general societal cleavages (such as fractionalization), conflict history or the (opportunity) cost of rebellion. Our controls have been used frequently in the analysis of internal armed conflict and civil war. Arguing that social unrest may be a first step towards more severe forms of conflict, we believe that these factors are important for our analysis as well.

If a country is already in an episode of armed conflict, this could make further events of social unrest more likely. Thus, we control for the *presence of an ongoing armed conflict* in a country using data from the UCDP/PRIO Armed Conflict Dataset. We create a binary variable that is '1' whenever there is an armed conflict incidence with more than 25 battle deaths (Pettersson and Wallensteen 2015; Strand 2006). To control for contagious conflict, we include a count variable for the *number of neighboring countries that currently experience a conflict*, using the same data.

Turning to the political system, we control for the *level of democracy*, using the Polity2 indicator from the Polity IV Database. This variable ranges from −10 (autocratic regime) to +10 (democratic regime).[24] Furthermore, we code a variable for *political instability* following Fearon and Laitin (2003) that is '1' when a country has had a change of more than 3 points on the Polity2 scale in the last 3 years.

To account for the feasibility of social unrest, we include *income (GDP) per capita*, and for demographic pressure, we include *population size*. Data on both variables are taken from the Penn World Tables (in logs). Further, we control for geographic conditions that could impede or foster social unrest, specifically, *mountainous terrain* (taken from Fearon and Laitin 2003) and a dummy for *OPEC countries*.

As our argument on vertical inequality is closely tied to hierarchies within a society, we control for the *share of population belonging to excluded groups* using the Ethnic Power Relations Data, retrieved from Girardin et al. (2015). Finally, *religious fractionalization* (taken from Fearon and Laitin 2003) is included to account for religious diversity.

For robustness checks, we include further demographic variables that are potentially associated with social unrest and polygyny: the *share of rural population* (norms and traditions could be practiced differently in rural and urban areas) and the *share of males in the age group 15–19 years* in total population. This ought to capture demographic pressure resulting from a 'youth bulge' that arguably increases conflict risk (e.g. Urdal 2006).

3.4 Estimation strategy

For our country-level analysis of *incidences* of social unrest in African countries, we use a logit model with robust standard errors that are clustered at the country-level. The binary dependent variables are the prevalence of (i) violent social unrest, (ii) non-violent social unrest, (iii) organized social unrest, and (iv) spontaneous unrest. Our set of baseline control variables includes ongoing conflict, GDP per capita, population size, mountainous terrain, OPEC membership, unstable government, democracy, religious fractionalization, population belonging to excluded ethnic groups, and neighboring countries with events of social unrest. In addition, we use cubic time polynomials for the time since the last unrest episode took place; this is to account for time dependence.[25] To this baseline regression, we add—as dummies—the scale values '3' and '4' of the polygyny scale; value '2' serves as the base category here as there are no countries with values '0' or '1' in Africa.

Furthermore, we include our main independent variables to identify the effect on conflict activity of each of the three inequalities under consideration. The dimensions of

[24] As a robustness check, we replace the Polity2 indicator with the electoral democracy indicator from V-DEM. Results remain comparable, see Online Appendix C-2 and C-4.

[25] Using time polynomials is more efficient than using time dummies and requires less information on the dependence between outcome and time (Carter and Signorino 2010).

vertical inequality (H1) will be tested by including *son bias*, *sex ratio*, and the *dispersion of resources* as well as *access to electricity*.[26] For horizontal inequality (H2), we use our newly compiled *unequal inheritance* variable. Finally, gender inequality (H3) is represented by *female labor force participation* and *female political participation*. These variables enter our regressions both individually as well as jointly.[27] All time-variant variables are included with a one-year time lag. Furthermore, GDP per capita as well as population size are in logs to reduce the influence of potential outliers.

Using the same set of variables, we also estimate a model for the *intensity* of social unrest. Here, we use a negative binomial regression (NBR) model for the number of social unrest events per country-year. This is justified because the count data on social unrest events is over-dispersed.

4 Results

Incidence of Social Unrest Figure 4 summarizes the estimated coefficients of our measure of polygyny and the three types of inequality according to hypotheses H1, H2 and H3 for four different logistic regressions, which reflect the *incidence* of the four different types of social unrest under consideration. In all four regressions, the main set of control variables has been included. The coefficients are from table A-2 in the appendix.[28]

Regarding *hypothesis 1* (vertical inequality), the estimated coefficients show mixed results. With respect to the measures of *economic inequality*, a more equal distribution of power resources is negatively associated with the presence of non-violent and organized social unrest, which supports H1. For violent and spontaneous unrest, the sign is in the same direction but slightly insignificant. Our alternative measure of economic inequality, access to electricity, shows a positive sign, implying that countries with more coverage of electricity exhibit more unrest. At first sight, this contradicts our hypothesis. However, a possible explanation is that with more households having access to electricity, mobilization and participation in events of unrest becomes feasible and thus more likely.

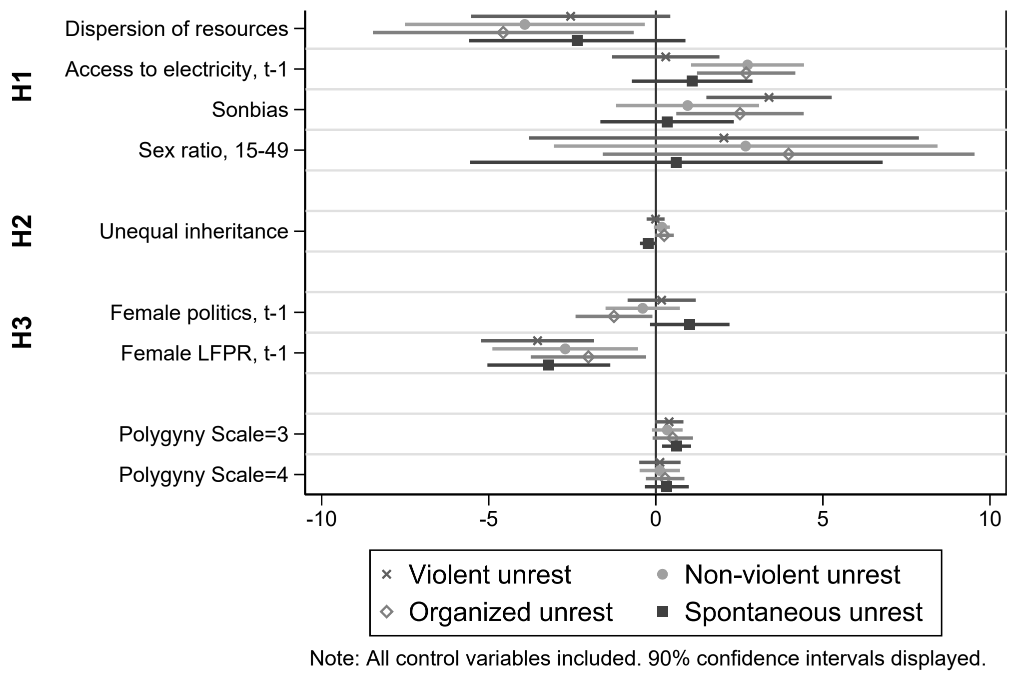
Turning to *reproductive inequality*, we observe that norms and traditions reflected in a son bias are positively associated only with violent and organized social unrest, while the sex ratio, indicating tight marriage markets, is not significant. Notice, however, that the standard errors are high, indicating measurement problems, which facilitate rejection of the hypothesis. All signs are in the expected direction but effects are only sometimes

[26]We include the *GINI coefficient* only in a separate regression because of the much lower number of observations.

[27]We include the variables also one-by-one in order to exclude potential feedback effects (e.g., because gender inequality is a condition for polygyny but also intensifies it).

[28]Note that the step-wise inclusion of variables shows that the fit of the model is indeed best (based on the Aikake Information Criterion) when all variables are included. Details are available from the authors upon request.

Figure 4: ***Incidence of social unrest, polygyny and inequality***



Notes: The figure shows the coefficients from our preferred specifications for the incidence of social unrest forms (i.e. results from four different logistic regressions, shown in detail in the appendix, table A-2). Controls, constant and time controls are included but not shown in the figure.

significant, lending only weak support to H1 with respect to reproductive inequality.[29]

The conflict-inducing effect of horizontal inequality, as postulated in *hypothesis 2a*, is not significant. There does not seem to be a direct correlation of unequal treatment within polygynous families and social unrest. However, according to *hypothesis 2b* the spillover from within-elite feuds to society is conditional on its feasibility, i.e. the availability of sufficient resources. We will test this conditional effect below.

Gender inequality, as stated in *hypothesis 3* and measured by female labor force participation, has a strongly negative and significant effect on all forms of social unrest, unequivocally supporting H3. Support is weaker when considering female participation in politics, which has a negative and significant effect on organized social unrest but an opposite effect for spontaneous unrest. Still, one could interpret this as indirect support for our hypothesis: If women are more present in political life, this raises awareness of structural inequality and discrimination, thereby increasing the likelihood of protest.[30]

[29] As a robustness check, we include two further controls: The share of rural population and the sex ratio in the youth cohort (15-24 years), but results do not change much. If we replace the economic inequality measures with the GINI, i.e. a measure of pure income inequality, most of the results remain the same: medium levels of polygyny are then positive and significant for all kinds of social unrest except non-violent unrest. The details can be found in the Online Appendix C-1 and C-3.

[30] If we replace the two measures with a composite indicator comprising both economic and political rights, (CIRI, from Cingranelli and Richards (2010)), the CIRI indicator is negatively associated (i.e. fewer unrest incidences and lower intensity) with increasing women's rights and significant for violent unrest (Online Appendix C-2 and C-4.

Finally, the sign of the direct effect of medium and high levels of polygyny on social unrest is positive as predicted (relative to lower levels of polygyny), but it is—with one exception—insignificant.

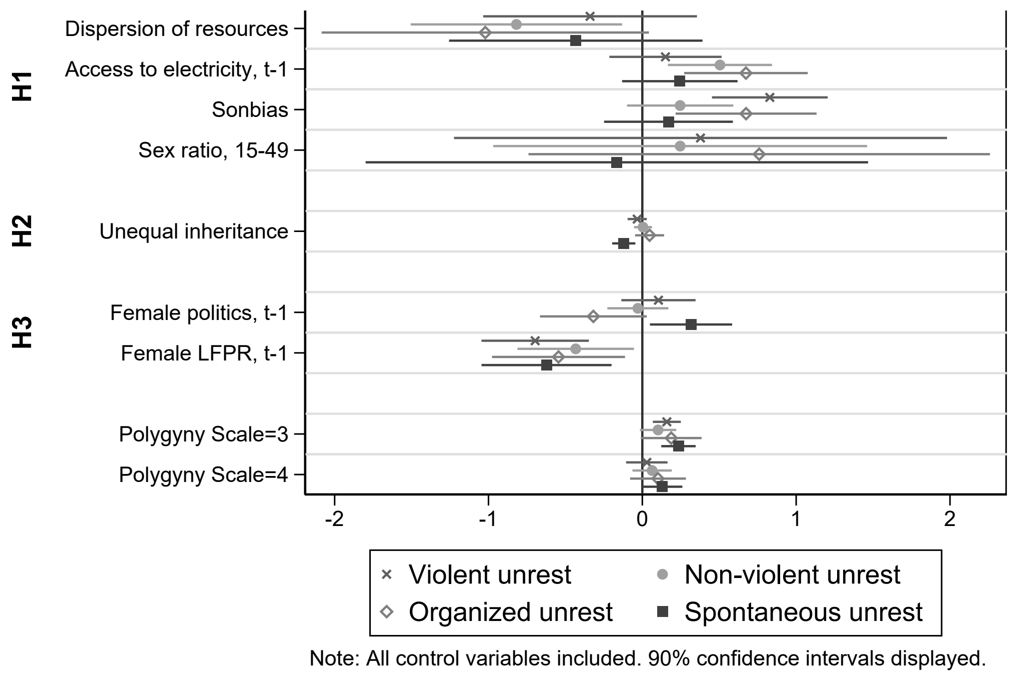
Intensity of Social Unrest Next, we consider the relationship between polygyny, inequality and the *intensity* of events of social unrest. The coefficients of our variable of interest are displayed in figure 5 and are—in terms of direction and significance—comparable to those in the previous analysis of the incidence of social unrest. Again, our hypothesis on vertical inequality (H1) is supported when looking at economic power resources and son bias. For horizontal inequality (H2), i.e. unequal inheritance, there is again little evidence for a direct effect. Gender inequality (H3) as measured by female labor force participation is significantly correlated with social unrest as before, while political participation is only significant for spontaneous unrest events (and again with a positive sign). For easier interpretation, we calculate incidence rate ratios (cf. Appendix, table A-3).[31] For example, an increase in son bias by one unit is associated with an increase in the incidence rate of organized (violent) unrest by roughly 90 (120) percent. If female labor force participation increases by one unit, the incidence rate of organized and violent unrest decreases by almost 50 percent.

Feasibility If polygyny induces individual-level grievances, conflict activity needs to be feasible, i.e. there need to be sufficient resources for mobilization or organization. According to Collier et al. (2009), feasibility is even more significant in determining civil wars than participants' motivation. As social unrest is less costly than civil war or armed conflict, the influence of resources on the feasibility of such events—if there is any—is not yet fully understood. To approximate feasibility, we interact a country's mean income (GDP per capita) with polygyny to test whether there are any combined effects. In line with *hypothesis H2b*, we want to shed light on whether there is an association between polygyny and social unrest only when sufficient resources are available. Following Ai and Norton (2003), we calculate in the following the marginal effects for different levels of polygyny and GDP per capita (keeping all covariates at their means).

The left panel of Figure 6 shows the marginal effects on organized social unrest for different levels of polygyny coinciding with various levels of income. The graph shows a declining probability of organized social unrest when GDP per capita rises. This pattern varies with the different levels of polygyny. Organized social unrest is more likely in relatively poor countries that exhibit a high prevalence of polygyny. The difference

[31]These results are only associations and should not be interpreted in a causal way. However, the robustness of the results to different estimators (logistic, negative binomial and ordinary least squares) and the variation in the choice of variables suggest that they are meaningful. Extensions in terms of control variables or other variables for testing our hypotheses as well as the baseline estimations using OLS are provided in the Online Appendix, table C.

Figure 5: ***Intensity of social unrest, polygyny and inequality***



Notes: The figure shows the coefficients of our variables of interest using our preferred specifications for estimating the intensity of social unrest (i.e. the number of events per country-year). The count models (negative binomial regressions) are displayed in detail in table A-2. Controls, constant and time controls are included but not shown.

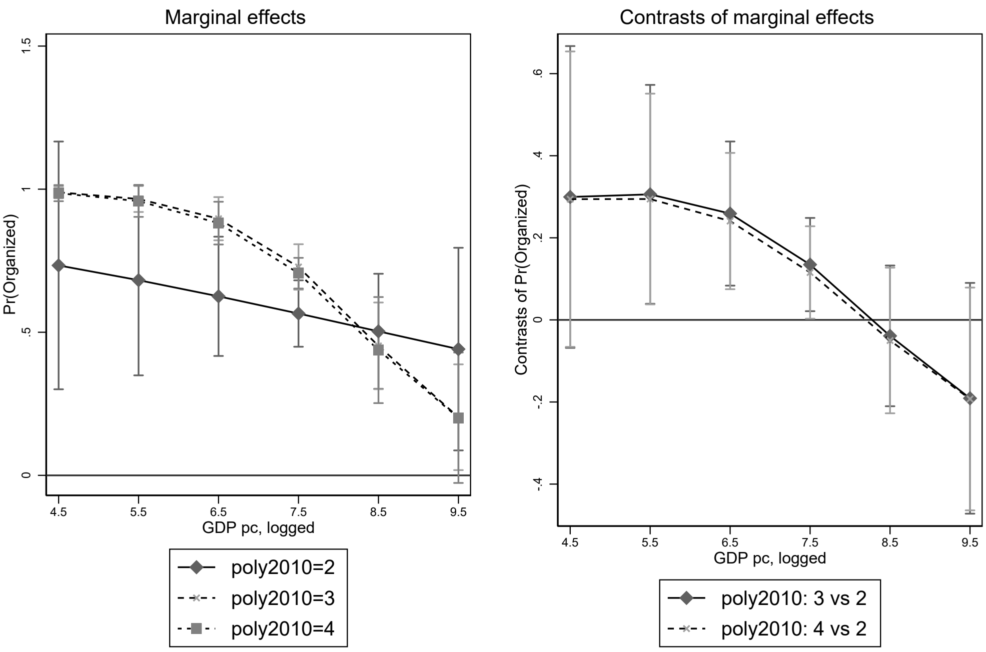
between high (medium) and low levels of polygyny is significant for low to medium levels of GDP per capita but not above a certain threshold, as shown by the contrasts of margins in Figure 6 (right panel). Hence, individual-level grievances related to polygyny matter, especially in poor countries. This implies that a lack of resources does not seem to be a major obstacle to organizing social unrest. Hence, the feasibility hypothesis that matters for larger-scale conflicts does not apply to low-level conflicts. Analogous graphs for the other three types of social unrest, which show similar patterns, are presented in the appendix (Figure A-1). Here, the difference between high and low or medium and low levels polygyny are not significant.[32]

Hypothesis 2b states that within-elite feuds extend to the rest of population only when elite men can effectively mobilize non-elite men. A change in leadership could be attractive for non-elite men if it is linked to future—monetary or non-monetary—benefits. Therefore, conflict-seeking elite men need sufficient resources. Again, we approximate this resource availability by considering GDP per capita, which we interact with horizontal inequality within the elite. For this, we create a binary variable for the presence of very high/high levels of unequal inheritance versus no/light unequal treatment in polygynous situations.

Figure 7 shows the marginal effects of this interaction. Considering again only orga-

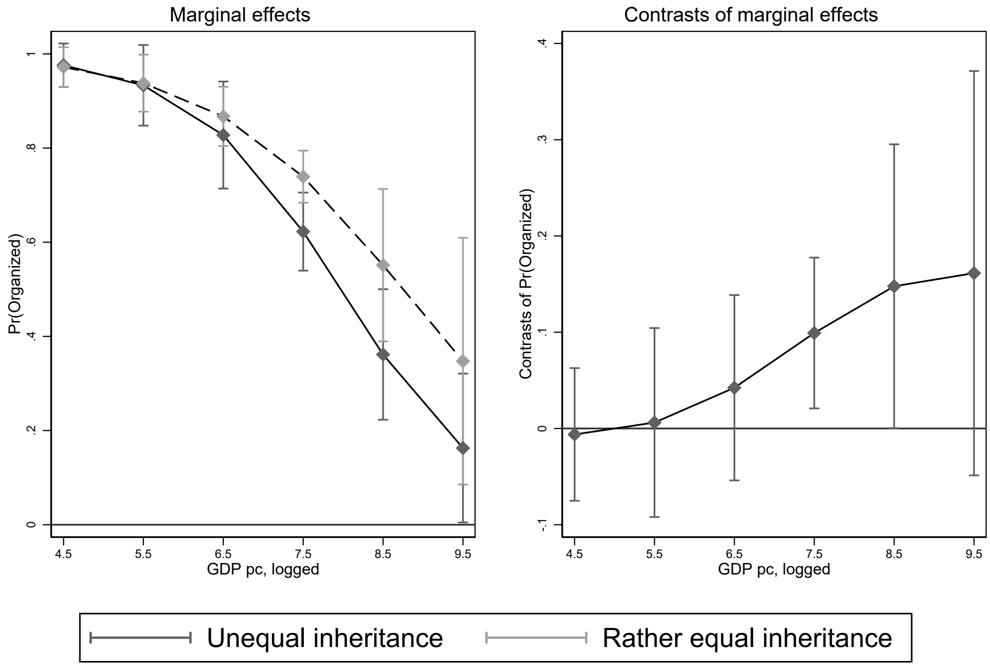
[32] A similar picture arises in the count model. Results are available in the Online Appendix B-1.

Figure 6: ***Organized social unrest: Polygyny and GDP interacted***



Notes: The figure on the left shows marginal effects for the three levels of polygyny for various levels of GDP per capita, holding all control variables at their means. The right panel shows the contrasts of the marginal effects, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure 7: ***Organized unrest: Inheritance and GDP interacted***



Notes: The figure on the left side shows marginal effects of unequal inheritance and equal inheritance at various levels of GDP per capita, holding all control variables at their mean. The right panel shows the contrasts of these marginal effects (i.e. unequal inheritance versus no unequal inheritance).The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

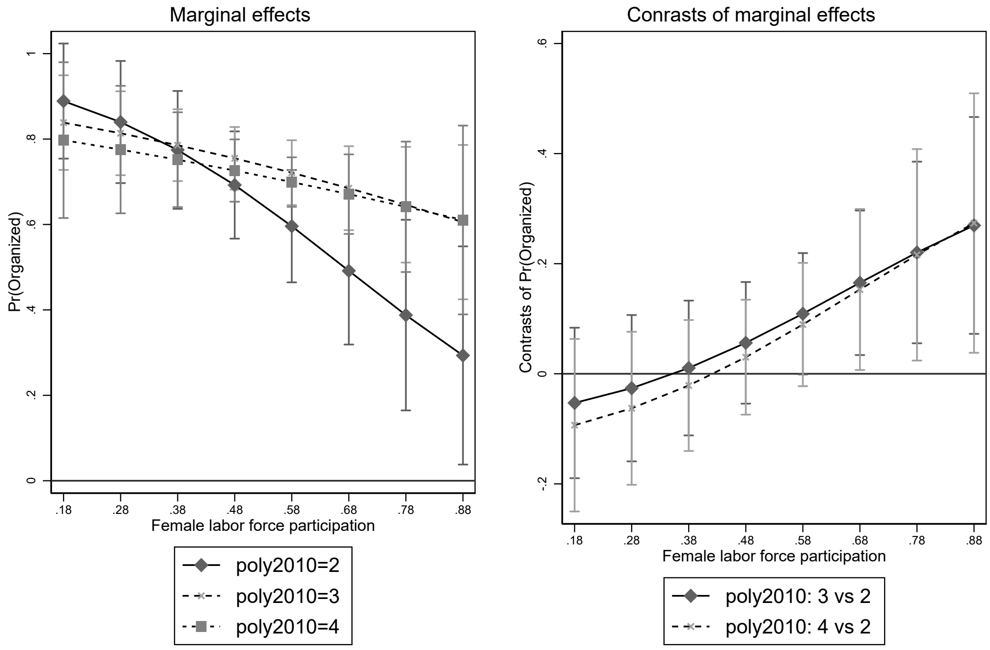
nized forms of social unrest here (with other forms presented in the appendix, Table A-3), there is a significant difference between the different levels of horizontal inequality above median levels of GDP (also for non-violent unrest but not the other two forms). If there is inequality within the polygynous elite, the probability of a decrease in organized social unrest is smaller. Or, put differently, the pacifying effect of higher income is smaller in a rich country, when horizontal inequality is high.[33]

Gender inequality The lack of women's voice or deeply-rooted beliefs and attitudes favoring gender inequality may reinforce the potential for social unrest especially at high levels of polygyny. Therefore, we also consider the interaction of polygyny and gender inequality. Again, we calculate the marginal effects with respect to organized social unrest for different levels of polygyny and gender inequality and present them in Figure 8.[34] If female labor force participation is low (i.e. gender inequality is high), organized social unrest is more likely. If female labor force participation increases, but polygyny is highly prevalent, the decrease in organized unrest is significantly smaller compared to low levels

[33]Similar results apply to the analysis of the intensity of social unrest. Results are available in the Online Appendix B-7.

[34]Findings for other forms of social unrest are analogous in direction, though not significant and shown in the appendix, Table A-5; for the count model, see the online appendix, Table B-3.

Figure 8: ***Organized unrest: Polygyny and female labor force participation***



Notes: The figure on the left shows marginal effects for the three levels of polygyny for various levels of female labor force participation, holding all control variables at their mean. The right panel shows the contrasts of the marginal effects, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

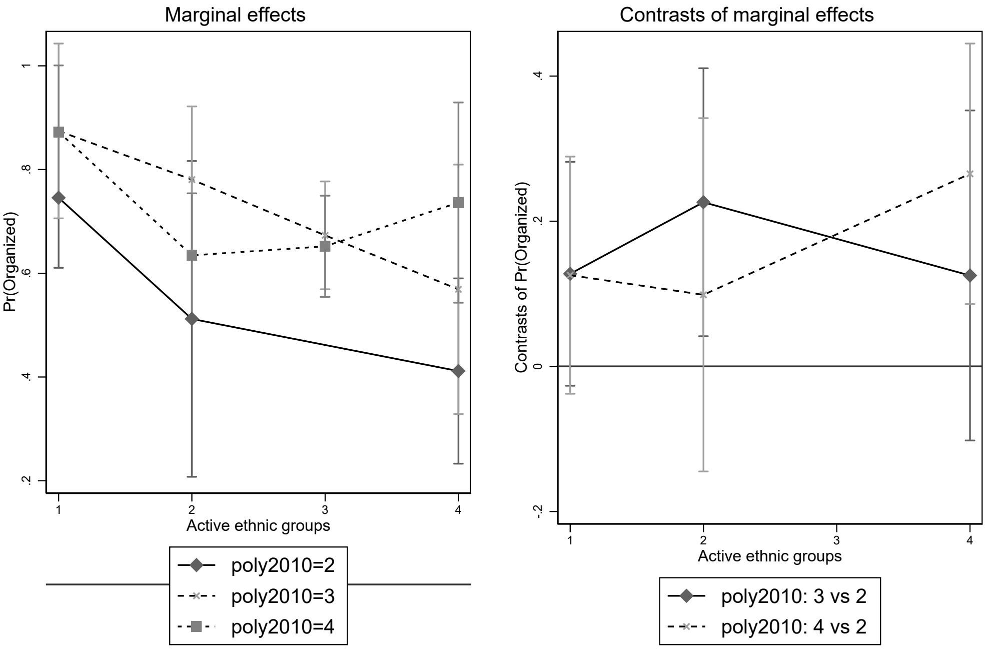
of polygyny. Thus, gender equality that reaches only parts of societal life (but not family life) cannot fully stabilize society. For gender equality in politics, no significant differences between high and low levels of polygyny exist (Table A-7).

5 Discussion of Alternative Hypotheses

In this section, we analyze the plausibility of the mediating effects of different types of inequality that we proposed in hypotheses H1, H2 and H3 by discussing whether there could be valid alternative hypotheses possibly leading to the same outcomes.

Strategic behavior of the elite In *hypothesis 1*, we argue that polygyny is closely tied to vertical inequality between men who belong to the local or ruling elite and who can afford to marry several women, and men who cannot. The resulting grievances, either reproductive or economic, may lead to destabilization, a finding that is supported by our empirical results. If the elite men are (rationally) expecting this outcome, they have several choices to stabilize their status and power, in particular when there is a stable network of elite families helping each other. One way to foster elite networks or 'clan governance', as Hudson et al. (2015) call it, is the strategic use of polygyny. That is, elite

Figure 9: ***Organized Unrest: Polygyny and number of ethnic groups interacted***



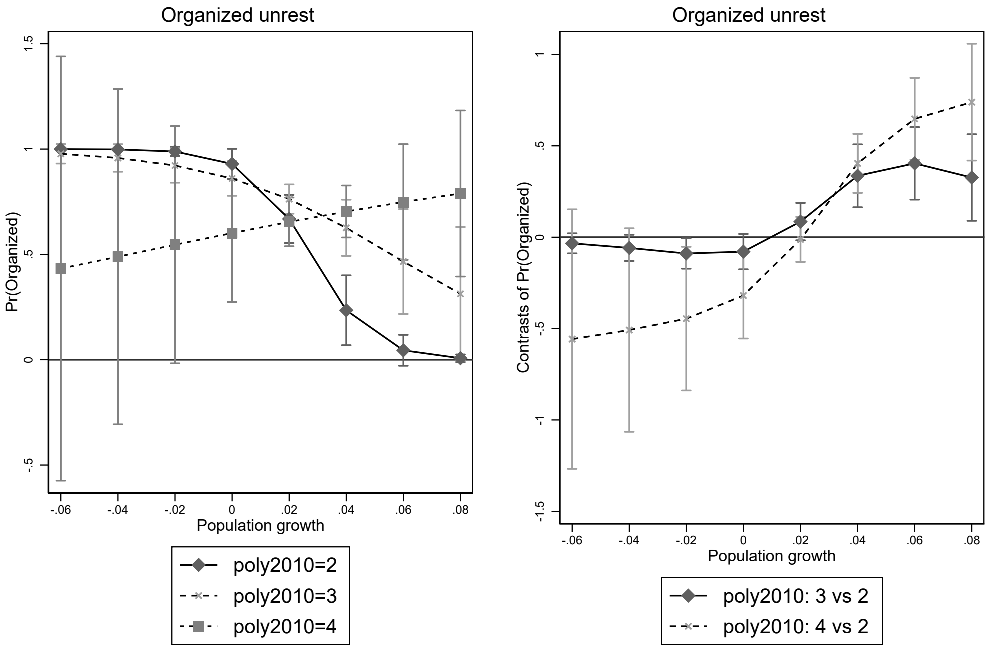
Notes: The figure on the left shows marginal effects of the three levels of polygyny for four categories of active ethnic groups, holding all control variables at their mean. The right-hand panel shows the contrasts of the marginal effects, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed. Please note that the categories of active ethnic groups are not the actual number of ethnic groups. A higher number indicates more groups.

families could strategically marry their daughters to other families' patriarchs and sons in order to stabilize ties between clans.

Empirically, this behavior implies that the estimated effects of polygyny in Section 4 are in fact downward biased, as polygyny may be a tool to stabilize societies. We test this by using data from Girardin et al. (2015) on the number of active ethnic groups per country. We create a categorical variable that is '1' if there are one or two groups, '2' if there are three or four groups, '3' for five and six groups and '4' for more groups. Interacting this variable with the level of polygyny sheds some light on strategic marriages. If strategic marriages were happening, we would expect to see a decreasing probability of social unrest if more groups are active and at the same time polygyny is more present. However, the marginal effects do not show such a clear picture, as figure 9 indicates.

Another option for elite men would be to restrict themselves, in line with the male compromise theory. This would imply that it would be rational to limit the number of wives per man or to ban polygyny altogether in order to avoid rebellions (Alexander 1987; Betzig 1986; Lagerlöf 2010). However, polygyny levels are rather stable (Dalton and Leung 2014, e.g.,), bans are not working (Tertilt 2005, 2006) and the limitation to four wives per man in Islamic family law still implies a considerable inequality in marriage markets, leaving many men without the option to marry.

Figure 10: ***Polygyny and population growth***



Notes: The figure on the left shows marginal effects of the three levels of polygyny for various levels of population growth, holding all control variables at their mean. The right-hand panel shows the contrasts of the marginal effects, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Population growth as a factor to ease tight marriage markets Through the monopolization of women by the elite, polygyny leads to a marriage market squeeze which implies vertical inequality with respect to reproduction. Potentially, population growth could ease this problem. If enough (young) women are born and married, men could simply marry younger women, implying a reduced or no shortage in brides. This argument has been put forward by Cook and Thies (2019) who look at bride price inflation (which should be a result of a marriage market squeeze) and associated political violence. Interacting the level of polygyny with population growth may help to answer this question. If population growth could reduce reproductive frustration from polygyny, the association between social unrest and polygyny should be lower at higher levels of population growth. However, Figure 10 does not support this argument. On the contrary, for organized social unrest, high population growth coinciding with high levels of polygyny has a significantly higher probability of unrest compared to a situation with low levels of polygyny.[35]

Polygyny as a consequence of violence Polygyny implies that women are scarce as some men are married to several of them at the same time. If social unrest is violent and eventually extends to more severe armed conflicts, the risk of dying on the battlefield

[35]For the other forms of social unrest, results are available in Figure A-11.

increases for men, turning our previous argument upside down. As a consequence of war, it may be men, not women, who become scarce. In this case, polygyny could be a solution to resolve a 'surplus of women', as e.g. Ember (1974, 1984) suggests.

Empirically, this would imply a problem of reverse causality that would weaken our analysis and argument. However, several arguments speak against this. First, Urdal and Che (2013) find that female death rates are also abnormally high in times of war because maternal health is strongly negatively affected by violent conflicts. Second, several studies find that after conflict periods, fertility increases, but marriages do not necessarily do so, such that fewer registered unions seem to be likely (Bethmann and Kvasnicka 2013; Schindler and Verpoorten 2013; Agadjanian and Prata 2002). Finally, since we consider social unrest only, the number of deaths typically ought to be too low to significantly change the sex ratio.

To be on the safe side, we nevertheless test whether the number of conflict years or related variables are correlated with polygyny using a simple linear regression. Empirically, we do not find support for this causal direction. Since polygyny is measured around 2010, we cut our sample so that it ends in 2009 for all other variables, i.e. right before the coding year of the polygyny data. Thus, conflict happens before polygyny is measured and any effect should be captured in the regression. Table A-4 does not support this link. We test several variables related to unrest and conflict. Only the number of neighbors experiencing social unrest is significant and positive. However, neither the number of fatalities in conflict episodes nor the number of violent unrest events per year or the sum of all unrest events is significant. The number of violent unrest events and ongoing conflict are only significant when we also include absolute latitude. This measure is highly significant, which seems appropriate given the geographic location of the polygyny belt (see Figure 1).

We also test whether skewed sex ratios are correlated with polygyny, an argument by Dalton and Leung (2014). They follow Nunn and Wantchekon (2011) in arguing that slave trade was, depending on the destination, focused heavily on males. Thereby, it created a shock and led to a severe loss of males, which ultimately (when the loss was sufficiently large) led to (or increased) polygyny, which is then assumed to have persisted until today. However, we do not find evidence for this mechanism in our sample (see columns 5).[36] Similarly, including income inequality as a predictor does not have any impact.

6 Conclusion

This paper provides a comprehensive theoretical and empirical analysis of the linkages between polygyny and conflict with a special emphasis of the role of inequality. We extend

[36]Note that Dalton and Leung (2014) limit their sample to 25 African countries, so that their sample is hardly comparable to ours.

the theoretical arguments put forward by the existing literature by clearly distinguishing three different channels through which different dimensions of inequality mediate polygyny to trigger instability. Each channel refers to a specific type of inequality: vertical inequality between elite and non-elite men, horizontal inequality within the elite, and gender inequality.

We argue that personal grievances related to frustrations that result from polygyny-induced inequality lead to small-scale social unrest in the first place, and only under particular circumstances also to larger-scale conflict. In this respect, we differ substantially from the existing literature with its sometimes ambiguous results on the polygyny-conflict nexus. In contrast, our correlative results are mostly supportive to the initial statement that polygyny 'breads inequality' and 'begets violence'.

More specifically, all three types of inequality lead to specific grievances or induce 'greed', which may then result in social unrest. Polygyny consistently has a positive, but not always significant, effect on social unrest. Vertical and gender inequality are particularly correlated with social unrest, mostly organized and non-violent. As for horizontal inequality, our results indicate that a certain income level needs to be present for elite-internal conflicts to spread to the general public. Reduced gender inequality, measured by higher female labor force participation rates, is negatively associated with unrest; however, this effect is smaller for high levels of polygyny. Furthermore, we consider several potential counter-arguments and alternative hypotheses and test whether they are able to change our results. Here, we do not find support for the idea that strategic polygyny may pacify societies, nor do we find evidence that population growth reduces the destabilizing effects of polygyny.

Overall, we show that the societal dynamics surrounding polygyny are complex and that they interact. While the previous literature has already provided interesting insights on the polygyny-conflict nexus, we are able to extend the focus of this field of research in a comprehensive manner by systematically developing a theory of the polygyny–inequality–conflict nexus and testing it. Taken together, the results support the view that effectively banning polygyny may not only be worthwhile in order to improve gender rights, but also for reducing other dimensions of inequality. Equally important, the political and social stability of nations may benefit as well.

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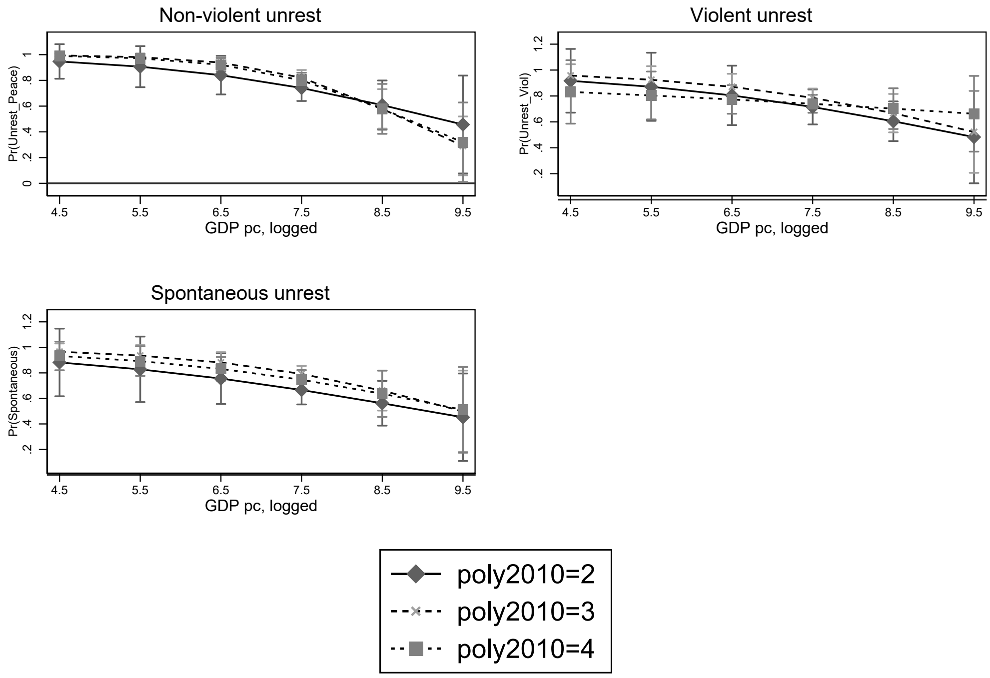
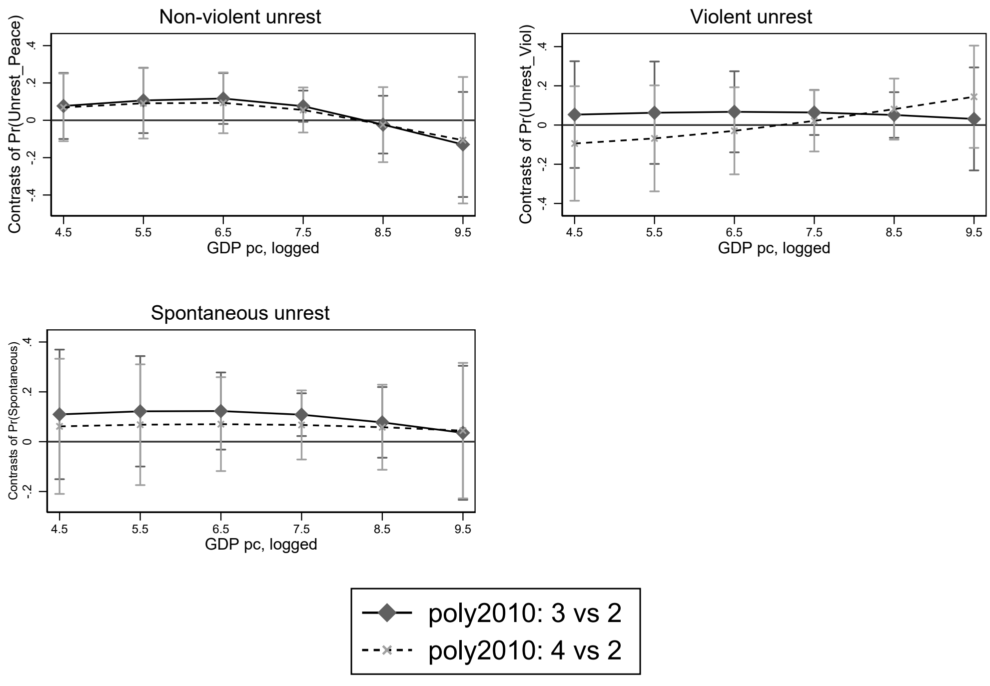
A Appendix

Figure A-1: ***Interaction Effects for GDP per capita and Polygyny***



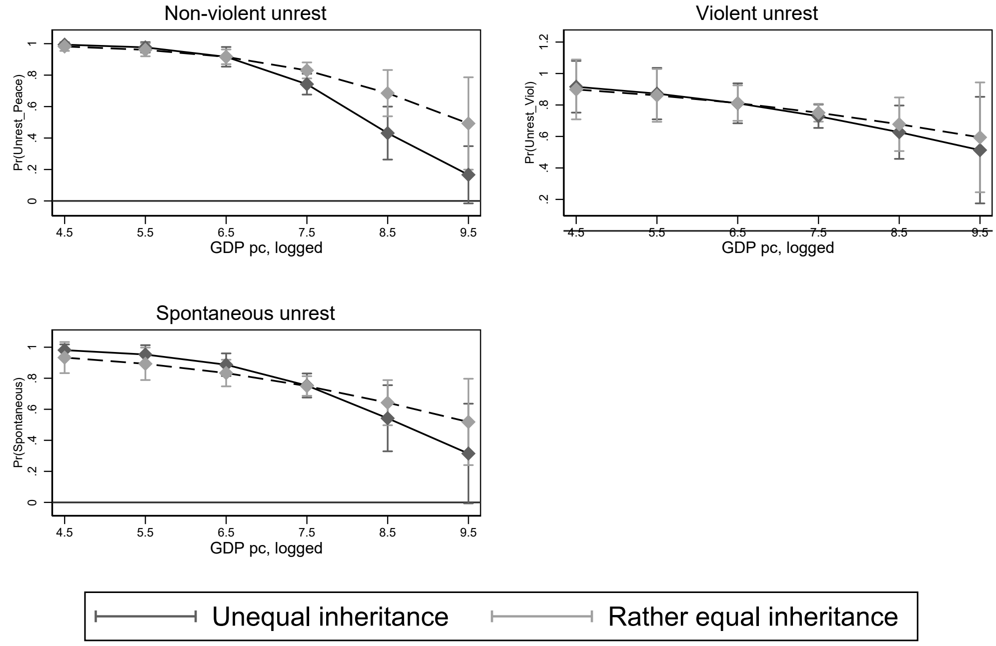
Notes: The figures show marginal effects for the three levels of polygyny for various levels of GDP per capita for non-violent, violent and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-2: ***Contrasts–Interaction Effects for GDP per capita and Polygyny***



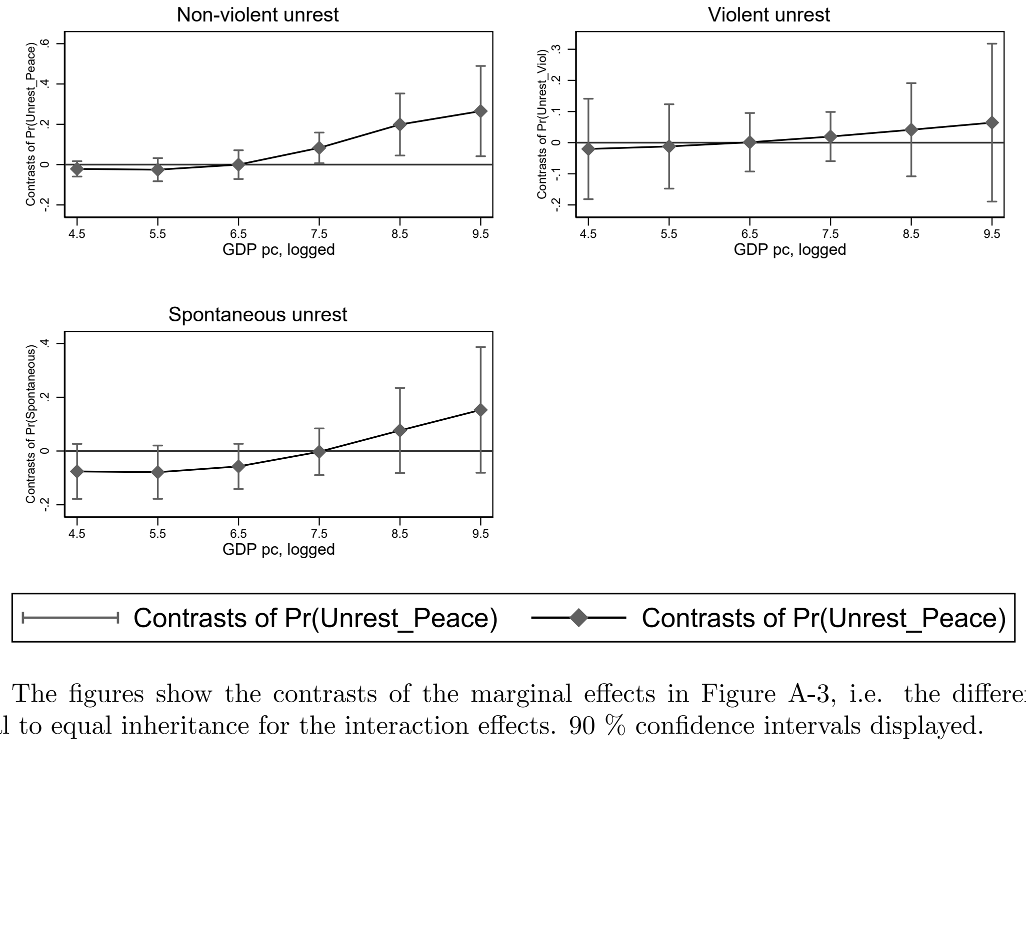
Notes: The figures show the contrasts of the marginal effects in Figure A-1, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. 90 % confidence intervals displayed.

Figure A-3: ***Interaction Effects for GDP per capita and Horizontal Inequality***



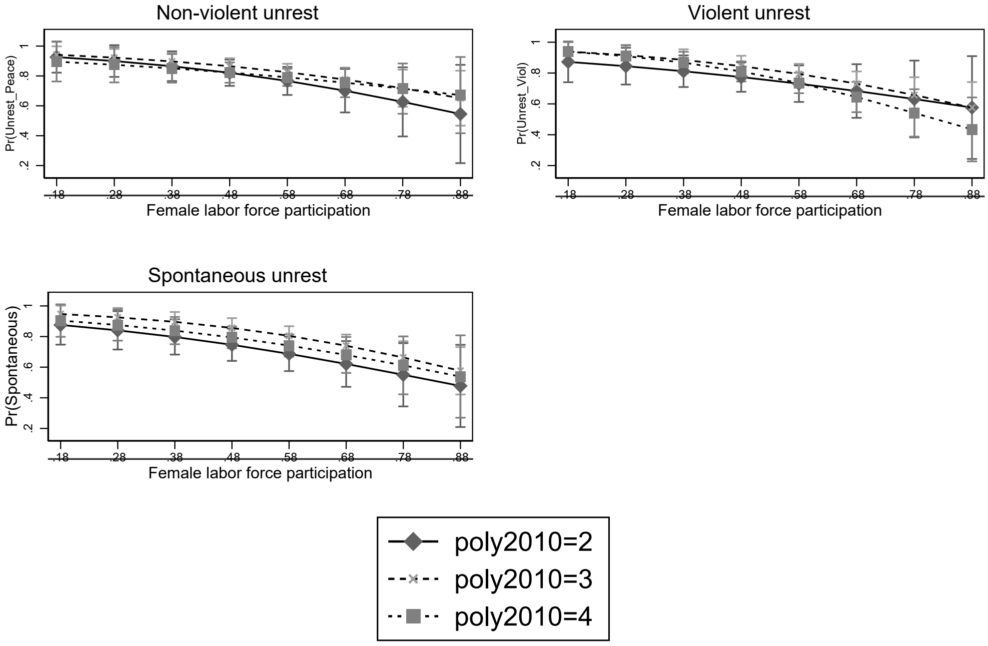
Notes: The figures show marginal effects for unequal versus equal inheritance for various levels of GDP per capita for non-violent, violent and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-4: ***Contrast–Interaction Effects for GDP per capita and Horizontal Inequality***



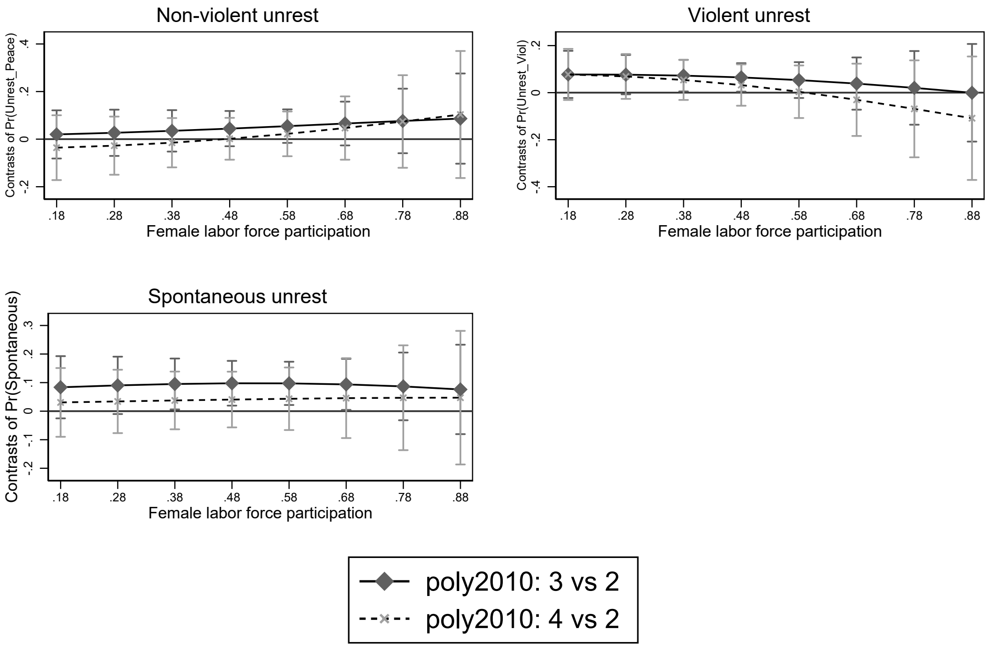
Notes: The figures show the contrasts of the marginal effects in Figure A-3, i.e. the difference from unequal to equal inheritance for the interaction effects. 90 % confidence intervals displayed.

Figure A-5: ***Interaction Effects for Female Labor Force Participation and Polygyny***



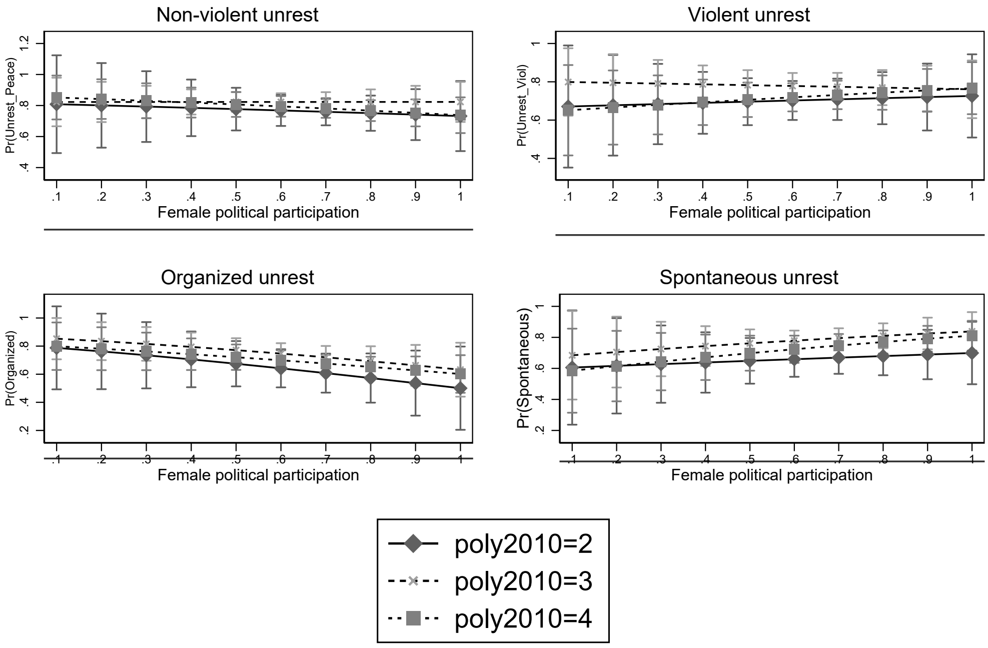
Notes: The figures show marginal effects for the three levels of polygyny for various levels of female labor force participation for non-violent, violent and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-6: ***Contrasts–Interaction Effects for Female Labor Force Participation and Polygyny***



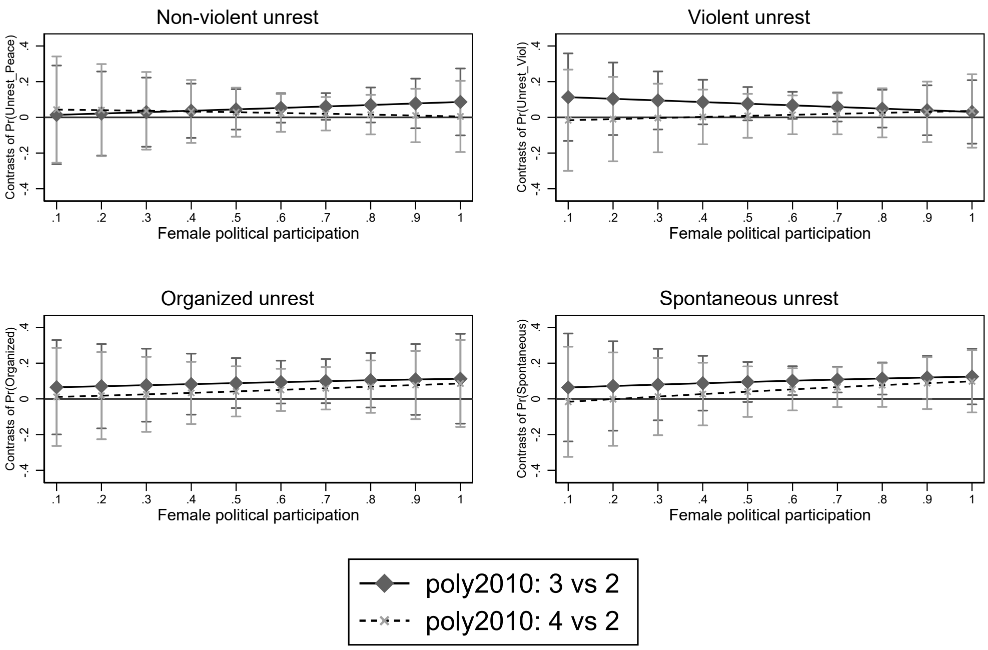
Notes: The figures show the contrasts of the marginal effects in Figure A-5, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. 90 % confidence intervals displayed.

Figure A-7: ***Interaction Effects for Female Political Participation and Polygyny***



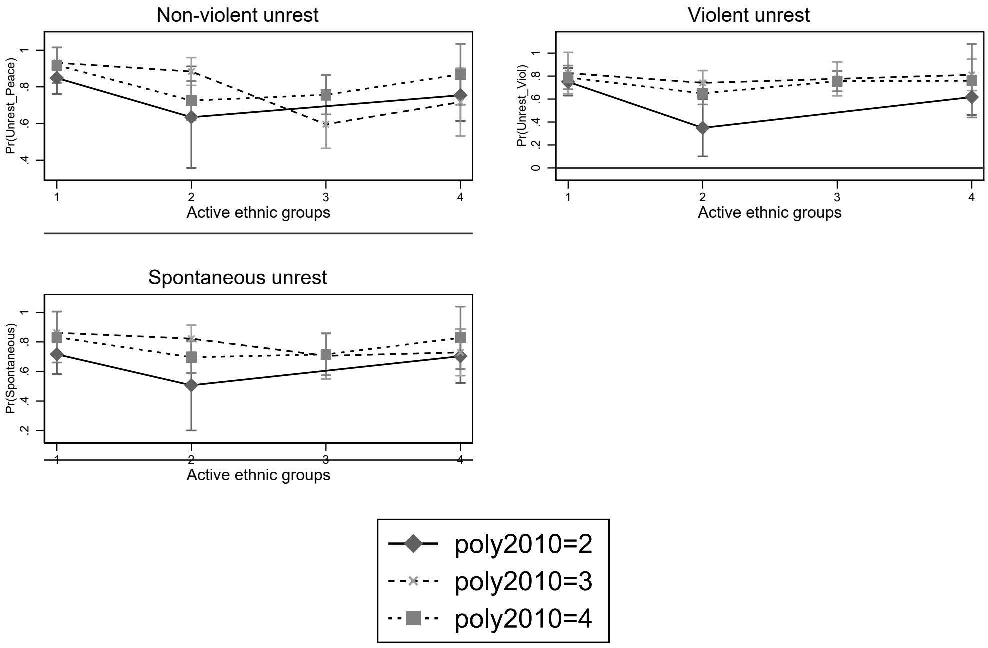
Notes: The figures show marginal effects for the three levels of polygyny for various levels of female political participation for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-8: ***Contrasts–Interaction Effects for Female Political Participation and Polygyny***



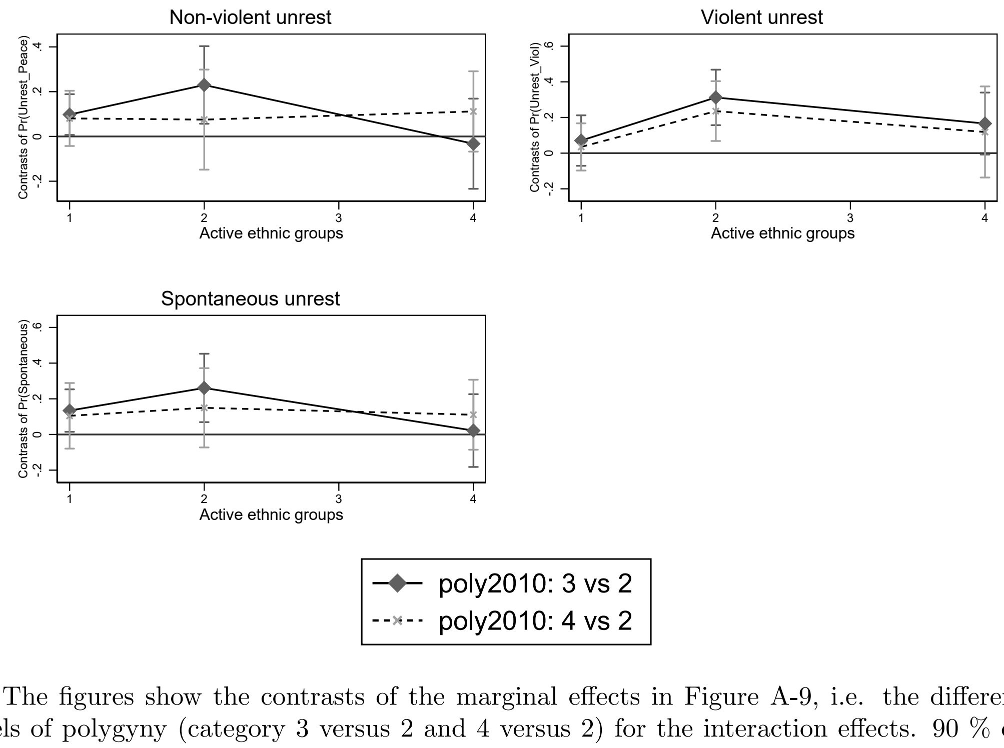
Notes: The figures show the contrasts of the marginal effects in Figure A-7, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. 90 % confidence intervals displayed.

Figure A-9: ***Interaction Effects for Polygyny and the Number of Ethnic groups***



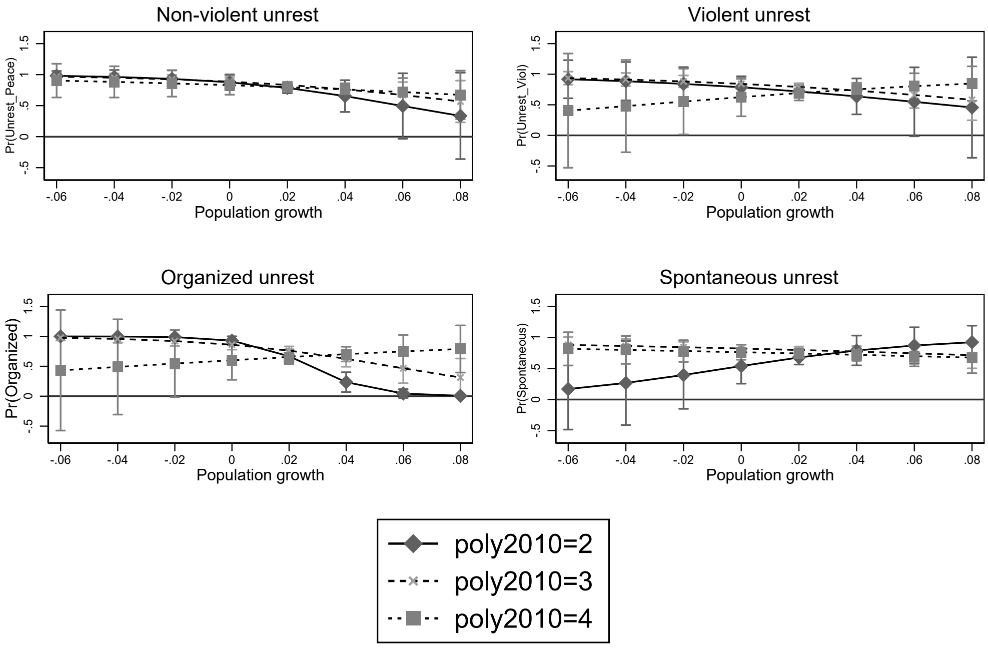
Notes: The figures show marginal effects for the three levels of polygyny for various levels of active ethnic groups for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-10: ***Contrasts–Polygyny and the Number of Ethnic groups***



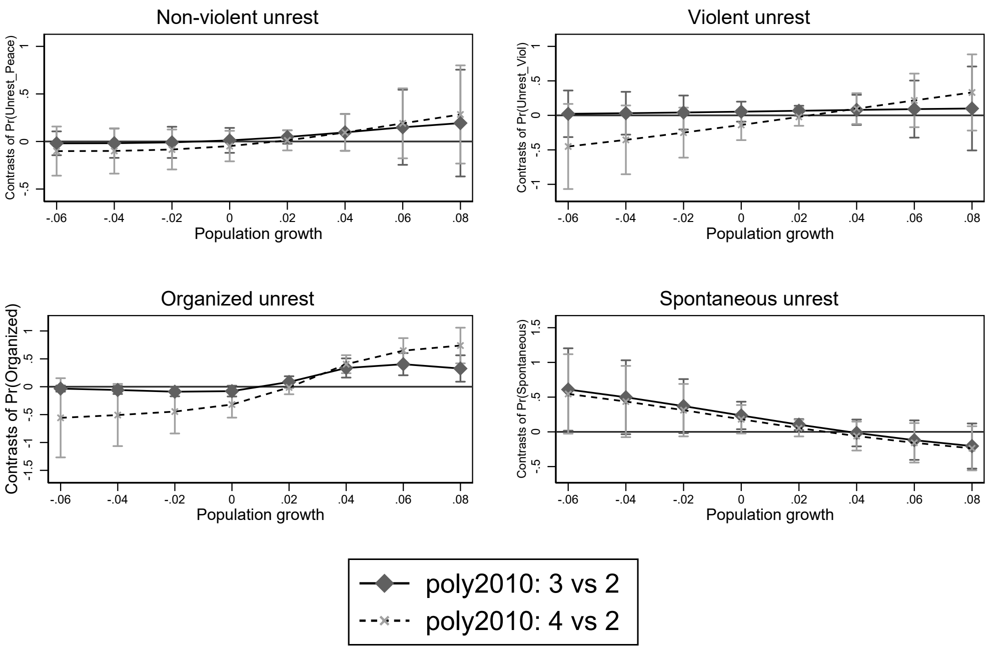
Notes: The figures show the contrasts of the marginal effects in Figure A-9, i.e. the difference across the levels of polygyny (category 3 versus 2 and 4 versus 2) for the interaction effects. 90 % confidence intervals displayed.

Figure A-11: ***Interaction Effects for Polygyny and Population Growth***



Notes: The figures show marginal effects for the three levels of polygyny for various levels of population growth for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure A-12: ***Contrasts–Interaction Effects for Polygyny and Population Growth***



Notes: The figures show marginal effects for the three levels of polygyny for various levels of population growth for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Table A-1: ***Summary Statistics***

Variable	Mean	Std. Dev.	Min.	Max.	N
Dependent variables					
Onset of internal armed conflict	0.018	0.134	0	1	932
Violent unrest incidence	0.700	0.459	0	1	932
Peaceful unrest incidence	0.756	0.429	0	1	932
Organized unrest, incidence	0.665	0.472	0	1	932
Spontaneous unrest, indicdence	0.704	0.457	0	1	932
Peaceful unrest, events per year	5.327	16.18	0	358	932
Violent unrest, events per year	6.231	19.449	0	290	932
Organized unrest, events per year	3.158	7.296	0	160	932
Spontaneous unrest, events per year	4.369	15.566	0	311	932
Control variables					
Ongoing conflict, t-1	0.218	0.413	0	1	932
GDPpc, t-1	7.515	0.834	4.959	9.771	932
Population, t-1	2.299	1.188	-0.148	5.152	932
Mountainous	1.647	1.448	0	4.421	932
Opec	0.07	0.255	0	1	932
Instability	0.039	0.193	0	1	932
Polity	0.109	5.287	-10	9	932
Religious frac.	0.464	0.205	0	0.783	932
Population share excluded, t-1	0.208	0.281	0	0.92	932
Nr neighbors unrest, t-1	3.639	2.008	0	9	932
Polygyny & Mechanisms					
Dispersion of resources	0.379	0.082	0.13	0.575	932
Sonbias	0.164	0.125	0	0.478	932
Sex ratio, 15-49	0.975	0.039	0.784	1.136	932
Unequal inheritance	1.698	0.878	0	3	932
Female politics, t-1	0.659	0.199	0.088	1	932
Female LFPR, t-1	0.594	0.188	0.188	0.893	932
Access to electricity, t-1	0.276	0.265	0	1	932
Polygyny Scale	3.376	0.736	2	4	932

Table A-2: ***Incidence and intensity of social unrest***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incidence				Intensity			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Ongoing conflict, t-1	0.318*	–0.187	–0.182	–0.114	0.076*	–0.019	–0.015	–0.022
	(0.175)	(0.236)	(0.259)	(0.251)	(0.043)	(0.047)	(0.054)	(0.075)
GDPpc, t-1	–0.405	–0.993***	–0.941***	–0.491**	–0.117**	–0.160***	–0.103**	–0.207***
	(0.304)	(0.228)	(0.217)	(0.245)	(0.055)	(0.041)	(0.048)	(0.052)
Population, t-1	0.446***	0.154	0.018	0.643***	0.094***	0.028	0.153***	–0.006
	(0.130)	(0.118)	(0.129)	(0.123)	(0.033)	(0.029)	(0.038)	(0.038)
Mountainous	0.075	0.179*	0.154	–0.012	0.006	0.034	–0.029	0.036
	(0.100)	(0.099)	(0.099)	(0.121)	(0.025)	(0.021)	(0.034)	(0.030)
Opec	0.240	0.250	0.157	0.218	0.009	0.005	–0.012	–0.024
	(0.306)	(0.572)	(0.352)	(0.563)	(0.079)	(0.098)	(0.116)	(0.076)
Instability	0.886**	0.728**	0.288	1.248***	0.206***	0.146**	0.254***	0.094
	(0.364)	(0.367)	(0.311)	(0.302)	(0.075)	(0.065)	(0.064)	(0.089)
Polity, t-1	0.036	–0.000	–0.004	–0.018	0.009	0.001	–0.004	–0.000
	(0.027)	(0.027)	(0.029)	(0.025)	(0.006)	(0.005)	(0.006)	(0.008)
Religious frac.	2.412**	1.720*	1.891**	1.522	0.599**	0.355	0.488	0.611**
	(0.959)	(0.970)	(0.959)	(1.027)	(0.249)	(0.220)	(0.304)	(0.302)
Population share excluded, t-1	0.052	0.177	–0.122	–0.170	–0.052	–0.019	–0.080	–0.115
	(0.439)	(0.521)	(0.566)	(0.413)	(0.113)	(0.107)	(0.104)	(0.184)
Nr neighbors unrest, t-1	0.054	0.169**	0.086	0.059	0.014	0.033**	0.011	0.031*
	(0.066)	(0.081)	(0.059)	(0.081)	(0.013)	(0.014)	(0.016)	(0.016)
Dispersion of resources	–2.548	–3.922*	–4.566*	–2.350	–0.339	–0.818*	–0.433	–1.021
	(1.813)	(2.182)	(2.372)	(1.968)	(0.422)	(0.418)	(0.501)	(0.647)
Access to electricity, t-1	0.298	2.746***	2.704***	1.085	0.151	0.505**	0.244	0.674***
	(0.976)	(1.027)	(0.894)	(1.099)	(0.222)	(0.206)	(0.228)	(0.244)
Sonbias	3.388***	0.952	2.518**	0.337	0.829***	0.246	0.170	0.674**
	(1.140)	(1.301)	(1.158)	(1.213)	(0.229)	(0.210)	(0.254)	(0.279)
Sex ratio, 15-49	2.038	2.688	3.973	0.613	0.378	0.246	–0.165	0.760
	(3.547)	(3.491)	(3.383)	(3.754)	(0.974)	(0.739)	(0.993)	(0.912)
Unequal inheritance	–0.008	0.180	0.251	–0.223	–0.033	0.005	–0.121***	0.047
	(0.163)	(0.145)	(0.173)	(0.151)	(0.038)	(0.035)	(0.046)	(0.057)
Female politics, t-1	0.173	–0.393	–1.253*	1.016	0.105	–0.029	0.317*	–0.318
	(0.619)	(0.676)	(0.699)	(0.722)	(0.147)	(0.121)	(0.162)	(0.211)
Female LFPR, t-1	–3.538***	–2.711**	–2.017*	–3.201***	–0.696***	–0.433*	–0.623**	–0.545**
	(1.029)	(1.325)	(1.051)	(1.118)	(0.212)	(0.230)	(0.257)	(0.263)
Polygyny Scale=3	0.397	0.342	0.507	0.624**	0.159***	0.102	0.235***	0.188
	(0.261)	(0.279)	(0.368)	(0.263)	(0.055)	(0.072)	(0.068)	(0.120)
Polygyny Scale=4	0.122	0.119	0.278	0.328	0.029	0.064	0.129	0.102
	(0.375)	(0.368)	(0.351)	(0.399)	(0.082)	(0.078)	(0.080)	(0.110)
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	932	932	932	932
Countries	41	41	41	41	41	41	41	41
Pseudo-R2	0.168	0.133	0.118	0.191	0.033	0.019	0.039	0.026
Log likelihood	–474.031	–448.378	–523.862	–458.311	–855.734	–885.006	–852.049	–849.921

Notes: Dependent variable: Incidence (using a logistig regression) or number of events (using a negative binomial regression) of social unrest, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A-3: ***Intensity of social unrest: Incidence Rate Ratios***

	(1)	(2)	(3)	(4)
	Violent	Non-violent	Spontaneous	Organized
Ongoing conflict, t-1	1.079	0.982	0.985	0.978
	(1.78)	(-0.40)	(-0.27)	(-0.29)
GDPpc, t-1	0.890*	0.852***	0.902*	0.813***
	(-2.10)	(-3.88)	(-2.14)	(-3.98)
Population, t-1	1.098**	1.029	1.166***	0.994
	(2.80)	(0.99)	(4.02)	(-0.17)
Mountainous	1.006	1.035	0.972	1.037
	(0.24)	(1.62)	(-0.84)	(1.20)
Opec	1.009	1.005	0.988	0.976
	(0.11)	(0.05)	(-0.10)	(-0.32)
Instability	1.228**	1.157*	1.290***	1.099
	(2.74)	(2.26)	(3.96)	(1.07)
Polity, t-1	1.009	1.001	0.996	1.000
	(1.40)	(0.11)	(-0.76)	(-0.04)
Religious frac.	1.820*	1.426	1.630	1.843*
	(2.41)	(1.62)	(1.61)	(2.03)
Population share excluded, t-1	0.949	0.982	0.923	0.891
	(-0.46)	(-0.17)	(-0.77)	(-0.63)
Nr neighbors unrest, t-1	1.015	1.033*	1.011	1.031
	(1.14)	(2.34)	(0.66)	(1.93)
Dispersion of resources	0.712	0.441	0.649	0.360
	(-0.80)	(-1.96)	(-0.86)	(-1.58)
Access to electricity, t-1	1.162	1.657*	1.276	1.961**
	(0.68)	(2.45)	(1.07)	(2.76)
Sonbias	2.291***	1.278	1.186	1.963*
	(3.63)	(1.17)	(0.67)	(2.42)
Sex ratio, 15-49	1.460	1.279	0.847	2.138
	(0.39)	(0.33)	(-0.17)	(0.83)
Unequal inheritance	0.967	1.005	0.886**	1.048
	(-0.87)	(0.13)	(-2.63)	(0.83)
Female politics, t-1	1.111	0.972	1.373	0.727
	(0.72)	(-0.24)	(1.95)	(-1.51)
Female LFPR, t-1	0.498**	0.649	0.537*	0.580*
	(-3.28)	(-1.88)	(-2.42)	(-2.07)
Polygyny Scale=3	1.173**	1.108	1.265***	1.207
	(2.88)	(1.43)	(3.46)	(1.57)
Polygyny Scale=4	1.030	1.066	1.138	1.107
	(0.36)	(0.82)	(1.62)	(0.92)
Years since last unrest	0.646***	0.830**	0.754***	0.726***
	(-6.07)	(-3.21)	(-4.70)	(-3.83)
lnalpha	3.62e-11	2.12e-11	3.48e-11	5.02e-11
Observations	932	932	932	932
Time Controls	YES	YES	YES	YES
Observations	932	932	932	932
Countries	41	41	41	41

Notes: Exponentiated coefficents (incidence rate ratios) shown. Dependent variable: Number of unrest events per country-year, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table A-4: ***Testing reverse causality***

	(1)	(2)	(3)	(4)	(5)	(6)
Ongoing conflict	–0.206	–0.173	–0.165	–0.187*	–0.202**	–0.217*
	(0.146)	(0.134)	(0.134)	(0.101)	(0.096)	(0.112)
GDPpc	–0.044	–0.059	–0.063	0.089	0.122	0.257*
	(0.106)	(0.102)	(0.101)	(0.100)	(0.096)	(0.148)
Population	–0.200**	–0.220**	–0.209**	–0.176**	–0.142*	–0.180**
	(0.095)	(0.100)	(0.096)	(0.079)	(0.079)	(0.080)
Mountainous	–0.233***	–0.230***	–0.231***	–0.247***	–0.276***	–0.263***
	(0.056)	(0.054)	(0.054)	(0.055)	(0.059)	(0.059)
Opec	0.158	0.160	0.150	0.228	0.177	0.263
	(0.328)	(0.308)	(0.309)	(0.205)	(0.223)	(0.225)
Instability	–0.167	–0.171	–0.169	–0.123	–0.108	–0.009
	(0.133)	(0.133)	(0.133)	(0.114)	(0.105)	(0.139)
Polity	0.007	0.003	0.003	0.003	–0.001	0.018
	(0.012)	(0.013)	(0.013)	(0.011)	(0.011)	(0.011)
Religious frac.	1.324***	1.298**	1.322***	0.318	0.376	0.149
	(0.477)	(0.487)	(0.480)	(0.457)	(0.426)	(0.434)
Population share excluded, t-1	–0.118	–0.166	–0.160	–0.328	–0.342	–0.098
	(0.184)	(0.201)	(0.200)	(0.200)	(0.203)	(0.177)
Nr neighbors unrest, t-1	0.124**	0.126**	0.127**	0.092*	0.089*	0.064
	(0.049)	(0.049)	(0.048)	(0.048)	(0.046)	(0.042)
Any unrest incidence	–0.025					
	(0.096)					
Fatalities in conflict, log	0.011	0.004	0.010	0.006	0.009	–0.002
	(0.021)	(0.020)	(0.017)	(0.016)	(0.016)	(0.019)
Violent unrest events		0.004	0.005	0.007**	0.007**	0.007**
		(0.005)	(0.005)	(0.003)	(0.003)	(0.003)
Sum of conflict events			–0.011			
			(0.020)			
Absolute latitude				–0.042***	–0.045***	–0.054***
				(0.014)	(0.013)	(0.016)
Distance to coast(km)				0.000	0.000	0.000
				(0.000)	(0.000)	(0.000)
Sex ratio, age 15-49					–0.026	
					(0.020)	
Mean GINI						–1.724
						(1.541)
Time Controls	YES	YES	YES	YES	YES	YES
Observations	335	335	335	335	335	256
Countries	34	34	34	34	34	32
Log likelihood	–203.229	–201.884	–201.467	–157.199	–151.264	–117.228
AIC	432.457	429.768	430.935	344.398	334.528	266.455
BIC	482.041	479.351	484.332	401.610	395.554	323.178

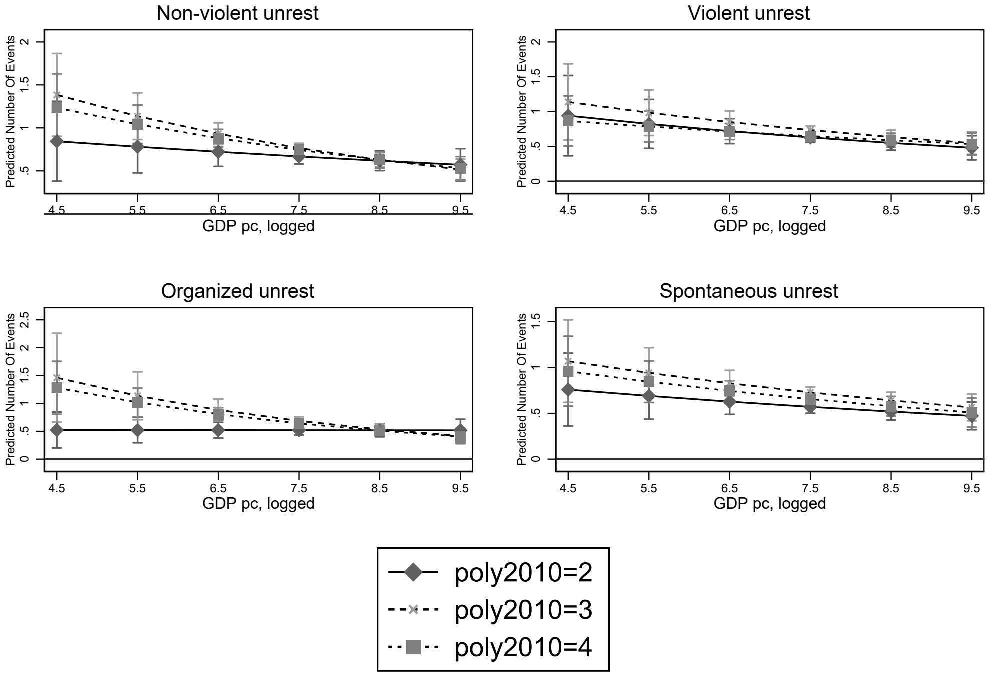
Notes: We cut the sample to make sure polygny is measured at the end. OLS regression with polgyny scale as dependent variable. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

B Online Appendix: Variable Definitions and Interaction Effects for Intensity

Table B-1: ***Variable Definitions and Sources***

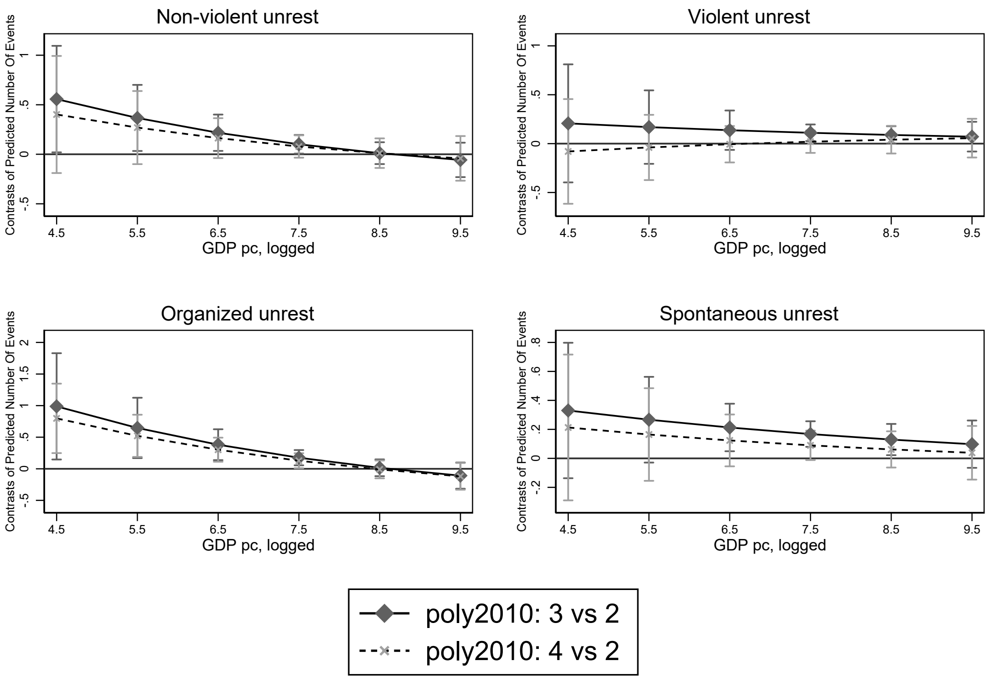
Variable	Definition	Source
Polygyny	Prevalence and legal status of polygyny in a given state. In Africa, the smallest value is a 2: Polygyny is generally illegal, except for certain minority ethnic or religious enclaves, but this represents $< 5\%$ of women being in such marriages. 3: Polygyny is legal under customary/religious law, but $< 25\%$ of women are in such arrangements. 4: Polygyny is legal under customary/religious law (though it may or may not be illegal under national law; if it is illegal, the government does not enforce the law), but it is common (more than $> 25\%$ of women are in such relationships).	The WomanStats Project, scale designed by Rose McDermott.
Unequal inheritance	No polygyny (0). (Rather) Equal (1): Widows and sons all receive an equal share. Sons may get more than widows. Inheritance claims are secure and valid.. Customary/informal/lesser wives and their sons may get less, Unequal (2): Ranking of wives translates to theirs and their sons' inheritance (also among legally married wives). Very unequal (3): One (male) heir gets all, maybe with some kind of support duty for dependent family members.	Own data collection and coding (data points uploaded via the WomanStats Project
Dispersion of resources	This index includes the prevalence of family farms (weighted with the share of agricultural population) and the degree of centralization of the public and private sector (weighted with the share of the non-agricultural population).	Constructed by Vanhanen (1990). Data from Finnish Social Science Data Archive.
Sonbias	Subcategory of the Social Institutions and Gender Index (SIGI). Codes marriage practices favoring sons as well as missing women.	SIGI (OECD 2014; Branisa et al. 2014)
Sex ratio, 15-49	Males per 100 females in a country for the age group 15 to 49	UN World Population Prospects 2017
Female in politics	Lower chamber female legislators and power distributed by gender, created by Sundström et al. (2017).	V-DEM version 7.1
Female labor force participation	Labor force participation rate is the proportion of the female population ages 15 and older that is economically active.	World Development Indicators
Access to electricity	Access to electricity is the percentage of population with access to electricity.	World Bank Development Indicators
Ongoing conflict	1 if incidence of intrastate conflict, 0 if not.	UCDP/PRIO Armed Conflict Dataset version 4, 2015
Unrest incidence	1 if one ore more events of the specific unrest type took place in that country year. Types of unrest: Violent and non-violent, spontaneous and organized event.	Social Conflict Analysis Database (SCAD), Version 3.2
Unrest intensity	Number of unrest events of the specific unrest type.	Social Conflict Analysis Database (SCAD), Version 3.2
GPC per capita	Real GDP (PPP) per capita	Penn World Tables v.9
Population size	Population	Penn World Tables v.9
Mountainous	Percent of mountaineous terrain	Fearon and Laitin (2003)
Opec	Own coding	
Polity	Polity2 indicator from the PolityIV Project: from -10, i.e. autocracy to $+10$ democracy	Polity4 version 2016
Instability	Own coding based on Polity2 indicator following Fearon and Laitin (2003): 1 if the Polity2 indicator changed by 3 or more points in the last three years	Polity4 version 2016
Religious fractionalization	Probability that two randomly drawn indiciduals are from different religious groups.	Fearon and Laitin (2003)
Population share excluded	Fraction of total population belonging to excluded groups.	EPR (Ethnic Power Relations) Core Dataset 2018
Nr neigbhors unrest	Own coding using data on neighboring countries' unrest incidence: count variable for number of neighbors with unrest events in a year.	SCAD Version 3.2 combined with contiguity from CEPII
Gini	Mean GINI, post tax income	SWIID, Version 6.1 (Solt 2016)
Active ethnic groups	Own coding based on count variable of ethnic active groups: 1 if one or two groups, 2 if three or four groups, 3 if five or six groups, 4 if more than 6 groups.	EPR (Ethnic Power Relations) Core Dataset 2018
Population growth		Penn World Tables v.9
Polyarchy	Electoral democracy index (from 0, least electoral democracy to 1, most electoral democracy	V-DEM version 7.1
Male youth bulge	Sex ratio (males per 100 females) aged 15-24	UN World Population Prospects 2017
Share rural population	Percentage of population in rural areas.	World Bank Development Indicators
CIRI	Women's economic and political rights (from 0, no rights, to 1, full rights).	Cingranelli and Richards (2010)

Figure B-1: ***Intensity: Interaction Effects for GDP per capita and Polygyny***



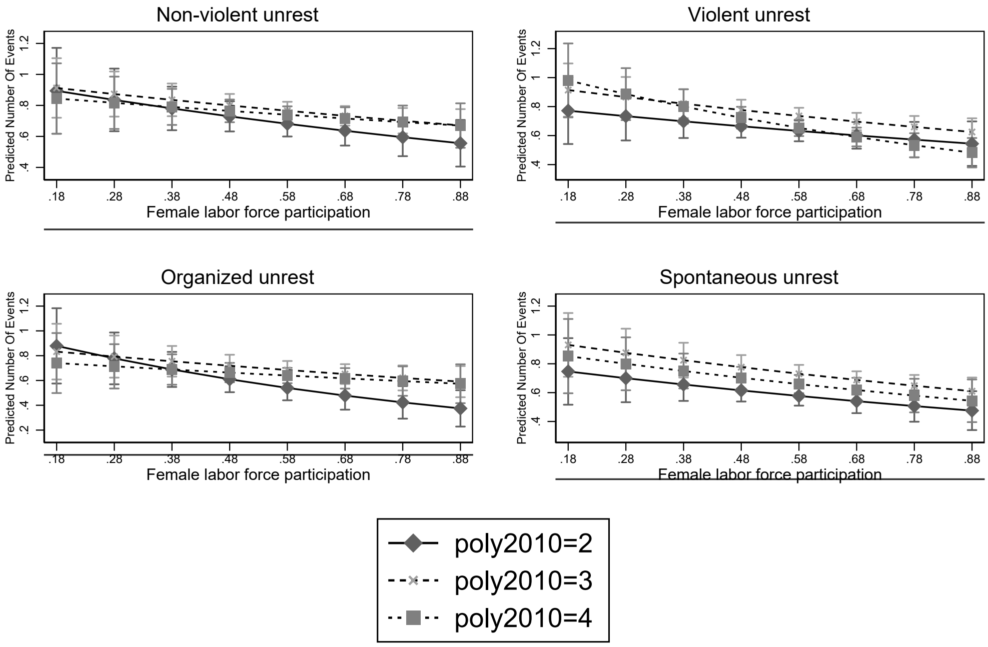
Notes: The figures show marginal effects for the three levels of polygyny for various levels of GDP per capita for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure B-2: ***Intensity: Contrasts–Interaction Effects for GDP per capita and Polygyny***



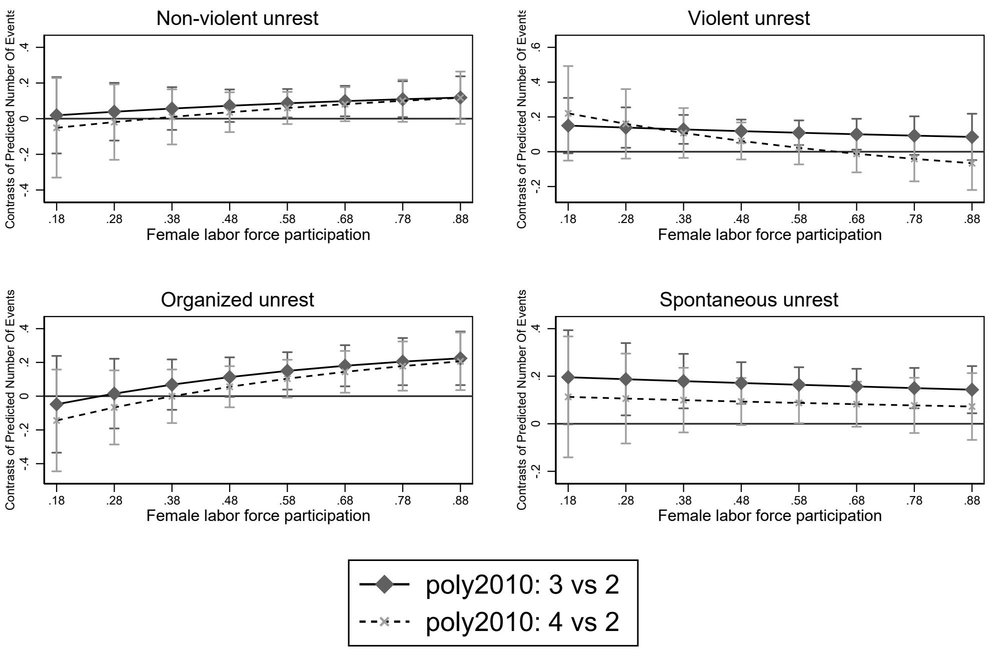
Notes: The figures show the contrasts of the marginal effects in Figure B-5, i.e. the difference from highest to medium and from medium to low levels of polygyny. 90 % confidence intervals displayed.

Figure B-3: ***Intensity: Interaction Effects for Female Labor Force Participation and Polygyny***



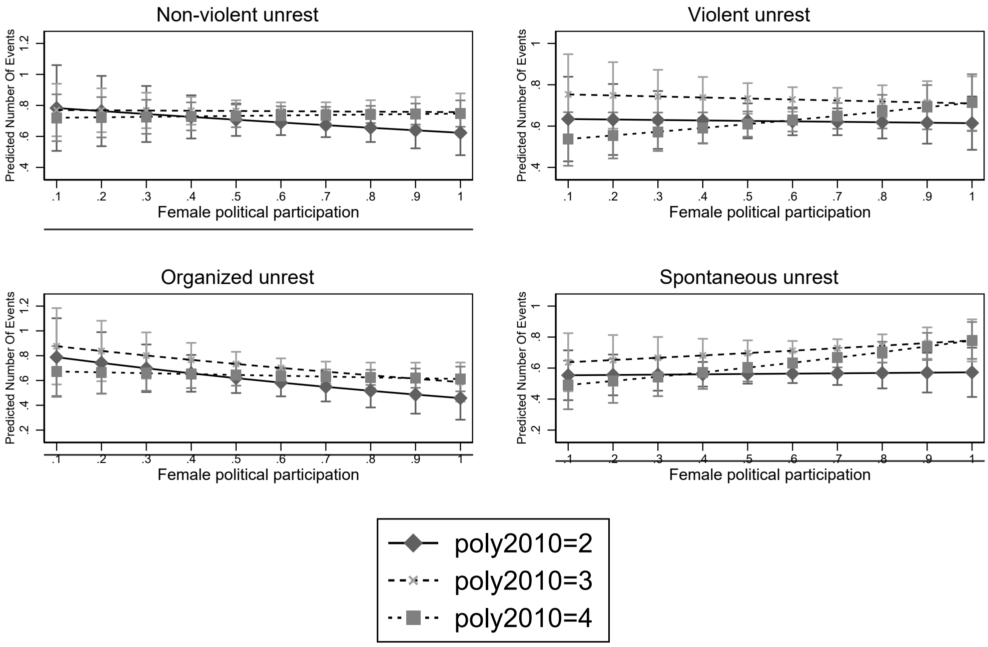
Notes: The figures show marginal effects for the three levels of polygyny for various levels of female labor force participation for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure B-4: ***Intensity: Contrasts–Interaction Effects for Female Labor Force Participation and Polygyny***



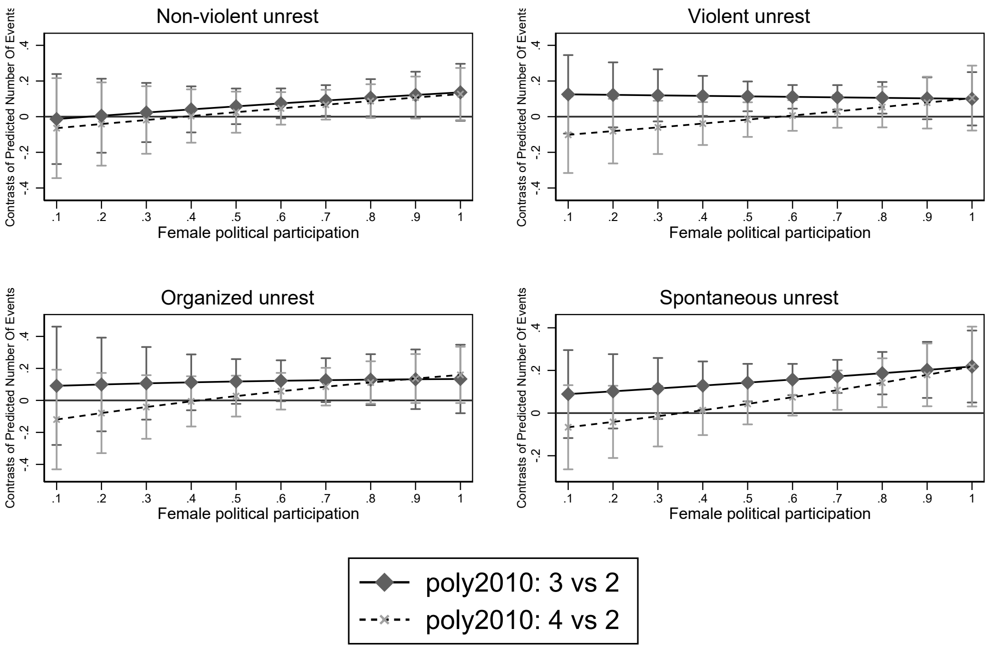
Notes: The figures show the contrasts of the marginal effects in Figure B-5, i.e. the difference from highest to medium and from medium to low levels of polygyny. 90 % confidence intervals displayed.

Figure B-5: ***Intensity: Interaction Effects for Female Political Participation and Polygyny***



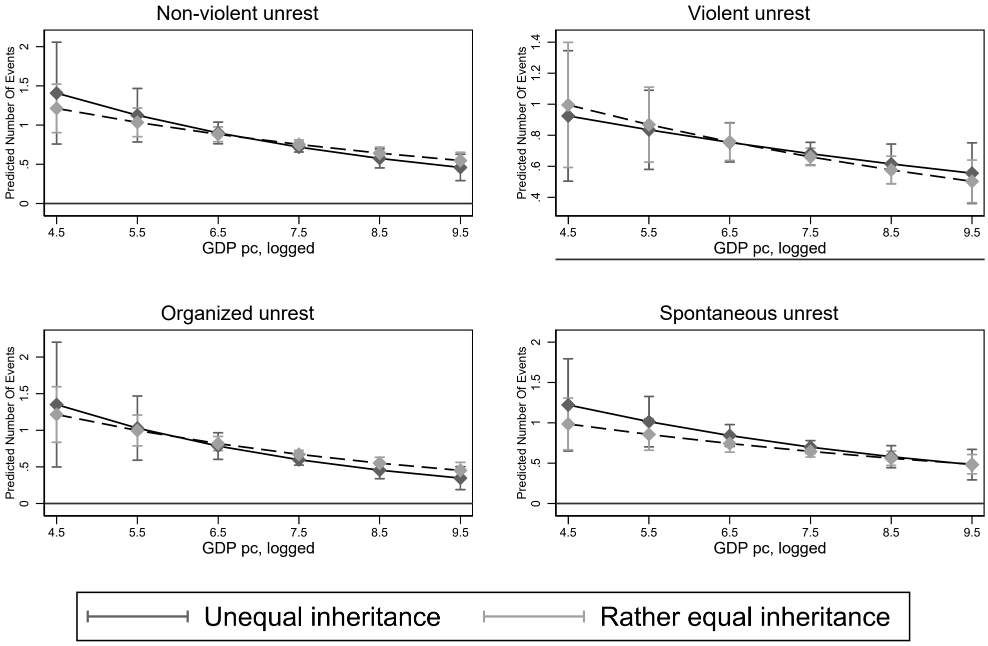
Notes: The figures show marginal effects for the three levels of polygyny for various levels of female political participation for non-violent, violent, organized and spontaneous unrest, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure B-6: ***Intensity: Contrasts–Interaction Effects for Female Political Participation and Polygyny***



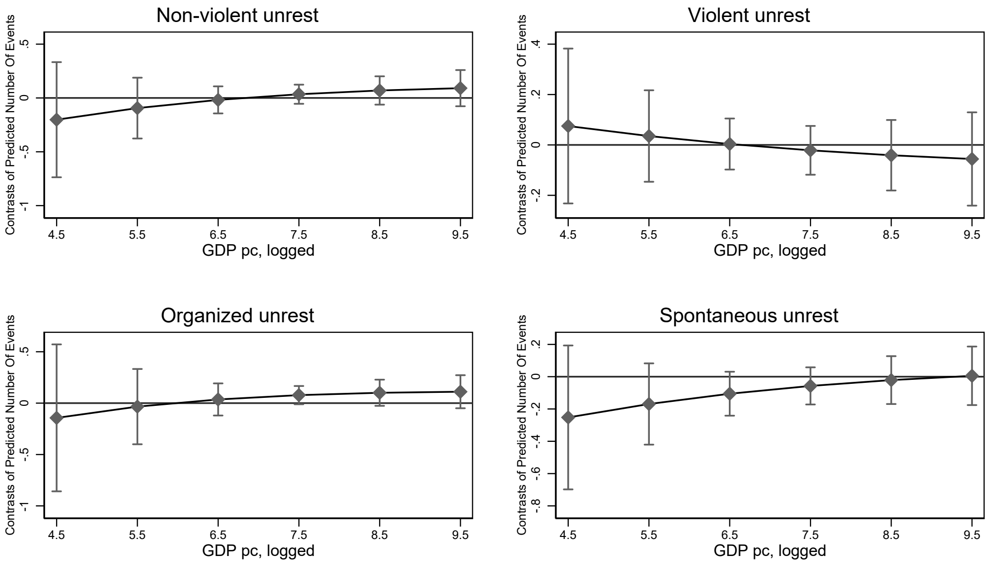
Notes: The figures show the contrasts of the marginal effects in Figure B-5, i.e. the difference from highest to medium and from medium to low levels of polygyny. 90 % confidence intervals displayed.

Figure B-7: ***Intensity: Interaction Effects for GDP per capita and Horizontal Inequality***



Notes: The figure shows marginal effects of unequal inheritance (transformed to a binary variable, 1 for medium and high inequality) and GDP per capita, holding all control variables at their mean. The interaction effects are integrated in the baseline specification as shown in Table A-2. 90 % confidence intervals displayed.

Figure B-8: ***Intensity: Contrasts–Interaction Effects for GDP per capita and Horizontal Inequality***



Notes: The figures show the contrasts of the marginal effects in Figure B-7, i.e. the difference from unequal to equal inheritance for the interaction effects. 90 % confidence intervals displayed.

C Online Appendix: Robustness Checks

Table C-1: ***Incidence: GINI and additional controls included***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Additional controls				GINI Coefficient			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Dispersion of resources	–2.804	–2.007	–3.068	–2.353				
	(2.122)	(2.178)	(2.314)	(2.149)				
Access to electricity, t-1	0.670	3.718***	3.344***	1.061				
	(1.146)	(1.301)	(1.134)	(1.236)				
Sonbias	3.335**	–0.192	1.636	0.454	2.759**	0.357	2.298*	–0.702
	(1.339)	(1.280)	(1.155)	(1.261)	(1.201)	(1.183)	(1.211)	(1.090)
Sex ratio, 15-49	1.130	6.758	6.177	4.813	3.657	–4.643	–0.437	–5.220
	(4.310)	(5.066)	(4.537)	(4.602)	(4.418)	(4.190)	(4.379)	(4.437)
Unequal inheritance	–0.003	0.170	0.235	–0.218	–0.125	0.159	0.178	–0.089
	(0.166)	(0.151)	(0.173)	(0.150)	(0.202)	(0.215)	(0.221)	(0.184)
Female politics, t-1	0.182	–0.438	–1.292*	1.082	–0.487	–0.948	–1.663*	–0.297
	(0.619)	(0.729)	(0.767)	(0.714)	(0.732)	(0.902)	(0.849)	(0.829)
Female LFPR, t-1	–3.509***	–3.237***	–2.376**	–3.498***	–4.164***	–2.951**	–3.509***	–2.820**
	(1.081)	(1.139)	(1.037)	(1.073)	(1.208)	(1.199)	(1.119)	(1.099)
Share rural population, t-1	0.719	2.836**	1.822	0.376				
	(1.723)	(1.344)	(1.290)	(1.372)				
Sex ratio, 15-24	2.525	–6.103	–3.547	–6.663				
	(4.690)	(6.342)	(5.242)	(5.570)				
Mean GINI, SWIID					2.390	–0.692	2.415	–4.350
					(2.244)	(3.196)	(3.054)	(2.871)
Male share 15-24	–34.621	49.835	47.507	–4.487				
	(47.071)	(57.575)	(46.287)	(35.167)				
Polygyny Scale=3	0.458*	0.325	0.532	0.502*	0.574*	0.574	0.830**	0.645*
	(0.268)	(0.282)	(0.365)	(0.288)	(0.323)	(0.352)	(0.389)	(0.371)
Polygyny Scale=4	0.144	0.102	0.300	0.188	0.264	0.043	0.536	–0.015
	(0.396)	(0.357)	(0.355)	(0.411)	(0.361)	(0.462)	(0.410)	(0.520)
Baseline Controls	YES	YES	YES	YES	YES	YES	YES	YES
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	702	702	702	702
Countries	41	41	41	41	40	40	40	40
Pseudo-R2	0.169	0.144	0.124	0.194	0.155	0.129	0.130	0.198
Log likelihood	–473.282	–443.094	–520.599	–456.147	–355.088	–339.644	–386.370	–339.857

Notes: Dependent variable: Incidence of social unrest, different categories, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-2: ***Incidence: Electoral democracy as control and CIRI for gender inequality***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Polyarchy				CIRI			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Dispersion of resources	–2.385	–4.089*	–4.628**	–2.749	–5.428***	–5.310**	–6.907**	–3.700**
	(1.797)	(2.124)	(2.348)	(1.829)	(1.859)	(2.512)	(2.802)	(1.882)
Access to electricity, t-1	0.345	2.717***	2.688***	0.975	1.229	2.855**	2.901***	2.060*
	(1.000)	(1.042)	(0.937)	(1.142)	(1.133)	(1.140)	(1.066)	(1.105)
Sonbias	3.276***	0.970	2.527**	0.420	3.724***	1.203	2.681**	0.498
	(1.128)	(1.275)	(1.145)	(1.175)	(1.213)	(1.262)	(1.165)	(1.099)
Sex ratio, 15-49	2.522	3.140	4.058	1.258	8.295*	5.125	9.051**	2.187
	(3.536)	(3.422)	(3.427)	(3.798)	(4.270)	(3.908)	(3.701)	(3.890)
Unequal inheritance	0.034	0.200	0.252	–0.205	0.172	0.233	0.304*	–0.070
	(0.162)	(0.137)	(0.168)	(0.143)	(0.156)	(0.164)	(0.183)	(0.157)
Female politics, t-1	0.215	–0.284	–1.220*	1.230				
	(0.689)	(0.694)	(0.738)	(0.784)				
Female LFPR, t-1	–3.369***	–2.615**	–2.003*	–3.080***				
	(0.976)	(1.283)	(1.044)	(1.105)				
Electoral democracy index, t-1	0.587	–0.407	–0.206	–1.142				
	(0.912)	(0.961)	(1.034)	(0.917)				
CIRI					–1.305*	–0.411	–1.198	–0.714
					(0.783)	(0.957)	(1.084)	(0.896)
Polygyny Scale=3	0.358	0.366	0.520	0.696***	0.367	0.299	0.310	0.551**
	(0.270)	(0.262)	(0.355)	(0.252)	(0.287)	(0.366)	(0.431)	(0.268)
Polygyny Scale=4	0.049	0.170	0.304	0.470	0.160	0.352	0.316	0.547
	(0.375)	(0.350)	(0.330)	(0.403)	(0.331)	(0.415)	(0.385)	(0.344)
Baseline Controls	YES	YES	YES	YES	YES	YES	YES	YES
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	775	775	775	775
Countries	41	41	41	41	41	41	41	41
Pseudo-R2	0.166	0.134	0.118	0.192	0.157	0.132	0.129	0.169
Log likelihood	–475.364	–448.207	–523.840	–457.390	–405.574	–379.304	–430.536	–400.692

Notes: Dependent variable: Incidence of social unrest, different categories, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table C-3: ***Intensity: GINI and additional controls included***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Additional controls				GINI Coefficient			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Dispersion of resources	–0.532	–0.382	–0.562	–0.573				
	(0.476)	(0.423)	(0.635)	(0.527)				
Access to electricity, t-1	0.147	0.711***	0.871**	0.105				
	(0.291)	(0.265)	(0.348)	(0.281)				
Sonbias	0.917***	–0.016	0.406	0.300	0.746***	0.197	0.653*	0.071
	(0.298)	(0.201)	(0.255)	(0.276)	(0.263)	(0.249)	(0.354)	(0.248)
Sex ratio, 15-49	0.188	1.014	1.375	0.872	0.766	–1.690*	–0.783	–1.995
	(1.163)	(0.817)	(1.094)	(0.988)	(1.382)	(0.896)	(1.426)	(1.301)
Unequal inheritance	–0.031	–0.006	0.039	–0.136***	–0.064	0.007	0.046	–0.103**
	(0.041)	(0.028)	(0.057)	(0.035)	(0.046)	(0.041)	(0.073)	(0.043)
Female politics, t-1	0.098	–0.017	–0.308	0.340**	–0.083	–0.183	–0.466*	–0.018
	(0.151)	(0.124)	(0.224)	(0.155)	(0.159)	(0.164)	(0.245)	(0.177)
Female LFPR, t-1	–0.664***	–0.567**	–0.659**	–0.776***	–0.785***	–0.551**	–0.913***	–0.463*
	(0.236)	(0.220)	(0.283)	(0.248)	(0.216)	(0.233)	(0.273)	(0.254)
Share rural population, t-1	–0.024	0.558**	0.502	–0.174				
	(0.432)	(0.264)	(0.392)	(0.304)				
Sex ratio, 15-24	0.491	–1.481	–1.226	–2.420**				
	(1.480)	(1.097)	(1.705)	(1.077)				
Mean GINI,post tax income, SWIID					0.321	0.013	0.445	–0.866
					(0.493)	(0.532)	(0.783)	(0.603)
Male share 15-19	–10.396	12.234	14.518	–0.337				
	(13.701)	(10.878)	(12.171)	(9.083)				
Polygyny Scale=3	0.164***	0.121*	0.214*	0.187***	0.166**	0.161**	0.270**	0.245***
	(0.060)	(0.067)	(0.120)	(0.072)	(0.082)	(0.077)	(0.121)	(0.071)
Polygyny Scale=4	0.031	0.072	0.120	0.074	0.044	0.056	0.160	0.063
	(0.089)	(0.075)	(0.114)	(0.084)	(0.091)	(0.087)	(0.119)	(0.094)
lnalpha	–24.042	–24.577	–23.716	–24.082	–24.175	–47.879	–46.334	–46.991
Baseline Controls	YES	YES	YES	YES	YES	YES	YES	YES
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	702	702	702	702
Countries	41	41	41	41	40	40	40	40
Pseudo-R2	0.033	0.020	0.027	0.040	0.029	0.019	0.029	0.041
Log likelihood	–855.521	–883.745	–848.943	–850.976	–650.738	–666.612	–640.205	–641.494

Notes: Dependent variable: Incidence of social unrest, different categories, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-4: ***Intensity: Electoral democracy as control and CIRI for gender inequality***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Polyarchy				CIRI			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Dispersion of resources	–0.291	–0.822**	–1.020	–0.481	–1.023***	–1.092**	–1.568**	–0.659
	(0.435)	(0.403)	(0.638)	(0.454)	(0.353)	(0.454)	(0.653)	(0.493)
Access to electricity, t-1	0.157	0.499**	0.678***	0.215	0.304	0.582**	0.756***	0.446*
	(0.223)	(0.211)	(0.258)	(0.233)	(0.254)	(0.232)	(0.278)	(0.244)
Sonbias	0.816***	0.242	0.677**	0.163	0.944***	0.276	0.713**	0.131
	(0.232)	(0.207)	(0.276)	(0.252)	(0.273)	(0.214)	(0.289)	(0.242)
Sex ratio, 15-49	0.326	0.275	0.741	–0.045	2.034**	0.763	2.054***	0.063
	(0.957)	(0.747)	(0.966)	(0.981)	(0.969)	(0.717)	(0.762)	(0.909)
Unequal inheritance	–0.028	0.007	0.046	–0.116***	0.027	0.029	0.076	–0.079
	(0.038)	(0.034)	(0.056)	(0.044)	(0.042)	(0.040)	(0.054)	(0.054)
Female politics, t-1	0.092	–0.018	–0.326	0.375**				
	(0.168)	(0.130)	(0.225)	(0.180)				
Female LFPR, t-1	–0.699***	–0.424*	–0.551**	–0.592**				
	(0.217)	(0.227)	(0.265)	(0.251)				
Electoral democracy index, t-1	0.220	–0.028	0.022	–0.298				
	(0.246)	(0.225)	(0.301)	(0.255)				
CIRI					–0.311	–0.083	–0.345	–0.075
					(0.198)	(0.192)	(0.318)	(0.210)
Polygyny Scale=3	0.152***	0.106	0.185	0.258***	0.157**	0.093	0.119	0.258***
	(0.058)	(0.072)	(0.120)	(0.067)	(0.077)	(0.098)	(0.145)	(0.087)
Polygyny Scale=4	0.011	0.069	0.097	0.170**	0.051	0.105	0.095	0.219***
	(0.087)	(0.081)	(0.110)	(0.087)	(0.085)	(0.097)	(0.131)	(0.080)
lnalpha	–24.042	–24.577	–23.716	–24.082	–23.930	–24.501	–23.709	–23.917
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	775	775	775	775
Countries	41	41	41	41	41	41	41	41
Pseudo-R2	0.033	0.019	0.026	0.039	0.033	0.020	0.029	0.038
Log likelihood	–855.976	–885.004	–849.919	–851.812	–708.170	–732.892	–704.242	–704.663
AIC	1,757.952	1,816.008	1,745.839	1,749.624	1,460.340	1,509.784	1,452.484	1,453.326
BIC	1,869.211	1,927.267	1,857.098	1,860.883	1,562.703	1,612.147	1,554.847	1,555.689

Notes: Dependent variable: Incidence of social unrest, different categories, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-5: ***Incidence and intensity of social unrest: Linear Probability Model***

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Incidence				Intensity			
	Violent	Non-violent	Spontaneous	Organized	Violent	Non-violent	Spontaneous	Organized
Ongoing conflict, t-1	0.053*	–0.019	–0.024	–0.017	0.053*	–0.019	–0.017	–0.024
	(0.030)	(0.036)	(0.050)	(0.040)	(0.030)	(0.036)	(0.040)	(0.050)
GDPpc, t-1	–0.080*	–0.130***	–0.153***	–0.077**	–0.080*	–0.130***	–0.077**	–0.153***
	(0.043)	(0.031)	(0.035)	(0.035)	(0.043)	(0.031)	(0.035)	(0.035)
Population, t-1	0.068***	0.023	–0.000	0.104***	0.068***	0.023	0.104***	–0.000
	(0.023)	(0.020)	(0.025)	(0.022)	(0.023)	(0.020)	(0.022)	(0.025)
Mountainous	0.008	0.027*	0.027	–0.008	0.008	0.027*	–0.008	0.027
	(0.017)	(0.016)	(0.020)	(0.020)	(0.017)	(0.016)	(0.020)	(0.020)
Opec	0.013	0.013	–0.003	0.010	0.013	0.013	0.010	–0.003
	(0.049)	(0.075)	(0.055)	(0.074)	(0.049)	(0.075)	(0.074)	(0.055)
Instability	0.151***	0.113**	0.063	0.188***	0.151***	0.113**	0.188***	0.063
	(0.055)	(0.050)	(0.060)	(0.041)	(0.055)	(0.050)	(0.041)	(0.060)
Polity	0.005	0.000	–0.000	–0.003	0.005	0.000	–0.003	–0.000
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Religious frac.	0.401**	0.265*	0.390**	0.287	0.401**	0.265*	0.287	0.390**
	(0.161)	(0.157)	(0.190)	(0.181)	(0.161)	(0.157)	(0.181)	(0.190)
Population share excluded, t-1	–0.033	–0.008	–0.058	–0.058	–0.033	–0.008	–0.058	–0.058
	(0.076)	(0.081)	(0.114)	(0.072)	(0.076)	(0.081)	(0.072)	(0.114)
Nr neighbors unrest, t-1	0.009	0.025**	0.019*	0.009	0.009	0.025**	0.009	0.019*
	(0.009)	(0.011)	(0.011)	(0.012)	(0.009)	(0.011)	(0.012)	(0.011)
Dispersion of resources	–0.327	–0.609*	–0.751*	–0.341	–0.327	–0.609*	–0.341	–0.751*
	(0.296)	(0.318)	(0.440)	(0.316)	(0.296)	(0.318)	(0.316)	(0.440)
Access to electricity, t-1	0.099	0.394**	0.473***	0.168	0.099	0.394**	0.168	0.473***
	(0.160)	(0.156)	(0.165)	(0.164)	(0.160)	(0.156)	(0.164)	(0.165)
Sonbias	0.552***	0.175	0.458**	0.097	0.552***	0.175	0.097	0.458**
	(0.162)	(0.167)	(0.195)	(0.185)	(0.162)	(0.167)	(0.185)	(0.195)
Sex ratio, 15-49	0.239	0.248	0.632	–0.030	0.239	0.248	–0.030	0.632
	(0.653)	(0.547)	(0.619)	(0.635)	(0.653)	(0.547)	(0.635)	(0.619)
Unequal inheritance	–0.012	0.012	0.040	–0.058**	–0.012	0.012	–0.058**	0.040
	(0.026)	(0.024)	(0.034)	(0.024)	(0.026)	(0.024)	(0.024)	(0.034)
Female politics, t-1	0.047	–0.035	–0.224	0.200*	0.047	–0.035	0.200*	–0.224
	(0.105)	(0.095)	(0.137)	(0.115)	(0.105)	(0.095)	(0.115)	(0.137)
Female LFPR, t-1	–0.526***	–0.353*	–0.371**	–0.479***	–0.526***	–0.353*	–0.479***	–0.371**
	(0.148)	(0.177)	(0.179)	(0.171)	(0.148)	(0.177)	(0.171)	(0.179)
Polygyny Scale=2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Polygyny Scale=3	0.101**	0.077	0.118	0.135***	0.101**	0.077	0.135***	0.118
	(0.039)	(0.048)	(0.073)	(0.037)	(0.039)	(0.048)	(0.037)	(0.073)
Polygyny Scale=4	0.031	0.047	0.066	0.077	0.031	0.047	0.077	0.066
	(0.054)	(0.054)	(0.066)	(0.054)	(0.054)	(0.054)	(0.054)	(0.066)
Time Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	932	932	932	932	932	932	932	932
Countries	41	41	41	41	41	41	41	41
Pseudo-R2								
Log likelihood	–497.227	–463.386	–552.106	–475.797	–497.227	–463.386	–475.797	–552.106

Notes: OLS regressions. Dependent variable: Incidence and intensity of social unrest, different categories, 1990-2014, from SCAD. Clustered (by country) standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Aktuelle Diskussionsbeiträge / Recent discussion papers

2020-02	Tim Krieger, Laura Renner	Polygyny, Inequality, and Social Unrest
2020-01	Jonas Klos, Tim Krieger, Sven Stöwhase	Measuring Intra-generational Redistribution in PAYG Pension Schemes
2019-06	Martin Murtfeld	Begegnungen mit Dr. Wilfried Guth – eine persönliche Rückschau – aufgezeichnet 2019 anlässlich der 100sten Wiederkehr seines Geburtsjahres 1919
2019-05	Malte Dold, Tim Krieger	The 'New' Crisis of the Liberal Order: Populism, Socioeconomic Imbalances, and the Response of Contemporary Ordoliberalism [Forthcoming in: *Journal of Contextual Economics*]
2019-04	Malte Dold, Tim Krieger	The Ideological Use and Abuse of Freiburg's Ordoliberalism
2019-03	Tim Krieger, Laura Renner, Lena Schmid	Where do Migrants from Countries Ridden by Environmental Conflict Settle? On the Scale, Selection and Sorting of Conflict-induced Migration [Published as: "The Individual Level: Sorting Effects", in: Krieger, T., Panke, D., Pregernig, M. (eds.), Environmental Conflicts, Migration and Governance. Bristol University Press, Bristol, 103-120, 2020]
2019-02	Tim Krieger, Daniel Meierrieks	The Economic Consequences of Terrorism for the European Union [Published in: Bossong, R. (ed.), Terrorismus als Herausforderung der Europäischen Union, Nomos, Baden-Baden, 87-108, 2019.]
2019-01	Wilfried-Guth-Stiftungsprofesssur	Jahresbericht 2018
2018-03	Tim Krieger, Daniel Meierrieks	Population Size and the Size of Government [Published in: *European Journal of Political Economy* 61, 2020, 101837]
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2017-05	Eugen Dimant, Tim Krieger, Daniel Meierrieks	Negative Returns: U.S. Military Policy and Anti-American Terrorism
2017-04	Mohammad Reza Farzanegan, Tim Krieger	The Response of Income Inequality to Positive Oil Rents Shocks in Iran: Implications for the Post-Sanction Period [Published as: "Oil Booms and Inequality in Iran" in *Review of Development Economics* 23(2), 2019, pp. 830-859]